

**Littoral Environment Observation  
(LEO) Data Summaries,  
Northern California, 1968-78**

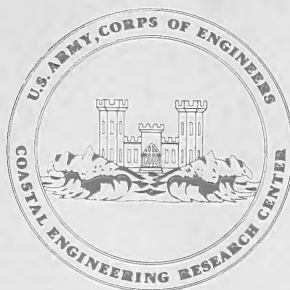
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by

Christine Schneider and J. Richard Weggel

MISCELLANEOUS REPORT NO. 82-6

AUGUST 1982



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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER MR 82-6	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)  LITTORAL ENVIRONMENT OBSERVATION (LEO) DATA SUMMARIES, NORTHERN CALIFORNIA, 1968-78		5. TYPE OF REPORT & PERIOD COVERED Miscellaneous Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Christine Schneider J. Richard Weggel		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Department of the Army Coastal Engineering Research Center (CEREN-EV) Kingman Building, Fort Belvoir, Virginia 22060		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS  J55200
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army Coastal Engineering Research Center Kingman Building, Fort Belvoir, Virginia 22060		12. REPORT DATE August 1982
		13. NUMBER OF PAGES 164
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release, distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
Data collection LEO		Northern California Wave climate
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This report briefly describes the Littoral Environment Observation (LEO) Program and its operation in northern California from 1968 to 1978. A summary of LEO data from 25 northern California sites is presented along with data on breaker height, period, direction, and type; wind speed and direction; longshore current velocity and direction; beach foreshore slope, beach cusps, and rip currents.		



## PREFACE

This report provides a brief description of the Littoral Environment Observation (LEO) Program and its operation in northern California from 1968 to 1978. The work was carried out under the U.S. Army Coastal Engineering Research Center's (CERC) Visual Surf and Nearshore Current Observations work unit, Coastal Field Data Collection Program, Coastal Engineering Area of Civil Works Research and Development.

The report was prepared by Christine Schneider, Civil Engineering Technician, and Dr. J. Richard Weggel, Chief, Evaluation Branch, under the general supervision of Mr. N. Parker, Chief, Engineering Development Division. Helpful reviews by D.W. Berg, A. Szuwalski, E.F. Thompson, R.A. Jachowski, O.T. Magoon, R. Edmisten, and G. Armstrong are acknowledged.

Technical Director of CERC was Dr. Robert W. Whalin, P.E.

Comments on this publication are invited.

Approved for publication in accordance with Public Law 166, 79th Congress, approved 31 July 1945, as supplemented by Public Law 172, 88th Congress, approved 7 November 1963.



TED E. BISHOP  
Colonel, Corps of Engineers  
Commander and Director

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CONVERSION FACTORS, U.S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U.S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	by	To obtain
inches	25.4	millimeters
	2.54	centimeters
square inches	6.452	square centimeters
cubic inches	16.39	cubic centimeters
feet	30.48	centimeters
	0.3048	meters
square feet	0.0929	square meters
cubic feet	0.0283	cubic meters
yards	0.9144	meters
square yards	0.836	square meters
cubic yards	0.7646	cubic meters
miles	1.6093	kilometers
square miles	259.0	hectares
knots	1.852	kilometers per hour
acres	0.4047	hectares
foot-pounds	1.3558	newton meters
millibars	$1.0197 \times 10^{-3}$	kilograms per square centimeter
ounces	28.35	grams
pounds	453.6	grams
	0.4536	kilograms
ton, long	1.0160	metric tons
ton, short	0.9072	metric tons
degrees (angle)	0.01745	radians
Fahrenheit degrees	5/9	Celsius degrees or Kelvins <sup>1</sup>

<sup>1</sup>To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use formula:  $C = (5/9) (F - 32)$ .

To obtain Kelvin (K) readings, use formula:  $K = (5/9) (F - 32) + 273.15$ .



LITTORAL ENVIRONMENT OBSERVATION (LEO) DATA SUMMARIES,  
NORTHERN CALIFORNIA, 1968-78

by  
*Christine Schneider and J. Richard Weggel*

I. INTRODUCTION

A major problem confronting coastal project planners and designers is the lack of data on waves and currents acting in the nearshore zone. Data obtained by recording instruments are expensive and appear to be rarely available at the precise locations under study. Also, since nearshore wave modifications are complex and highly variable over short distances, data that are transposed from one site to an adjacent one may not be reliable. Simple estimates of the direction from which waves approach the coast are also not generally available because wave gages are usually located seaward of the breakers. Wave direction is an important variable in determining the rate and direction of longshore sand transport, and one measurement that is easily estimated from visual observations.

The Littoral Environment Observation (LEO) Program was established to help overcome some of these problems by providing estimates of coastal phenomena at low cost. Under this program, volunteer observers are recruited to make daily estimates of variables such as breaker height, wave period, direction of wave approach, wind speed and direction, longshore current velocity, and beach slope. Other parameters estimated are the spacing between beach cusps and between rip currents when present. At some LEO sites, monthly sand samples are collected from the swash zone. Observers use simple, inexpensive equipment to obtain the data and, for some variables like wave height and direction, simply record a visual estimate of the variable. Because of the simple data collection procedures used, any individual observation may be of questionable accuracy, but statistical descriptions of the variables can provide insight into the local littoral environment. Also, LEO observations in a continuous series over time can be extremely useful in describing the physical coastal environment at a site. Observer bias that may exist for some sites can be partially compensated for by determining relative changes rather than absolute values of certain variables.

LEO data may be used to estimate longshore sand transport resulting from waves breaking at an angle to the shoreline. These waves produce longshore currents which may transport large quantities of sand along the shore. An empirical equation that relates longshore sand transport with wave conditions recorded under the LEO program is given in Chapter 4 of the Shore Protection Manual (SPM) (U.S. Army, Corps of Engineers, Coastal Engineering Research Center, 1977). Some recent theoretical developments allow the computation of sand transport rates using longshore current velocities (see Walton, 1980), which are also available through the LEO observation program. Therefore, LEO provides two separate (although not completely independent) methods of determining longshore transport rates. More details regarding LEO data collection procedures are available in Schneider (1981), and information on the comparison of LEO wave height and period data with data obtained from wave gages is available in Schneider and Weggel (1980).

This report presents data obtained at 25 LEO sites in northern California starting with inception of the program in 1968 and continuing through 1978.

The location of the sites is presented in the Table and shown on the location map in Figure 1. For examples of applications of the data, the reader is referred to publications listed in the Bibliography. The data collected at these 25 northern California sites represent output from the program during its formative years. Data collection methods and data recording formats over the years were modified as experience was gained. The most notable change was the recording of the wave approach direction. Recordings of early observations were based on the eight major compass directions; later recordings were based on the coastal sector method which recorded the sector from which the waves were approaching. The data presented in this report extend through the adoption of the protractor method. Later data collection efforts include the use of a protractor to estimate direction of wave approach to the nearest degree as measured from a line perpendicular to the shore. Other modifications over the years have been less significant.

Table. Code number, name, and location of 25 active LEO sites in northern California from 1968 to 1978.

Code No.	Name of site	Latitude N.	Longitude W.	Marsden square No.	One square	County
05310	Pelican Beach State Park	41°59.56'	124°12.50'	157	14	Del Norte
05313	Enderts Beach	41°42.50'	124°08.60'	157	14	Del Norte
05036	Prairie Creek Redwoods State Park	41°21.30'	124°04.50'	157	14	Humboldt
05307	Redwood Creek Beach	41°17.00'	124°05.57'	157	14	Humboldt
05306	Mad River	40°56.00'	124°08.00'	157	04	Humboldt
05302	Centerville Beach	40°34.40'	124°21.00'	157	04	Humboldt
05301	Shelter Cove	40°01.40'	124°03.90'	157	04	Humboldt
05026	Mackerricher Beach State Park	39°29.50'	123°47.67'	121	93	Mendocino
05025	Russian Gulch State Park	39°19.76'	123°46.99'	121	93	Mendocino
05024	Van Damme Beach State Park	39°16.38'	123°47.39'	121	93	Mendocino
05300	Navarro Beach	39°11.30'	123°45.40'	121	93	Mendocino
05023	Manchester Beach State Park	38°59.03'	123°42.39'	121	83	Mendocino
05020	Goat Rock Beach	38°26.76'	123°07.64'	121	83	Sonoma
05021	Wright's Beach	38°24.15'	123°05.89'	121	83	Sonoma
05355	Drake's Beach	38°01.85'	122°57.58'	121	82	Marin
05500	Bolinas Beach	37°54.28'	122°41.07'	121	72	Marin
05022	Stinson Beach State Park	37°53.60'	122°38.17'	121	72	Marin
05002	Thornton Beach State Park	37°41.92'	122°29.83'	121	72	San Mateo
05003	Francis Beach	37°28.05'	122°26.81'	121	72	San Mateo
05004	Natural Bridges State Park	36°57.02'	122°03.42'	121	62	Santa Cruz
05367	Capitola Beach State Park	36°58.40'	121°56.50'	121	61	Santa Cruz
05005	Twin Lakes State Park	36°57.70'	121°59.76'	121	61	Santa Cruz
05001	New Brighton Beach State Park	36°58.72'	121°56.10'	121	61	Santa Cruz
05006	Sea Cliff Beach	36°58.17'	121°54.73'	121	61	Santa Cruz
05007	Sunset Beach	36°53.80'	121°50.32'	121	61	Santa Cruz

## II. HISTORY OF NORTHERN CALIFORNIA LEO PROGRAM

During the fall of 1966 the Coastal Engineering Research Center (CERC) was asked by the U.S. Army Engineer District, San Francisco, to participate in a cooperative data collection program with the State of California. The program was to provide information on the natural forces and response elements in the littoral zone along the California coastline. CERC assumed the responsibilities of organizing the data collection and developing data collection

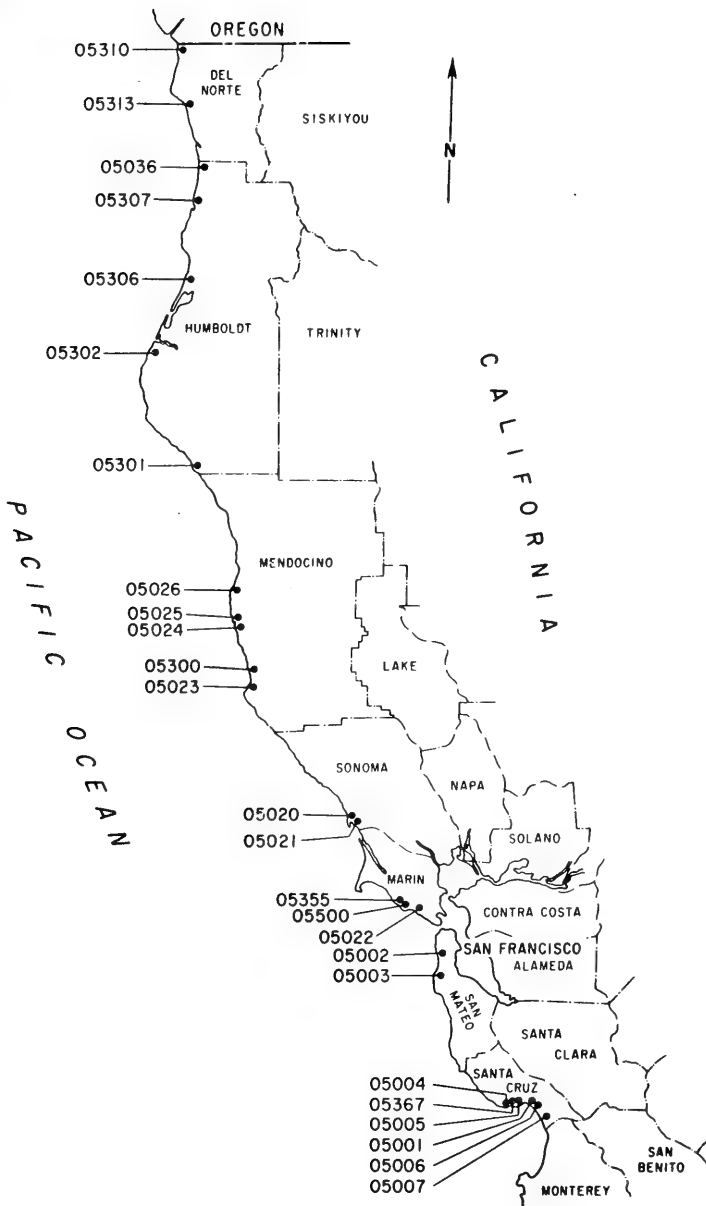


Figure 1. Location map of LEO sites between Pelican Beach State Park and Sunset Beach (Monterey Bay), California.

procedures and techniques, as well as serving as the central repository of the data. A pilot study was implemented at New Brighton State Beach, California, to evaluate instrumentation, data recording forms, and field procedures. Subsequently, volunteer observers were recruited by the California Division of Beaches and Parks, and the full-scale program was put into effect in the spring of 1968. The initial phases of the program were described by Berg (1968).

### III. SITE SELECTION

In selecting the LEO sites, data needs for planning, design, construction, operation, and maintenance of possible future projects were taken into consideration. The existence of other data collection programs and the proximity to adjacent LEO sites were also factors. Since the program was a cooperative effort with the State of California, the selection of site locations was based on accessibility of the Division of Beaches and Parks' volunteer observers. The distribution of sites was fairly uniform along the northern California coast from the northernmost site at Pelican Beach State Park near the Oregon border to the site at Sunset Beach just north of Moss Landing. Inaccessible beaches and rocky areas were generally not considered; however, the density of sites selected increased in heavily used sandy beach areas such as northern Monterey Bay near Santa Cruz. There were six sites in Monterey Bay and five sites in the San Francisco area between Drake's Beach in the north to Pacifica.

Two LEO sites, Pelican (05310) and Enderts (05313), were established in Del Norte County between the Oregon border and Point St. George. The northernmost site (Pelican) has a sandy beach backed by sand dunes, while at Enderts the terrain is rocky and the shore is backed by vertical cliffs.

The Humboldt County shoreline forms the western border of a number of parks, e.g., Redwood National Park and Prairie Creek Redwoods State Park, and includes many beaches. Two sites, Prairie Creek Redwoods (05036) and Redwood Creek Beach (05307), were located in this area south of the Klamath River. The Mad River (05306) and Centerville Beach (05302) sites were situated between Trinidad and Cape Mendocino, a distance of about 40 miles (64 kilometers). This part of the coast is a continuous sandy beach broken only by the entrance to Humboldt Bay and the outlets of several rivers. An additional site was established to the south at Shelter Cove (05301), which occupies a hook-shaped bay with a very rocky shoreline and backshore.

A total of five LEO sites were located in Mendocino County. The segment of coastline reaching from the Humboldt County line to Mistake Point, devoid of beaches and with limited access, is rocky and backed by cliffs. These shoreline characteristics are essentially the same for the MacKerricher (05026), Russian Gulch (05025), Van Damme (05024), and Navarro (05300) sites. The Manchester (05023) site was on a short stretch of sandy beach backed by dunes.

The majority of the Sonoma County shoreline is rocky and rugged. Goat Rock (05020) and Wright's Beach (05021) sites were located south of the Russian River. This reach is also rocky with cliffs occasionally reaching heights of 20 to 50 feet (6.1 to 15.2 meters).

The Drake's Beach (05355) site was situated within the Point Reyes National Seashore in Marin County. From Point Reyes south, the shoreline is crescent

shaped, forming Drake's Bay. Continuing south, the coastline is variable in character, including near-vertical offshore rocks and cliffs as seen at Bolinas (05500) to sandy beaches such as at Stinson Beach State Park (05022).

The initial segment of the San Mateo County shoreline is made up of steep sea cliffs overlooking small, flat, sandy beaches such as exists at the Thornton Beach State Park (05002) site. The shoreline south of Pillar Point forms a hook-shaped bay and contains the town of Half Moon Bay and the Francis Beach (05003) site.

Santa Cruz County has a shoreline 42 miles (67 kilometers) long. The northern half of the coast is rocky with a few small sandy beaches. To the south, a few miles below the town of Santa Cruz, the shoreline character changes to wide sandy beaches devoted mostly to recreational use; several small pocket beaches are also along the coastline. LEO sites were established at Natural Bridges (05004), Twin Lakes (05005), Capitola (05367), New Brighton (05001), Sea Cliff (05006), and Sunset (05007).

#### IV. DATA COLLECTION AND STANDARD ANALYSES

##### 1. Variables Measured.

Based on the results of the pilot study at New Brighton State Beach, the following littoral variables were selected for observation:

(a) Wave conditions including breaker height, period, direction, and breaker type (i.e., plunging, spilling, surging or spill-plunge);

(b) wind speed and direction;

(c) littoral current speed and direction;

(d) beach foreshore slope (in some cases other beach dimensions such as berm width, etc., were also determined);

(e) tide level;

(f) water temperature;

(g) rip current spacings if rip currents are present;

(h) beach cusp spacings if beach cusps are present; and

(i) monthly photos, sand samples, and comments describing beach conditions and other events.

Surf and wind measurements, beach dimensions, rip currents, beach cusps, and water temperature were measured twice a day; photos and sand samples were taken once a month. An analysis of the LEO data collected during 1968 was presented by Szuwalski (1970).

The current LEO program includes estimates of breaker height and period, direction, and breaker type in the surf observations. Period is determined by measuring the time of passage past a fixed point of 10 consecutive breakers.

Breaker height is visually estimated to the nearest 10th of a foot. Direction of wave approach to the shoreline is estimated visually to the nearest degree using a hand-held protractor with its base oriented along the shoreline. Wind observations include speed and direction. Direction is referred to the eight-point compass directions by noting the sector from which the wind is blowing. A Dwyer wind meter is used to measure windspeed which is noted to the nearest mile per hour. Longshore current speeds are estimated by pacing the shore-parallel distance traveled in 1 minute of a dye packet thrown into the surf. Current direction to the right or left of an observer looking seaward is noted. Beach observations consist of estimates of the foreshore slope, measured to the nearest degree with an Abney topographic hand level. Monthly sand samples are taken from the swash zone at some sites. A typical instruction sheet provided to LEO observers under the current program is given in Appendix A.

## 2. Variation of Data Collection Techniques.

Through experience gained during the operation, some collection procedures were improved to meet specific needs. The most significant change was that of wave angle determination. The compass sector method used in early observations was changed to the coastal sector method which was later improved by the protractor method currently being used. Under the compass sector method an observer determined the orientation of the shoreline with respect to north, then recorded the wave approach from one of the eight primary compass directions. The coastal sector method eliminated the need to determine the approximate orientation of the shoreline. Direction of wave approach was estimated using the simplified protractor shown in Figure 2. Examples of compass sector and coastal sector output are shown in Figure 3.

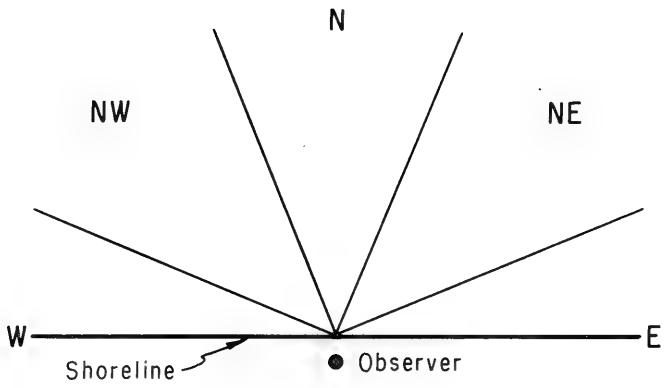
In the years following 1973 the coastal sector method was supplanted by the protractor method. A protractor, which is printed on the back of the LEO form, is oriented with its base parallel to the general shoreline orientation; the observer sights along the protractor in the direction of wave approach and records the visually estimated direction to the nearest degree. Angles greater than 90° represent waves approaching generally from the right and driving the longshore current to the left, for an observer looking seaward. Angles less than 90° represent waves approaching from the left and driving the longshore current to the right. Shore-normal waves (wave crests parallel with shore) are recorded as 90° angles. The protractor is shown in Figure 4.

## 3. Standard Computer Output.

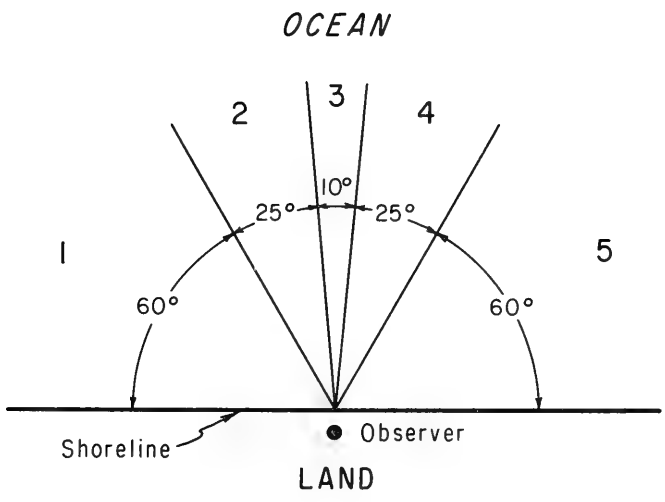
LEO data are normally analyzed with data sets comprised of 1 year of observations. Where an accumulation of 2 or more years of data is available, it may also be analyzed as a complete data set.

As stated previously, this report makes the northern California LEO data available for use to coastal planners, designers, and researchers. Because of the quantity of data collected during the 1968-78 program it was not practical to present all the data analyses and summary formats available, however, basic data summaries by year are given.

a. Yearly Summary Report. The yearly summary report, as shown in Figure 3, provides monthly averages of breaker height, breaker period, angle of breaker approach to the shoreline, breaker type, longshore current velocity, foreshore



a. Compass Sector Method



b. Coastal Sector Method

Figure 2. Simplified protractors used in both the compass sector (a) and coastal sector (b) methods to determine wave direction during early stages of LEO program.

5004 NATURAL BRIDGES		CALIFORNIA										SUMMARY FOR PERIOD STARTING		1=1-70 AND ENDING		11=24=70.
		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.		
SURF OBS.																
HEIGHT (FT)																
MEAN	3.08	2.12	2.06	1.94	2.75	2.68	3.10	2.92	3.18	3.25	2.47	0.00	2.78			
STD DEV	1.42	.88	.74	1.01	3.77	3.34	2.07	.93	.97	1.30	1.01	0.00	1.94			
NO. OBS.	59.	44.	55.	51.	56.	60.	62.	62.	56.	57.	17.	0.	584.			
PERIOD (SEC)																
MEAN	11.05	12.04	12.10	11.93	12.65	11.60	11.65	12.04	12.41	12.02	13.94	0.00	12.11			
STD DEV	1.86	1.35	1.41	2.78	3.19	1.96	1.63	1.89	2.39	2.35	3.95	0.00	2.25			
NO. OBS.	59.	52.	52.	55.	55.	58.	62.	62.	58.	54.	17.	0.	584.			
DIRECTION																
COASTAL SECTOR																
0 OCC.	1	0.00	0.00	0.00	11.54	0.00	0.00	0.00	0.00	1.75	1.72	5.88	0.00	1.54		
	2	0.00	0.00	0.00	26.92	26.00	21.67	27.42	21.67	19.30	25.88	58.82	0.00	25.38		
	3	0.00	0.00	0.00	53.85	74.00	71.67	70.97	78.33	78.95	72.41	35.29	0.00	71.28		
	4	0.00	0.00	0.00	7.69	0.00	6.87	1.81	0.00	0.00	0.00	0.00	0.00	1.79		
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
NO. OBS.	0.	0.	0.	26.	90.	60.	62.	60.	57.	58.	17.	0.	390.			
COMPASS SECTOR																
0 OCC.	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	S	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00		
	SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
NO. OBS.	59.	59.	52.	29.	0.	0.	0.	0.	0.	0.	0.	0.	0.	190.		
BREAKER TYPE																
X OCC	SPILL	43.05	100.00	90.74	85.71	100.00	94.64	86.89	63.33	45.61	52.63	58.82	0.00	79.21		
	SP/PL	0.00	0.00	0.00	3.57	0.00	1.79	13.11	28.33	26.32	14.04	35.29	0.00	9.79		
	PLUNG	10.17	0.00	9.26	10.71	0.00	3.57	0.00	8.33	28.07	33.33	5.88	0.00	10.31		
	BURGE	6.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69		
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
NO. OBS.	59.	51.	44.	56.	94.	56.	61.	60.	57.	57.	17.	0.	582.			
CURRENT OBS.																
(FT/SEC)																
NET MEAN	.06	-.04	-.01	-.02	-.03	-.02	.00	-.10	-.07	-.03	.01	0.00	-.02			
GROSS MEAN	.19	.11	.11	.08	.04	.04	.04	.10	.08	.06	.01	0.00	.08			
STD DEV	.17	.19	.13	.08	.07	.06	.07	.14	.11	.09	.02	0.00	.11			
NO. OBS.	50.	26.	26.	28.	27.	30.	11.	32.	24.	26.	7.	0.	294.			
FORESHORE SLOPE																
MEAN (DEG)	3.17	2.79	4.04	1.22	1.63	1.93	1.65	1.16	2.14	1.97	1.68	0.00	2.16			
STD DEV	1.05	.88	2.14	.42	.49	.37	.49	.37	.52	.19	.35	0.00	1.24			
NO. OBS.	50.	44.	25.	27.	27.	30.	31.	32.	28.	24.	8.	0.	291.			
RIPS % OCC																
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
NO. OBS.	59.	52.	54.	51.	56.	60.	62.	62.	58.	58.	17.	0.	585.			
CUSPS % OCC.																
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
NO. OBS.	59.	52.	44.	57.	56.	60.	62.	62.	58.	58.	17.	0.	585.			

Figure 3. Typical yearly summary report, LEO site 05004, Natural Bridges, California.



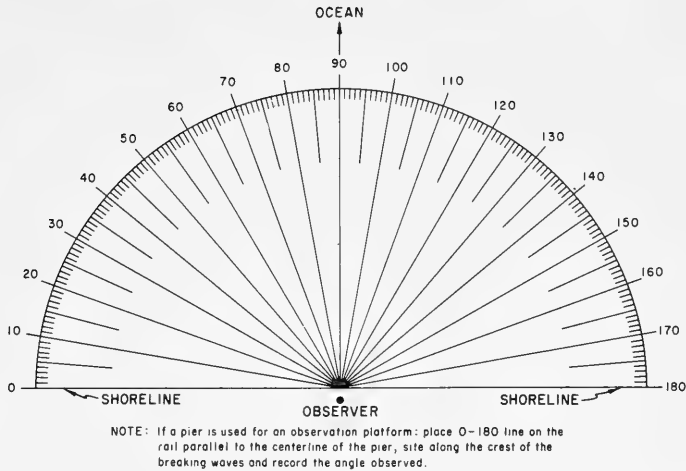


Figure 4. Protractor on back of LEO form which is currently being used to obtain wave direction.

slope, and rip current and beach cusp spacings. Monthly means, standard deviations, the number of observations taken, frequencies of occurrence (in percent), and the number of observations of calm conditions are also presented. For example, the first column in Figure 3 represents the summary of LEO observations made for the month of January 1970 at site 05004, Natural Bridges, near Santa Cruz, California. During January, the average breaker height was 3.08 feet (0.9 meter) and the standard deviation of the observations was 1.42 feet (0.4 meter); these values are based on 59 observations made during the month. The mean and the standard deviation of the wave period during January were 11.45 and 1.86 seconds, respectively, based on the 59 observations.

During January 1970 the compass sector method was being used and all waves were observed to approach from the south. The coastal sector method was adopted about mid-April 1970. This method gives a better resolution of wave direction than does the compass sector method, a major factor in the decision to modify the method. Note that for the months when the coastal sector method was in use (Fig. 3, April through November), a large majority of waves were in sector 3 indicating shore-normal or nearly shore-normal wave approach. This lack of resolution between upcoast and downcoast wave propagation and the resulting direction of sediment transport by longshore currents led to the subsequent adoption of the protractor method. The majority of breakers observed in January, 83.05 percent, were of the spilling type. Plunging and surging waves comprised 10.17 and 6.78 percent, respectively, of the observations. Calm conditions were not recorded. Longshore current observations indicated that the net average current was 0.06 foot (0.02 meter) per second. This represents the average of both positive (upcoast) and negative (downcoast) current velocities; hence, a zero or near-zero value does not imply that the average current speed was close to zero but rather that the vector average was close to zero. The gross mean is the average of the absolute values of the observed current speeds. For January this value was 0.19 foot (0.06 meter)

per second with a standard deviation of 0.17 foot (0.05 meter) per second. Current observations were made about once a day since only 30 observations were made. Foreshore slope averaged  $3.17^\circ$  with a standard deviation of  $1.05^\circ$  based on 30 observations. There were no observed rip currents or beach cusps in January 1970 at Natural Bridges.

The last column in the Yearly Summary Report (Fig. 3) gives data values averaged for all the data acquired during the year.

b. Wind Roses. The wind rose plots represent wind speeds and directions recorded during the entire period of record. An example is shown in Figure 5. Windspeeds are plotted as frequency of occurrence, in percent, according to the compass direction from which they blow. The term "insufficient data" indicates that less than 10 wind observations were taken for that particular month.

## V. OTHER TYPES OF DATA ANALYSES AVAILABLE

Computer programs in a number of analyses and formats are available that provide various additional statistical summaries of LEO data. These programs will be provided to users on request. Examples of the various data formats follow.

### 1. Daily LEO Printouts.

An example of a daily LEO printout is given in Figure 6. The listing is simply the daily values of the LEO observations presented chronologically for a given month. Each month of data is listed on separate sheets. The date and time of each observation are given along with the values of each data entry made for that series of observations. Each line corresponds to the data entered on a completed LEO form. For example, for the observation made at 1515 hours (24-hour clock) on 3 April 1968 (Fig. 6, second line) breakers 3 feet (0.9 meter) high with a period of 20.0 seconds were reported. Surging breakers occurred and the waves were generally approaching from the southwest. The windspeed was 20 miles (32 kilometers) per hour, blowing from the northwest. No currents were observed at this time. (The asterisks indicate that no observation was made; zeros indicate that an observation was made but its value was zero.)

### 2. Frequency and Cumulative Frequency Histograms of Breaker Height and Period.

These printouts provide an annual statistical summary of wave height and wave period probabilities. Figure 7 is an example of wave height histograms prepared for data collected between April 1968 and November 1970 at Natural Bridges. Data are tabulated for wave heights at 1-foot (0.3 meter) intervals. For example, Figure 7 shows that 32.6 percent (576 of the 1,765 observations) of the wave height observations made at Natural Bridges fell in the interval  $2.0 \leq H_b < 3.0$  where  $H_b$  is the breaker height. The lower half of Figure 7 shows that 56.1 percent of the waves (991 of 1,765 observations) at Natural Bridges were greater than or equal to 30 feet (9.1 meters). Figure 8 provides similar information for wave periods at 1-second intervals.

### 3. Joint and Marginal Probabilities for Breaker Height and Period.

The probability distribution of wave heights for a given wave period interval is available in tables of the joint wave height and wave period probabilities.

WIND ROSES 5004 NATURAL BRIDGES

CALIFORNIA

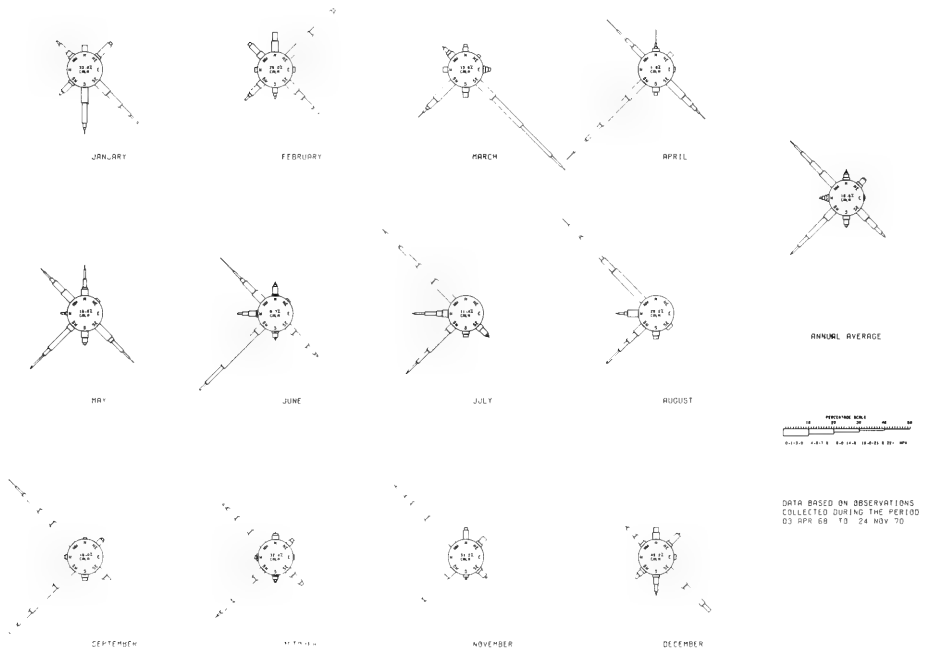


Figure 5. Typical wind rose plots, LEO site 05004, Natural Bridges, California.

NATURAL BRIDGES APR1968		LITTORAL ENVIRONMENT OBSERVATIONS (LEO) (05004), CALIFORNIA										APR1968		APR1968		
DAY	TIME	WAVE SEC PERIOD	WAVE FEET HEIGHT	WAVE DIN	WAVE TYPE	WIND MPH SPEED	WIND DIR	LONGSHORE FT/SEC CURRENT	DIR	HEMM FEET FLEV	FEET REACH	SHORE DEG SLOPE	HIPS = IRREGULAR SPACING=FEET	CUSPS	WATER DEG F TEMP	TIDE
3	900	11.0	4	SW	SPILL	4	NE	.30	-1	6.5	135	2			**	1
3	1515	20.0	3	SW	SURGE	20	NW	*****	**	*****	*****	**			**	**
4	915	13.0	3	S	SPILL	6	NE	.40	-1	5.0	135	2			**	1
4	1515	14.0	**	S	SURGE	15	SW	*****	**	*****	*****	**			**	**
5	****	13.0	2	S	PLUNGE	20	NW	*****	**	*****	*****	**			**	**
5	930	10.5	4	S	SPILL	10	NW	.32	-1	4.5	135	2			**	-1
6	1115	13.0	2	S	SPILL	5	NW	.53	1	4.5	135	2			**	-5
6	1500	9.0	2	S	PLUNGE	7	NW	*****	**	*****	*****	**			**	**
7	1115	12.0	2	S	SPILL	7	NW	.58	1	4.5	135	2			**	-1
7	1500	9.0	3	**	PLUNGE	5	NW	*****	**	*****	*****	**		30	**	**
8	930	14.0	2	S	SPILL	3	SW	.60	-1	5.0	135	1		50	**	-1
8	1530	16.0	3	S	SPILL	7	SW	*****	**	*****	*****	**			**	**
9	1130	14.5	3	S	SPILL	6	SW	.10	-1	.4	141	2			**	-5
9	1515	14.5	3	S	PLUNGE	5	SW	*****	**	*****	*****	**			**	**
10	1130	15.0	5	S	PLUNGE	4	SW	.30	1	4.0	150	2			**	-1
10	1515	4.5	3	S	SPILL	7	SW	*****	**	*****	*****	**			**	**
11	****	14.5	3	S	SPILL	8	SW	*****	**	*****	*****	**			**	**
11	830	13.5	6	S	PLUNGE	0	CA	.33	1	9.5	150	2		90	**	3
12	815	13.0	5	S	SPILL	5	SW	.33	1	4.5	150	2			**	2
12	1500	12.5	3	S	SPILL	4	SW	*****	**	*****	*****	**		95	**	**
13	1115	13.0	**	S	SPILL	4	SW	.35	1	9.5	150	2		75	**	4
13	1315	11.0	3	S	PLUNGE	9	SW	*****	**	*****	*****	**			**	**
14	1115	13.0	4	S	PLUNGE	15	SW	.42	1	95.0	150	2			**	4
14	1300	12.0	2	S	PLUNGE	9	SW	*****	**	*****	*****	**		40	**	**
15	900	14.0	4	S	PLUNGE	4	SW	.17	1	90.5	150	2			**	8
15	1500	12.5	3	S	PLUNGE	18	SW	*****	**	*****	*****	**			**	**
16	915	13.0	1	S	SURGE	10	SW	0.00	0	5.0	135	1		50	**	1
16	1515	13.0	1	SW	SURGE	15	NW	*****	**	*****	*****	**			**	**
17	930	14.5	3	S	SURGE	4	NE	.05	-1	5.0	135	1			**	-1
17	1515	14.0	2	S	SURGE	7	NW	*****	**	*****	*****	**			**	**
18	915	15.5	3	S	SPILL	6	SW	0.00	-1	5.0	150	1		30	**	1
18	1515	13.0	4	S	SURGE	15	NW	*****	**	*****	*****	**			**	**
19	1515	15.0	2	**	SPILL	9	SW	*****	**	*****	*****	**			**	**
20	915	12.5	3	SW	PLUNGE	5	SE	.32	-1	5.0	150	2			**	1
20	1515	14.5	2	S	SPILL	15	NW	*****	**	*****	*****	**			**	**
21	915	12.5	3	SW	SPILL	5	SW	1.90	-1	5.0	150	1		30	**	1
21	1500	9.0	2	S	SURGE	20	SW	*****	**	*****	*****	**			**	**
22	****	13.5	2	S	SURGE	9	SW	*****	**	*****	*****	**			**	**
22	1030	16.5	3	S	PLUNGE	4	SW	0.00	0	5.0	150	1			**	-2
23	****	13.5	4	S	SPILL	5	SW	.15	1	4.0	150	3		102	**	-2
23	1545	15.0	1	S	SURGE	10	SW	*****	**	*****	*****	**			**	**
24	****	12.0	1	S	SURGE	20	SW	*****	**	*****	*****	**			**	**
24	915	14.0	1	S	SPILL	8	SW	0.00	0	5.0	150	2		60	**	-2
25	1500	13.5	2	S	SURGE	12	SW	*****	**	*****	*****	**			**	**
26	900	11.0	2	S	SPILL	1	SW	.25	1	5.0	150	1		50	**	-1
26	1500	13.0	2	S	PLUNGE	15	SW	*****	**	*****	*****	**			**	**
27	1015	13.0	4	S	PLUNGE	9	SW	.33	-1	5.0	150	1			**	4
27	1500	8.0	3	S	SURGE	10	SW	*****	**	*****	*****	**		40	**	**
28	1500	13.5	2	S	SURGE	6	SW	*****	**	*****	*****	**		50	**	**
29	945	13.5	4	S	PLUNGE	0	SW	.17	-1	5.0	150	1			**	2
29	1500	16.0	2	W	SURGE	15	SW	*****	**	*****	*****	**		60	**	8
30	830	13.0	1	S	PLUNGE	4	SW	.17	-1	5.0	150	1			**	1
30	1500	13.0	1	S	SURGE	15	SW	*****	**	*****	*****	**		50	**	**

\*\*\* MEANS ITEM WAS LEFT BLANK

-1 LONGSHORE CURRENT DIRECTION INDICATES FLOW TO THE LEFT, 1 RIGHT FLOW, AND 0 NO FLOW

Figure 6. Typical daily LEO printout, LEO site 05004, Natural Bridges, California.

WAVE HEIGHT HISTOGRAMS 5004 NATURAL BRIDGES

DATA COLLECTED FROM 4/ 3/68 TO 11/24/70

HEIGHT INTERVAL	FREQUENCY	%	0	10	20	30	40	50	60	70	80	90	100
.0 TO < 1.0	1	.1											
1.0 TO < 2.0	197	11.2											
2.0 TO < 3.0	576	32.6											
3.0 TO < 4.0	486	27.5											
4.0 TO < 5.0	328	18.6											
5.0 TO < 6.0	120	6.8											
6.0 TO < 7.0	34	1.9											
7.0 TO < 8.0	4	.2											
8.0 TO < 9.0	0	.0											
9.0 TO < 10.0	0	.0											
10.0 TO < 11.0	3	.2											
11.0 TO < 12.0	1	.1											
12.0 TO < 13.0	3	.2											
13.0 TO < 14.0	2	.1											
14.0 TO < 15.0	4	.2											
15.0 TO < 16.0	0	.0											
16.0 TO < 17.0	0	.0											
17.0 TO < 18.0	0	.0											
18.0 TO < 19.0	0	.0											
19.0 TO < 20.0	0	.0											
20.0 TO < 21.0	0	.0											
21 TO 30	4	.2											
31 +	0	.0											

HEIGHT INTERVAL	CUMULATIVE FREQUENCY	%	0	10	20	30	40	50	60	70	80	90	100
>= .0	1765	100.0											
>= 1.0	1764	99.9											
>= 2.0	1567	88.8											
>= 3.0	991	56.1											
>= 4.0	505	28.6											
>= 5.0	177	10.0											
>= 6.0	57	3.2											
>= 7.0	23	1.3											
>= 8.0	17	.9											
>= 9.0	17	1.0											
>= 10.0	17	1.0											
>= 11.0	14	.8											
>= 12.0	13	.7											
>= 13.0	10	.6											
>= 14.0	8	.5											
>= 15.0	4	.2											
>= 16.0	4	.2											
>= 17.0	4	.2											
>= 18.0	4	.2											
>= 19.0	4	.2											
>= 20.0	4	.2											
>= 21.0	4	.2											
>= 31.0	0	.0											
>= 41.0	0	.0											
TOTAL NUMBER OF OBSERVATIONS	1765												

Figure 7. Typical breaker height frequency and cumulative frequency histograms, LEO site 05004, Natural Bridges, California.

WAVE PERIOD HISTOGRAMS 5004 NATURAL BRIDGES

DATA COLLECTED FROM 4/ 3/68 TO 11/24/70

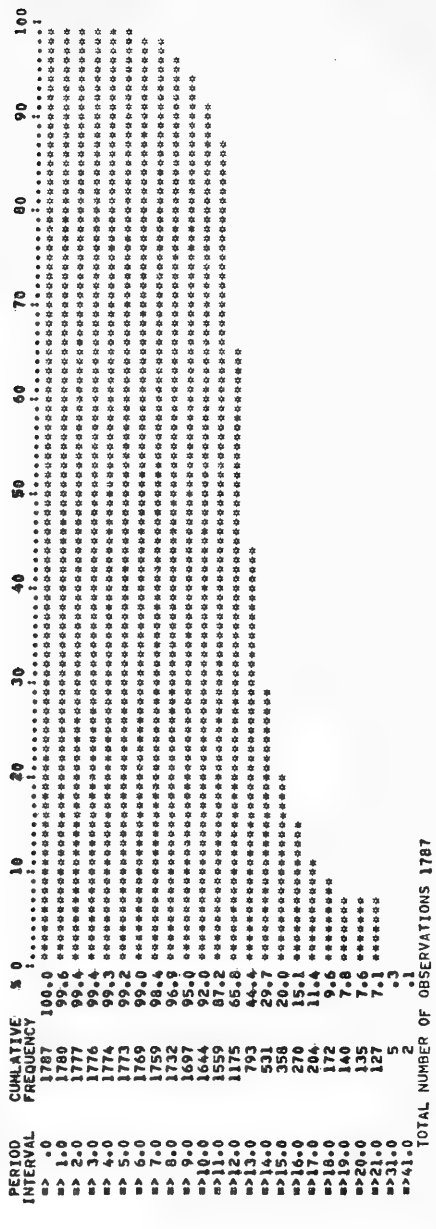
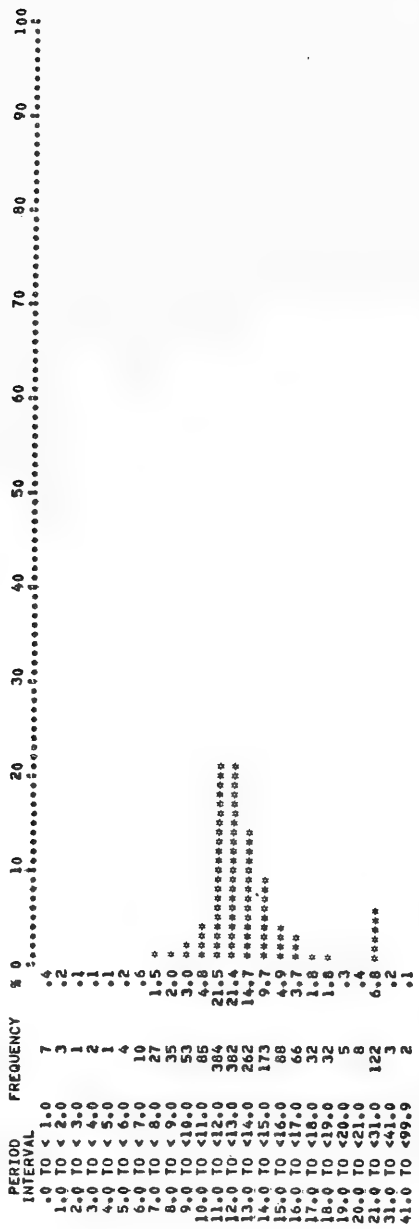


Figure 8. Typical breaker period frequency and cumulative frequency histograms, LEO site 05004, Natural Bridges, California.

Figure 9 is an example of the Natural Bridges data obtained between April 1968 and December 1968. The table shows that 38 of 480 observations had wave heights in the interval  $2.0 \leq H_b \leq 2.9$  (since wave heights are only reported to the nearest 0.1 foot this interval is effectively  $2 \leq H_b < 3.0$ ) and with periods, T, in the interval  $13.0 \leq T \leq 13.9$  (effectively  $13 \leq T < 14.0$ ). Conditional probabilities can be developed from information in the table. The marginal probability data for wave periods are given in the last three columns of the table, while marginal probability data for wave heights are given in the bottom three rows. To a certain extent, the marginal probability data are redundant with the probability data given in the histograms of Figures 7 and 8.

#### 4. Monthly Average Breaker Height and Period Versus Time.

The time variations of the monthly average breaker height and period are plotted against time in Figure 10 and seasonal variations of the parameters are evident. The figure shows that average monthly wave heights dipped below 2 feet (0.6 meter) during the spring and increased to near 3 feet (0.9 meter) during autumn in 1970.

#### 5. Longshore Current Histogram.

The longshore current histogram provides information on the frequency of occurrence of current speeds and direction within specific speed intervals. The current speed is tabulated in increments of 0.25 foot (0.08 meter) per second. For example, tabulation in Figure 11 shows no current (calm) conditions prevailed 29.9 percent of the time. For an observer facing seaward, currents moving to the right at speeds between 0.5 and 0.75 foot (0.1 and 0.2 meters) per second occurred 2.1 percent of the time. Currents moving to the left at the same speed interval prevailed 2.1 percent of the time.

#### 6. Longshore Current Versus Time.

Figure 12 is an example of the time history of longshore current velocity at Natural Bridges for 1969. Each current observation is represented by a vertical line above or below the horizontal line for currents to the right or left, respectively. The length of the line corresponds with the magnitude of the velocity. The monthly average current velocities are represented by circles. The figure shows that the average January current velocity was about 0.25 foot per second to the left, and the maximum observed current velocity in January was about 1.0 foot per second to the left.

### VI. DATA PRESENTATION

The data from the 25 northern California sites are presented in Appendix B in geographic order, starting with the northernmost site at Pelican Beach State Park to the southernmost site at Sunset Beach in Monterey Bay. All the data for a given site are together. Yearly summary reports are given for each year during which some data were collected, even if data were obtained for only a few observations or a few months during that year. These annual summaries are followed by a cumulative annual summary, in the same format, of all data from the site. The period of record covered by each summary is given in the upper right-hand corner of the sheet.

WAVE PERIOD VS. WAVE HEIGHT NATURAL BRIDGES  
 NUMBER OF OBSERVATIONS

DATA COLLECTED FROM 3 APR 68 TO 31 DEC 68

PERIODS	0.5	1	2	3	4	5	6	7	8	9	10	11	12	13+	TOTAL OBS	PERCENT	CUMULATIVE PERCENT
	0.9	1.9	2.9	3.9	4.9	5.9	6.9	7.9	8.9	9.9	10.9	11.9	12.9				
0.5-1.9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	.6	.6
1.5-2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.6
2.5-3.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.6
3.5-4.9	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	.2	.8
4.5-5.9	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1.0	1.8
5.5-6.9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	.2	2.0
6.5-7.9	0	2	1	3	2	3	1	0	0	0	0	0	0	1	12	2.3	4.3
7.5-8.9	0	3	1	2	1	1	0	0	0	0	0	0	0	0	10	2.0	6.3
8.5-9.9	0	2	6	2	1	1	0	0	0	0	0	0	0	0	14	2.9	9.2
9.5-10.9	0	5	6	1	3	2	0	0	0	0	0	0	0	0	17	3.5	12.7
10.5-11.9	0	7	12	17	4	1	0	0	0	0	0	0	0	0	31	6.5	19.2
11.5-12.9	0	20	26	30	11	1	1	0	0	0	0	0	0	0	89	18.5	37.5
12.5-13.9	0	17	38	46	25	7	1	0	0	0	0	0	0	0	134	27.9	65.4
13.5-14.9	0	10	33	28	13	6	1	1	1	0	0	0	0	0	93	19.4	84.8
14.5-15.9	0	2	11	10	8	1	0	1	0	0	0	0	0	0	33	6.9	91.7
15.5-16.9	0	2	6	7	0	0	0	0	0	0	0	0	0	0	15	3.1	94.8
16.5-17.9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.2	95.0
17.5-18.9	0	1	1	0	0	0	1	0	0	0	0	0	0	0	3	.6	95.6
18.5-19.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	95.6
19.5-20.9	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	.4	96.0
20.5-21.9	0	1	1	2	0	0	0	0	0	0	0	0	0	0	4	.8	96.8
21.5-22.9	0	1	3	2	1	0	0	0	0	0	0	0	0	0	5	1.0	97.9
22.5-23.9	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	.4	98.3
23.5-24.9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.2	98.5
24.5-25.9	0	0	1	0	2	0	0	0	0	0	0	0	0	0	3	.6	99.1
25.5-30.0															8	1.6	100.0
TOTAL OBS	75	154	144	74	22	5	2	1	0	0	0	0	0	0	480		
PERCENT	.6	15.6	12.1	30.0	15.4	4.5	1.0	.4	.2	.0	.0	.0	.0	.0			
CUMULATIVE PERCENT	.6	16.2	48.3	78.3	93.7	98.3	99.4	99.8	100.0	100.0	100.0	100.0	100.0	100.0			

Figure 9. Typical joint and marginal probability table for breaker height and period, LEO site 05004, Natural Bridges, California.



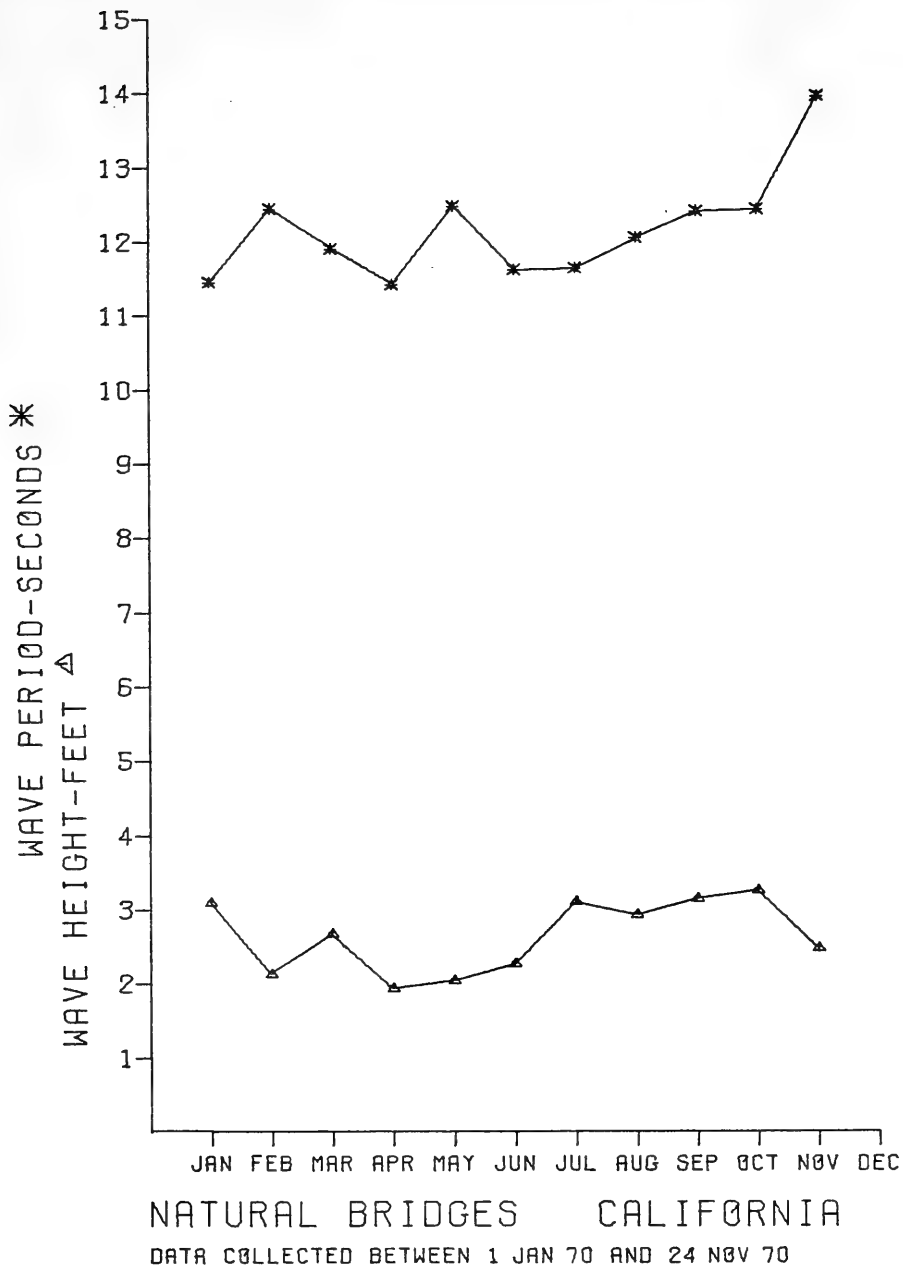


Figure 10. Typical monthly average breaker height and period versus time plot, LEO site 05004, Natural Bridges, California.

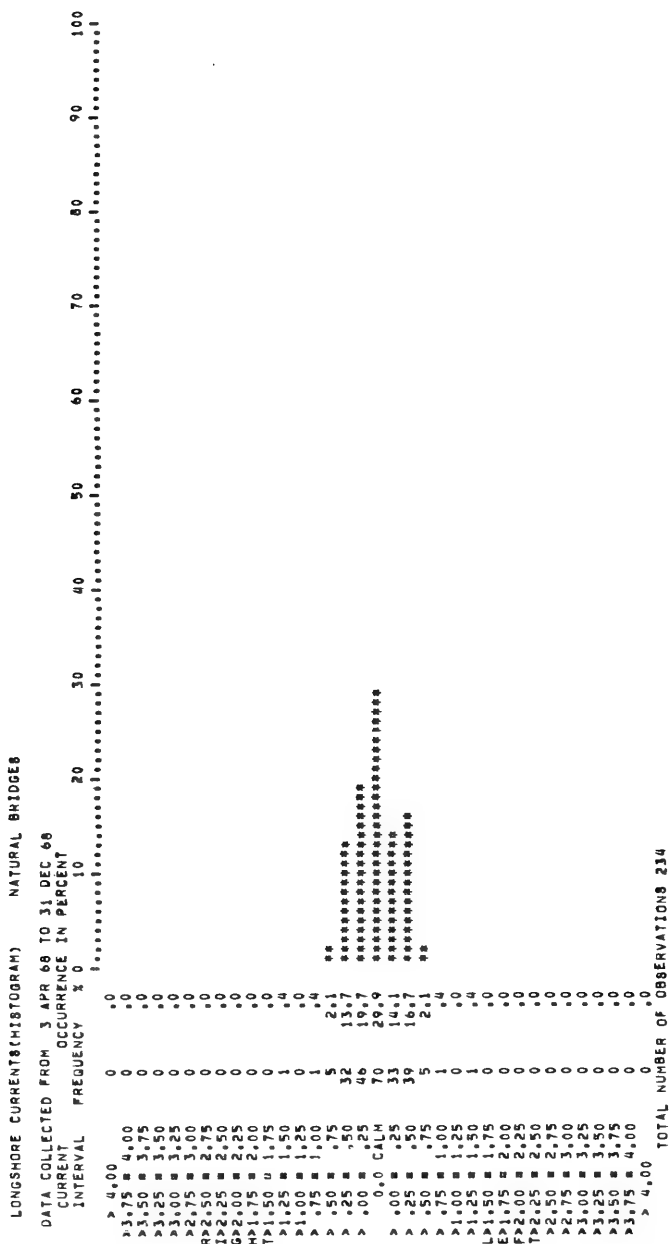


Figure 11. Typical longshore current histogram, LEO site 05004, Natural Bridges, California.

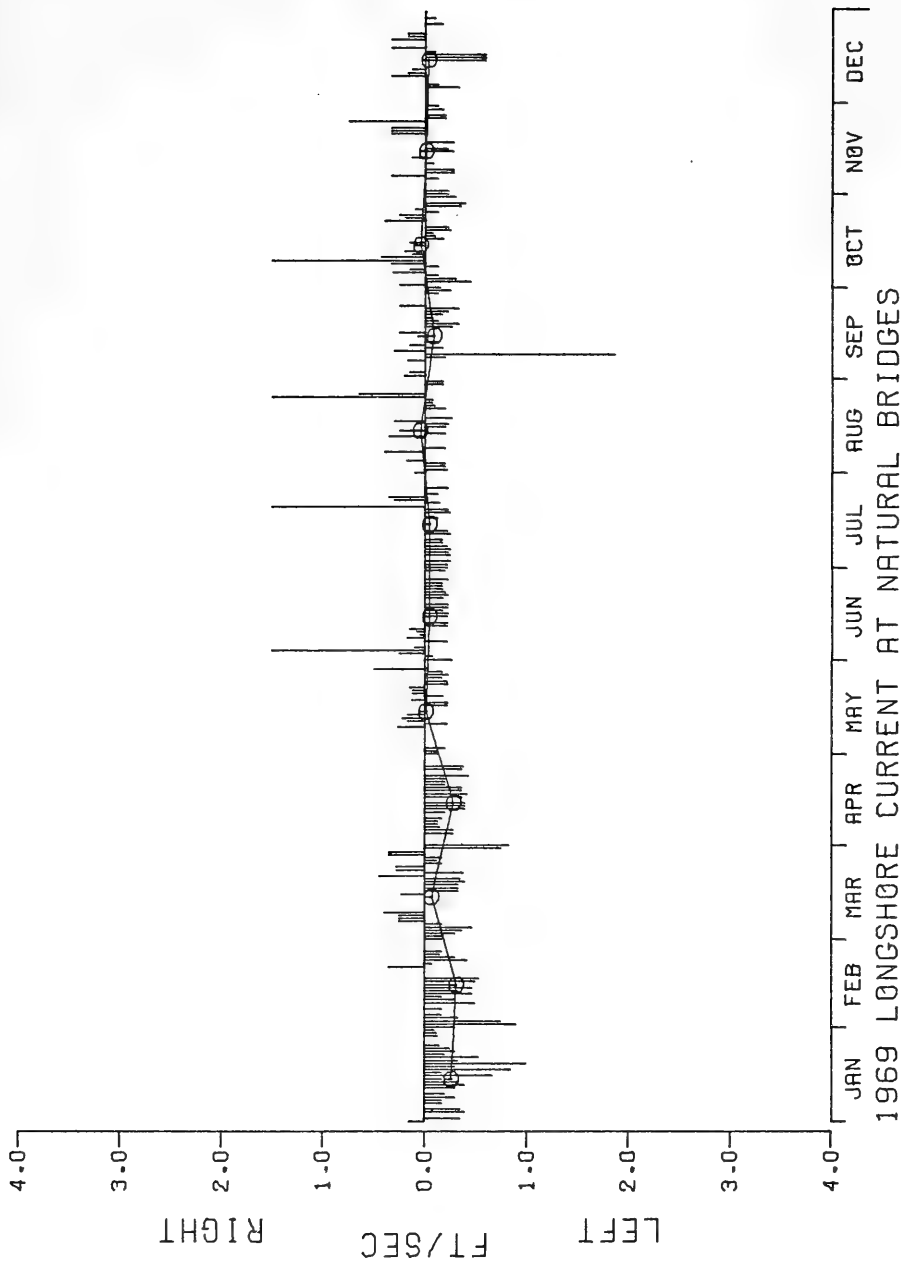


Figure 12. Typical plot of longshore current versus time, LEO site 05004, Natural Bridges, California.

The annual summary reports are followed by a page of wind roses summarizing monthly wind conditions for all data available at a site. Note that some of the January wind roses may have been constructed from data obtained during January of several different years. An annual average wind rose, based on all wind observations available for a site, is given above the legend indicating the period of record on the same page.

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APPENDIX A

LITTORAL ENVIRONMENT OBSERVATIONS INSTRUCTION SHEET

## LITTORAL ENVIRONMENT OBSERVATIONS

RECORD ALL DATA CAREFULLY AND LEGIBLY

<p><b>SITE NUMBERS</b></p> <p>1 2 3 4 5</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>YEAR</b></p> <p>6 7</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>MONTH</b></p> <p>8 9</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>DAY</b></p> <p>10 11</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>TIME</b></p> <p>Record time using the 24 hour system</p> <p>12 13 14 15</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<p><b>WAVE PERIOD</b></p> <p>Record the time in seconds for eleven (11) wave crests to pass a stationary point. If calm record 0.</p>	<p>16 17 18</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>BREAKER HEIGHT</b></p> <p>Record the best estimate of the average wave height to the nearest tenth of a foot.</p>	<p>19 20 21</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>		
<p><b>WAVE ANGLE AT BREAKER</b></p> <p>Record to the nearest degree the direction the waves are coming from using the protractor on the reverse side. 0 if calm.</p>	<p>22 23 24</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>WAVE TYPE</b></p> <p>0 - Calm                      3 - Surging          1 - Spilling                4 - Spill / Plunge          2 - Plunging</p>		<p>25</p> <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	
<p><b>WIND SPEED</b></p> <p>Record wind speed to the nearest mph. If calm record 0.</p>	<p>26 27</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>WIND DIRECTION</b> - Direction the wind is coming from.</p> <p>1 - N    3 - E    5 - S    7 - W    0 - Calm          2 - NE   4 - SE   6 - SW   8 - NW</p>		<p>28</p> <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	
<p><b>FORESHORE SLOPE</b></p> <p>Record foreshore slope to the nearest degree.</p>	<p>29 30</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>WIDTH OF SURF ZONE</b></p> <p>Estimate in feet the distance from shore to breakers, if calm record 0.</p>		<p>31 32 33 34</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<p><b>LONGSHORE CURRENT</b></p>		<p><b>DYE</b></p> <p>Estimate distance in feet from shoreline to point of dye injection.</p>		<p>36 37 38</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<p><b>CURRENT SPEED</b></p> <p>Measure in feet the distance the dye patch is observed to move during a one (1) minute period; if no longshore movement record 0.</p>		<p>43 44 45</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p><b>CURRENT DIRECTION</b></p> <p>0 No longshore movement          +1 Dye moves toward right          -1 Dye moves toward left</p>		<p>46 47</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>
<p><b>RIP CURRENTS</b></p> <p>If rip currents are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no rips record 0.</p>				<p>49 50 51 52</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<p><b>BEACH CUSPS</b></p> <p>If cusps are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no cusps record 0.</p>				<p>54 55 56</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<p>PLEASE PRINT:</p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%; border-bottom: 1px solid black; text-align: center;">SITE NAME</div> <div style="width: 45%; border-bottom: 1px solid black; text-align: center;">OBSERVER</div> </div> <p style="text-align: center; margin-top: 5px;">Please Check The Form For Completeness</p> <p>REMARKS: _____</p> <p>_____</p>					
<p>CERC 113-72 8 Mar 72</p> <p style="text-align: center;">Make any additional remarks, computations or sketches on the reverse side of this form.</p>					



## APPENDIX B

## LEO DATA SUMMARY FOR NORTHERN CALIFORNIA SITES

This appendix presents LEO data for the following 25 northern California sites located between Pelican Beach State Park and Sunset Beach (Monterey Bay):

	<u>Sites</u>	<u>Page No. in App.</u>
05310	Pelican Beach State Park	32
05313	Enderts Beach	34
05036	Prairie Creek Redwoods State Park	39
05307	Redwood Creek Beach	44
05306	Mad River	49
05302	Centerville Beach	55
05301	Shelter Cove	60
05026	MacKerricher Beach State Park	65
05025	Russian Gulch State Park	70
05024	Van Damme Beach State Park	75
05300	Navarro Beach	77
05023	Manchester Beach State Park	81
05020	Goat Rock Beach	86
05021	Wright's Beach	94
05355	Drake's Beach	102
05500	Bolinas Beach	104
05022	Stinson Beach State Park	109
05002	Thornton Beach State Park	117
05003	Francis Beach	122
05004	Natural Bridges State Park	127
05367	Capitola Beach State Park	132
05005	Twin Lakes State Park	137
05001	New Brighton Beach State Park	144
05006	Sea Cliff Beach	150
05007	Sunset Beach	157

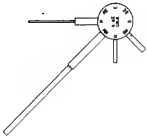
ST10 PELICAN

CALIFORNIA

SUMMARY FOR PERIOD STARTING

1-29-70 AND ENDING 12- 8-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	15.00	12.00	0.00	3.00	4.00	3.00	3.00	3.00	2.00	3.00	0.00	3.00	5.10
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.20
STD DEV	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	11.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	10.00	12.60	11.00	10.20	6.50	9.70	7.80	8.70	10.10	14.10	0.00	9.20	10.20
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89
NO. OBS.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	11.
<b>DIRECTION</b>													
<b>COASTAL DIRECTION</b>													
O OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	100.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	0.	1.	8.
<b>COMPASS DIRECTION</b>													
O OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	66.67
<b>BREAKER TYPE</b>													
TUCK SPILL	100.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	3.00	100.00	0.00	100.00	95.45
PLUNGE	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	36.16
BURGE	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.18
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	11.
<b>CURRENT OBS.</b>													
(FT/SEC)													
MEAN	.02	1.00	.65	0.00	.95	0.00	.15	.50	.98	0.00	0.00	0.00	.31
STD DEV	.02	1.00	.65	0.00	.95	0.00	.15	.50	.98	0.00	0.00	0.00	.57
NO. OBS.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	1.	10.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	11.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	11.



INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA  
JANUARY

INSUFFICIENT DATA  
FEBRUARY

INSUFFICIENT DATA  
MARCH

INSUFFICIENT DATA  
APRIL

MAY

JUNE

JULY

AUGUST

ANNUAL AVERAGE

1950-1959  
 1960-1969  
 1970-1979  
 1980-1989  
 1990-1999  
 2000-2009  
 2010-2019  
 2020-2029

DATA BASED ON OBSERVATIONS  
 FROM 1950 TO 2009  
 29 JUN 70 TO 09 DEC 70

INSUFFICIENT DATA

INSUFFICIENT DATA

NO DATA

INSUFFICIENT DATA

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

SUMMARY FOR PERIOD STARTING 2-10-70 AND ENDING 7-9-72.

CALIFORNIA

SAILS ENDERTS BEACH

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF DRG.</b>													
HEIGHT (FT)													
MEAN	4.00	6.05	4.24	3.58	2.81	3.27	2.59	4.03	3.58	3.90	4.46	4.44	3.85
STD DEV	0.00	1.78	.81	.81	.51	1.10	.95	3.98	.79	1.09	.97	.73	2.01
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	228.
<b>PERIOD (SEC)</b>													
MEAN	21.00	15.46	15.73	17.05	14.02	18.69	13.61	16.85	17.25	17.60	17.62	19.44	16.31
STD DEV	0.10	2.98	3.38	2.66	4.35	4.84	5.97	6.59	5.81	3.82	2.44	2.21	4.77
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	228.
<b>DIRECTION</b>													
<b>CASUAL SECTOR</b>													
OCC.	0.00	15.79	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79
MEAN		36.84	3.88	19.05	0.00	20.00	38.48	12.90	0.00	0.00	0.00	0.00	15.63
STD DEV		42.11	18.19	5.85	8.90	50.00	61.54	78.19	83.33	93.23	92.31	100.00	84.89
NO. OBS.		33.	19.	19.	19.	30.	0.00	12.90	16.67	4.76	0.00	0.00	17.86
<b>CALM</b>													
OCC.	0.00	5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN		3.19	33.	26.	21.	10.	28.	31.	12.	21.	13.	9.	228.
NO. OBS.	3.	19.	33.	26.	21.	10.	29.	31.	12.	21.	13.	9.	228.
<b>BREAKER TYPE</b>													
KOC	0.00	0.00	57.58	19.23	42.86	63.64	51.72	38.71	33.33	61.90	92.31	100.00	66.05
R/PL	100.00	52.63	42.52	73.08	32.18	9.09	34.08	29.03	61.67	0.00	0.00	0.00	35.96
PLUNGE	0.00	47.37	0.00	7.69	4.76	27.27	13.79	32.26	25.00	38.10	7.69	0.00	17.98
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	228.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.04	0.94	0.79	0.11	0.09	0.72	0.47	0.65	0.49	0.73	0.78	0.50	0.55
<b>GROSS MEAN</b>													
STD DEV	.29	1.27	1.00	.83	.77	.69	.71	.76	.91	.63	.78	.58	.84
NO. OBS.	2.	18.	33.	26.	21.	10.	29.	31.	12.	21.	13.	8.	224.
<b>FORESHORE SLOPE</b>													
MEAN (OEG)	4.67	5.88	3.76	3.27	3.24	2.62	3.46	2.49	2.88	3.76	3.54	3.78	3.50
STD DEV	2.31	1.64	1.97	1.59	1.64	1.17	3.46	1.15	1.16	3.79	2.78	.67	2.26
NO. OBS.	3.	18.	33.	26.	21.	11.	28.	31.	12.	21.	13.	9.	226.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	228.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	228.

5313 PADRETS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 2-10-70 AND ENDING 12-16-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF (IRS.)</b>													
HEIGHT (FT)													
MEAN	0.00	0.17	0.17	3.58	2.81	3.33	3.70	3.56	4.00	4.14	4.67	4.44	4.03
STD DEV	0.00	1.76	1.75	3.61	1.51	1.62	1.67	1.78	1.63	1.10	1.85	1.73	1.82
NO. OBS.	0.	1A.	29.	26.	21.	9.	10.	10.	6.	14.	12.	9.	172.
<b>PERIOD (SEC)</b>													
MEAN	0.00	15.82	15.71	17.05	14.02	20.64	21.10	21.94	22.58	19.86	18.13	19.44	17.86
STD DEV	0.00	2.97	3.55	2.06	4.35	2.68	2.40	3.09	1.72	1.03	1.68	2.21	3.95
NO. OBS.	0.	1A.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC.	0.00	16.67	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38
1	0.00	3A.89	20.69	3A.85	19.05	25.00	100.00	11.11	0.00	0.00	8.33	0.00	17.86
2	0.00	3A.89	37.93	53.85	61.90	37.50	0.00	72.22	66.67	92.86	91.67	100.00	58.33
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.83
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.60
NO. OBS.	0.	1A.	29.	26.	21.	9.	7.	18.	6.	14.	12.	9.	168.
<b>BREAKER TYPE</b>													
KNOCC SPILL	0.00	0.00	5A.67	19.23	42.88	55.56	90.00	66.67	46.67	92.86	100.00	100.00	55.23
SPJPL	0.00	55.56	41.38	73.08	52.38	11.11	0.00	22.22	33.33	0.00	0.00	0.00	34.50
PLUNGE	0.00	48.44	0.00	7.69	4.76	33.33	10.00	11.11	0.00	7.14	0.00	0.00	10.87
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1A.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
<b>CURRENT (IRS.)</b>													
(FT/SEC)													
NET MEAN	0.00	-0.00	-0.68	-0.11	-0.09	-0.50	-0.14	-0.60	-0.82	-0.77	-0.83	-0.50	-0.55
GROSS MEAN	0.00	1.32	1.02	0.83	0.77	0.72	0.52	0.79	1.09	0.77	0.83	0.58	0.68
STD DEV	0.00	0.69	0.65	0.56	0.63	0.75	0.25	0.44	0.94	0.35	0.30	0.38	0.58
NO. OBS.	0.	17.	29.	26.	21.	8.	10.	18.	6.	14.	12.	8.	169.
<b>FRESHSHORE SLOPE</b>													
MEAN (DEG)	0.00	5.88	3.59	3.27	3.24	2.78	4.22	2.83	2.67	3.29	3.50	3.78	3.98
STD DEV	0.00	1.69	1.92	1.59	1.64	1.30	5.93	1.25	1.37	0.61	0.60	0.67	2.08
NO. OBS.	0.	17.	29.	26.	21.	9.	9.	18.	6.	14.	12.	9.	170.
<b>PIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1A.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1A.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.

5113 ENDLERS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-18-71 AND ENDING 11- 7-71.

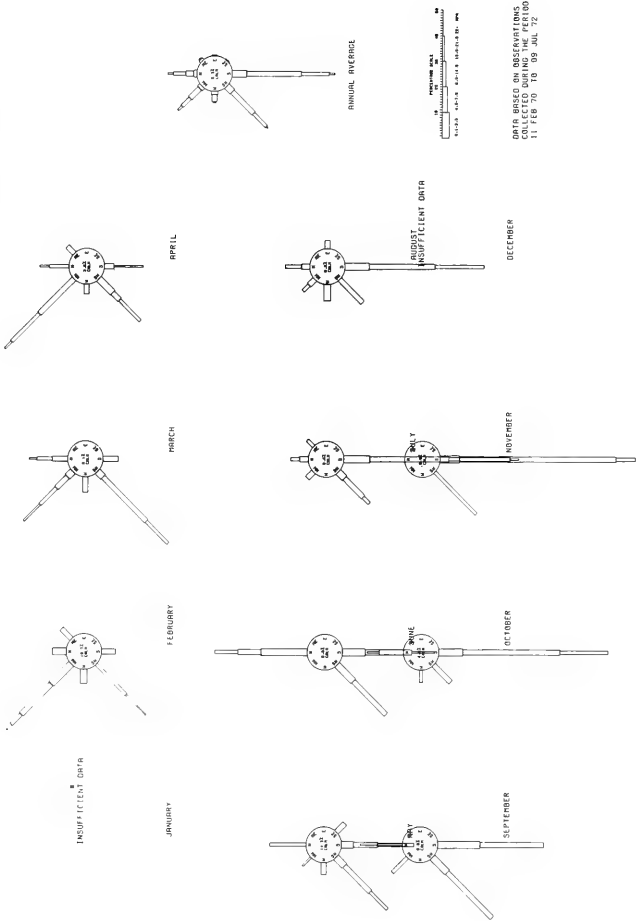
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	4.00	0.00	0.00	0.00	0.00	0.00	2.07	4.69	3.17	3.43	2.00	0.00	3.34
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	.27	6.16	.75	.98	0.00	0.00	3.46
NO. OBS.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
<b>PERIOD (SEC)</b>													
MEAN	21.00	0.00	0.00	0.00	0.00	0.00	9.63	9.81	11.92	13.07	11.50	0.00	11.36
STD DEV	9.10	0.00	0.00	0.00	0.00	0.00	2.00	1.51	1.72	.98	0.00	0.00	3.86
NO. OBS.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	33.33	0.00	0.00	0.00	0.00	0.00	21.43	15.38	0.00	0.00	0.00	0.00	11.36
4	66.67	0.00	0.00	0.00	0.00	0.00	78.57	76.92	100.00	100.00	100.00	0.00	61.82
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	6.82
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	2.27
SP/PL	100.00	0.00	0.00	0.00	0.00	0.00	71.43	38.46	50.00	0.00	0.00	0.00	47.73
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	21.43	61.54	50.00	100.00	100.00	0.00	50.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
<b>CURRENT OBS.</b>													
NET MEAN	-1.04	0.00	0.00	0.00	0.00	0.00	0.87	0.72	0.16	0.66	0.08	0.00	0.63
<b>GROSS MEAN</b>													
STD DEV	.29	0.00	0.00	0.00	0.00	0.00	1.09	.72	.33	.66	.08	0.00	.74
NO. OBS.	2.	0.	0.	0.	0.	0.	14.	.77	.42	.40	0.00	0.00	.62
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	4.67	0.00	0.00	0.00	0.00	0.00	3.21	1.92	2.50	4.71	4.00	0.00	3.09
STD DEV	2.31	0.00	0.00	0.00	0.00	0.00	1.50	.76	1.03	6.75	0.00	0.00	2.96

5313. ENLERTS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 2= 9-72 AND ENDING 7= 9-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT MEAN	0.00	4.00	4.75	0.00	0.00	3.00	1.60	0.00	0.00	0.00	0.00	0.00	3.17
STD DEV	0.00	0.00	1.71	0.00	0.00	0.00	.45	0.00	0.00	0.00	0.00	0.00	1.64
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>PERIOD (SPC)</b>													
MEAN	0.00	12.50	15.80	0.00	0.00	11.00	9.80	0.00	0.00	0.00	0.00	0.00	12.25
STD DEV	0.00	0.00	2.02	0.00	0.00	4.95	3.05	0.00	0.00	0.00	0.00	0.00	3.81
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 DEC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	100.00	50.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	83.33
4	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.67
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	50.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
SP/PL	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.67
PLUNGE	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	-0.02	-0.09	0.00	0.00	-1.58	0.00	0.00	0.00	0.00	0.00	0.00	-0.33
GROSS MEAN	0.00	0.02	0.83	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.57
STD DEV	0.00	0.00	0.50	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.63
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>FINE SHORE SLOPE</b>													
MEAN (DEG)	0.00	6.00	5.00	0.00	0.00	3.00	2.80	0.00	0.00	0.00	0.00	0.00	3.83
STD DEV	0.00	0.00	2.16	0.00	0.00	0.00	.45	0.00	0.00	0.00	0.00	0.00	1.70
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
<b>CUSPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.

CALIFORNIA

WIND ROSES 5313 ENDERTS BEACH





5016 PRAIRIE CREEK REEF-DODS CALIFORNIA SUMMARY FOR PERIOD STARTING 4-2-66 AND ENDING 12-28-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>BURF OBS.</b>													
HEIGHT (FT)	4.30	5.38	4.92	4.18	3.58	2.79	2.71	2.03	3.31	3.43	4.22	5.03	3.65
MEAN	2.11	2.34	2.14	1.97	1.45	.97	.79	.99	1.05	1.52	1.72	1.32	1.65
STD DEV	0.5	.42	.51	.56	.86	.86	.86	.86	.90	.77	.68	.58	.852
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	12.92	11.34	12.97	12.55	10.87	9.65	9.23	9.46	9.32	9.65	10.61	13.25	10.68
STD DEV	2.66	2.06	1.76	2.18	2.88	2.81	2.85	2.89	2.34	2.57	2.31	2.71	2.84
NO. OBS.	25	42	51	56	86	86	102	86	90	77	66	56	847
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
DIR	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>COMPASS SECTOR</b>													
DIR	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BREAKER TYPE</b>													
SPILL	93.33	100.00	98.04	98.21	97.73	100.00	93.14	87.50	69.66	63.44	58.21	73.68	65.48
NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
PLUNGE	2.22	0.00	0.00	1.79	2.27	0.00	1.96	5.68	21.55	29.97	29.55	24.56	19.15
BURGE	4.44	0.00	1.96	0.00	0.00	0.00	0.00	0.00	6.74	6.09	11.94	1.75	3.66
NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>CURRENT OBS.</b>													
DIR	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	.16	.35	.15	0.59	0.15	0.61	1.60	1.58	1.36	0.53	0.62	.33	0.62
GROSS MEAN	1.16	.79	.97	.77	.91	1.11	1.50	1.43	1.62	1.09	1.55	.86	1.19
STD DEV	1.05	.74	.61	.81	1.07	1.05	1.31	1.19	1.30	.86	1.02	.95	1.06
NO. OBS.	16	38	42	47	80	78	82	64	83	78	63	52	747
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	6.14	5.18	5.75	6.75	6.74	7.00	5.35	7.29	6.43	5.09	4.77	5.39	6.03
STD DEV	2.42	1.66	1.80	2.75	3.43	4.02	2.10	2.28	4.16	2.92	1.74	2.99	2.99
NO. OBS.	36	28	51	56	85	73	78	65	83	73	65	59	752
<b>RIPS</b>													
MEAN (DEG)	6.67	0.00	1.96	3.64	3.61	0.00	.87	0.00	0.00	2.40	11.76	6.00	2.62
STD DEV	235.23	0.00	200.00	205.00	200.00	0.00	276.00	0.00	0.00	325.00	310.75	337.50	169.54
NO. OBS.	45	42	51	55	80	80	103	86	90	77	68	58	851
<b>CUSPS</b>													
MEAN (DEG)	15.56	26.19	37.29	39.29	43.18	33.26	56.89	18.32	7.32	35.97	0.00	0.00	23.46
STD DEV	180.00	137.91	190.32	201.18	209.62	227.20	280.87	109.32	195.33	159.78	0.00	0.00	169.88
NO. OBS.	45	42	51	56	86	86	103	86	83	77	66	58	848

503A PRAIRIE CREEK RECORDS CALIFORNIA

SUMMARY FOR PERIOD STARTING 4-24-68 AND ENDING 12-29-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	3.83	3.28	2.67	2.60	2.75	3.88	3.75	5.15	4.50	3.33
MEAN	0.00	0.00	0.00	1.33	1.16	.96	.76	1.06	1.83	1.85	2.21	.85	1.54
STD DEV	0.00	0.00	0.00	0.6	.29	.30	.50	.44	.32	.24	.20	.14	.249
NO. OBS.	0.	0.	0.	6.	29.	30.	50.	44.	32.	24.	20.	14.	249.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	11.17	9.89	10.08	9.97	10.49	9.30	10.59	10.62	10.53	10.15
STD DEV	0.00	0.00	0.00	1.33	1.84	2.22	3.06	2.72	1.83	3.13	1.84	1.59	2.45
NO. OBS.	0.	0.	0.	6.	29.	29.	49.	43.	32.	24.	20.	14.	246.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	3.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	6.90	6.12	2.33	0.00	0.00	5.56	7.69	3.28
CALM	0.00	0.00	0.00	100.00	93.10	96.87	91.88	86.37	84.38	91.67	91.00	38.46	88.52
NO. OBS.	0.	0.	0.	6.	29.	30.	49.	43.	32.	24.	20.	13.	244.
<b>BREAKER TYPE</b>													
XOCC SPILL	1.00	0.00	0.00	83.33	93.10	100.00	97.96	90.91	87.10	83.33	57.69	92.31	89.80
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	16.67	6.90	0.00	2.04	9.09	12.90	16.67	42.11	7.69	10.20
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	6.	29.	30.	49.	44.	31.	24.	10.	13.	245.
<b>CURRENT OBS.</b>													
(FT/SEC)	0.00	0.00	0.00	-1.08	-0.01	-0.02	-0.83	-1.12	-0.95	-0.59	-1.17	-0.03	-0.68
NFT MEAN	0.00	0.00	0.00	1.14	.94	1.01	.90	1.33	1.00	.93	1.24	.43	1.00
MEAN	0.00	0.00	0.00	1.41	1.27	.70	.67	.88	.91	.59	.87	.30	.86
STD DEV	0.00	0.00	0.00	0.6	.29	.23	.29	.24	.27	.23	.17	.11	.189
NO. OBS.	0.	0.	0.	6.	29.	30.	49.	44.	31.	24.	10.	13.	245.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	9.67	7.04	3.65	3.85	7.27	7.71	7.17	5.44	7.63	6.33
MEAN SPAC.	0.00	0.00	0.00	7.34	2.96	2.91	1.59	1.83	2.09	4.17	1.49	3.13	3.04
STD DEV	0.00	0.00	0.00	0.6	.28	.20	.27	.22	.28	.23	.18	.12	.184
NO. OBS.	0.	0.	0.	6.	29.	30.	49.	44.	32.	24.	10.	14.	248.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	20.00	10.34	0.00	2.00	0.00	0.00	6.33	40.00	21.43	7.26
MEAN SPAC.	0.00	0.00	0.00	300.00	200.00	0.00	276.00	0.00	0.00	325.00	318.75	363.33	163.68
NO. OBS.	0.	0.	0.	5.	29.	30.	50.	44.	12.	24.	20.	14.	248.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	100.00	96.55	66.67	44.00	36.36	20.83	79.17	0.00	0.00	48.13
MEAN SPAC.	0.00	0.00	0.00	123.33	202.89	227.20	262.36	202.56	220.40	160.95	0.00	0.00	185.16
NO. OBS.	0.	0.	0.	6.	29.	30.	50.	44.	24.	24.	20.	14.	241.

503A PPAIRIE CHECK BEDS CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 4-69 AND ENDING 12-31-69.

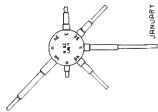
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MRS.
SHORE HEIGHT (FT.)													
MEAN	9.43	7.60	6.21	5.64	4.27	2.53	2.55	2.26	3.21	3.48	3.86	5.42	4.17
STD DEV	2.34	2.10	2.13	1.91	1.78	.94	.57	.53	1.13	1.18	.85	1.72	2.12
NO. OBS.	14.	14.	24.	24.	30.	30.	29.	27.	28.	29.	28.	26.	305.
PERIOD (SEC)													
MEAN	11.76	12.37	12.79	13.28	12.42	9.05	8.05	7.97	9.13	9.40	10.51	13.72	10.71
STD DEV	1.53	1.64	1.52	1.52	2.56	2.70	3.03	1.57	3.13	2.26	2.14	2.50	3.09
NO. OBS.	14.	15.	24.	25.	30.	29.	29.	26.	28.	29.	28.	26.	303.
DIRECTION													
COMPASS SECTOR													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	78.57	80.00	73.91	4.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.97
NW	21.43	20.00	8.70	80.00	70.00	100.00	100.00	92.59	94.43	93.10	94.43	100.00	69.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.41	3.57	0.00	3.57	0.00	6.52
NO. OBS.	14.	15.	23.	25.	30.	28.	29.	27.	28.	29.	28.	26.	302.
BREAKER TYPE													
BOCC SPILL	85.71	100.00	95.83	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.01
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	14.	15.	24.	25.	30.	29.	29.	27.	28.	29.	28.	26.	304.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-55	95	33	-36	28	-146	-277	-245	-142	-24	-155	50	-81
GROSS MEAN	1.90	1.20	1.03	.66	.95	1.71	2.84	2.49	1.51	.79	1.73	.91	1.49
STD DEV	1.12	.86	.66	.49	1.20	1.25	1.18	1.14	1.76	.56	1.15	1.29	1.30
NO. OBS.	14.	15.	24.	24.	27.	30.	29.	27.	28.	29.	26.	26.	299.
FORESHORE SLOPE													
MEAN (DEG)	5.64	5.93	7.04	5.20	5.00	7.03	6.64	6.65	3.70	4.32	5.11	5.08	5.59
STD DEV	1.45	1.91	1.65	2.22	2.07	2.51	1.16	2.21	3.73	1.70	1.95	1.72	2.37
NO. OBS.	14.	14.	24.	25.	29.	29.	28.	26.	27.	28.	27.	26.	298.
RIPS % OCC													
MEAN SPAC.	21.43	0.00	0.17	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	1.97
NO. OBS.	14.	15.	24.	25.	30.	30.	29.	27.	28.	29.	28.	26.	305.
CUSPS % OCC.													
MEAN SPAC.	50.00	73.33	76.17	64.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.66
NO. OBS.	14.	14.	19.	23.	22.	20.	29.	27.	28.	29.	28.	26.	305.

5036 PRAIRIE CRKFK RECD-HOHS CALIFORNIA

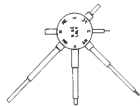
SUMMARY FOR PERIOD STARTING 1= 1-70 AND ENDING 12-28-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	3.45	4.15	3.78	2.80	3.17	3.23	3.13	2.88	2.60	3.04	3.80	4.49	3.40
STD DEV	1.12	1.45	1.52	1.07	1.07	.95	1.52	1.03	1.03	.91	1.01	1.68	1.19
NO. OBS.	31.	27.	27.	25.	24.	24.	24.	17.	30.	24.	20.	18.	298.
<b>PERIOD (SEC)</b>													
MEAN	10.76	13.12	12.15	10.23	9.45	9.14	9.16	9.16	9.51	9.02	10.77	14.69	10.99
STD DEV	2.69	2.31	1.94	2.86	2.21	1.66	1.78	1.63	1.59	1.63	2.78	2.21	2.84
NO. OBS.	31.	27.	27.	25.	24.	24.	17.	17.	30.	24.	20.	18.	298.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	41.18	52.94	46.87	70.83	95.00	94.44	70.83
4	0.00	0.00	0.00	0.00	0.00	0.00	50.82	41.18	33.53	2.00	0.00	5.56	28.98
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	17.	17.	30.	24.	20.	18.	128.
<b>COMPASS SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	31.	27.	27.	25.	24.	24.	17.	17.	30.	24.	20.	18.	178.
<b>BREAKER TYPE</b>													
0 OCC	99.77	100.00	100.00	100.00	100.00	100.00	75.00	58.82	23.33	0.00	0.00	22.22	88.12
1	0.00	0.00	0.00	0.00	0.00	0.00	20.83	29.41	63.33	95.83	100.00	77.78	28.66
2	0.00	0.00	0.00	0.00	0.00	0.00	4.17	5.88	6.67	4.17	0.00	0.00	2.01
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	31.	27.	27.	25.	24.	24.	17.	17.	30.	24.	20.	18.	298.
<b>CURRENT OBS.</b>													
(FT/SEC)	.61	.04	.07	.74	.81	.38	.60	.66	-.66	.84	1.02	.60	-.36
NET MEAN													
<b>GRASS</b>													
MEAN	.69	.62	.89	.80	.84	.68	.60	.68	1.72	1.62	1.56	1.08	.97
STD DEV	.70	.56	.63	.54	.57	.61	.50	.68	1.00	1.21	.94	.17	.83
NO. OBS.	28.	23.	28.	17.	24.	24.	24.	17.	28.	24.	20.	15.	259.
<b>FURLOW SLOPE</b>													
MEAN (DEC)	6.05	4.31	4.59	7.60	8.25	9.75	5.54	8.29	7.79	4.00	3.70	4.22	6.35
STD DEV	2.86	1.91	1.93	2.62	4.20	4.52	2.41	2.86	4.87	1.06	.80	.65	3.89
NO. OBS.	28.	13.	27.	25.	28.	24.	24.	17.	28.	24.	20.	18.	270.
<b>RIPS &amp; OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	31.	27.	27.	25.	24.	24.	17.	17.	30.	24.	20.	18.	298.
<b>CUSPS &amp; OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	31.	27.	27.	25.	24.	24.	17.	17.	30.	24.	20.	18.	298.

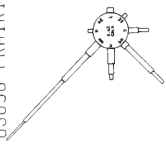
WIND ROSES 05036 PRAIRIE CREEK REDWOODS CALIFORNIA



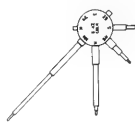
JANUARY



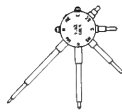
FEBRUARY



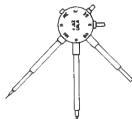
MARCH



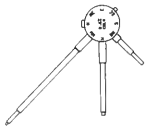
APRIL



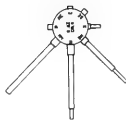
ANNUAL AVERAGE



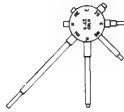
MAY



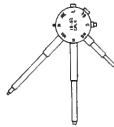
JUNE



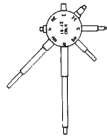
JULY



AUGUST



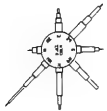
SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

WIND ROSE DATA  
 COLLECTED DURING THE PERIOD  
 24 APR 69 TO 28 DEC 70  
 WIND DATA SOURCE: METEOR

WIND ROSE DATA  
 COLLECTED DURING THE PERIOD  
 24 APR 69 TO 28 DEC 70

## 5307 REDWOOD CREEK

## CALIFORNIA

## SUMMARY FOR PERIOD STARTING 2-

1-70 AND ENDING 7-12-72.

7-12-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	10.00	4.47	6.32	6.00	6.33	6.13	5.63	4.39	6.64	9.63	6.67	13.50	6.18
MEAN	10.00	4.47	6.32	6.00	6.33	6.13	5.63	4.39	6.64	9.63	6.67	13.50	6.18
STD DEV	0.00	.92	1.70	1.65	1.67	1.55	1.56	1.75	1.78	3.59	2.31	2.12	2.46
NO. OBS.	1.	15.	22.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.
<b>PERIOD (SEC)</b>													
MEAN	12.00	16.01	16.39	14.65	12.71	19.00	18.71	14.69	15.35	12.22	10.50	12.00	15.51
STD DEV	0.00	3.23	4.27	2.84	1.70	5.07	4.19	5.01	3.41	2.31	0.00	0.00	4.82
NO. OBS.	1.	15.	22.	20.	12.	5.	32.	26.	11.	16.	3.	2.	165.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
D OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	1.18
2	0.00	60.00	95.45	60.00	50.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	28.62
3	0.00	10.00	10.00	30.00	33.33	50.00	74.89	57.14	37.18	60.00	100.00	100.00	47.06
4	0.00	10.00	4.85	10.00	16.67	25.00	25.71	42.86	33.71	26.67	0.00	0.00	22.35
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	6.59
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	16.	22.	20.	12.	8.	33.	28.	14.	15.	3.	2.	170.
<b>COMPASS SECTOR</b>													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	6.67	6.65	6.00	6.33	0.00	14.69	17.66	0.00	0.00	0.00	0.00	7.95
8/PL	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	2.86
PLUNGE	100.00	93.33	95.45	95.00	91.67	87.50	80.00	75.00	100.00	100.00	100.00	100.00	69.20
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	15.	22.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	2.40	1.08	0.70	0.72	-1.61	0.92	0.86	0.76	-1.32	0.63	.13	-2.05	0.73
<b>GROSS MEAN</b>	2.90	1.33	1.03	1.27	1.87	1.12	1.19	1.78	1.32	1.09	1.76	2.45	1.26
STD DEV	0.00	.65	.81	.69	1.19	.73	.81	.86	.69	.76	.67	2.10	1.26
NO. OBS.	1.	18.	15.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.00	7.13	6.91	5.63	7.50	9.00	8.39	6.39	6.67	7.66	6.00	10.00	7.40
STD DEV	0.00	.42	1.29	1.14	1.65	3.07	1.66	2.17	4.68	1.97	0.00	0.00	2.27
NO. OBS.	1.	15.	22.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.
<b>RIPB % OCC</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	15.	22.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.
<b>CUSPS % OCC</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	15.	22.	20.	12.	8.	33.	28.	14.	16.	3.	2.	176.

SACT REDWOOD CREEK CALIFORNIA

SUMMARY FOR PERIOD STARTING 2- 1-70 AND ENDING 11- 1-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	0.00	4.46	6.33	6.00	6.55	5.86	6.04	4.00	7.50	10.08	6.00	0.00	6.41
MEAN	0.00	.97	1.74	1.70	1.57	1.46	1.31	.82	1.81	3.73	0.00	0.00	2.32
STD. DEV	0.00	1.30	2.10	1.90	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NO. OBS.	0.	13.	21.	19.	11.	7.	75.	4.	8.	13.	1.	0.	122.
PERIOD (SEC)													
MEAN	0.00	16.85	16.00	14.86	12.77	20.63	19.58	25.50	20.42	12.15	10.50	0.00	16.44
STD. DEV	0.00	3.19	4.26	2.85	1.77	4.09	3.69	6.16	3.32	2.55	0.00	0.00	4.44
NO. OBS.	0.	13.	21.	19.	11.	4.	22.	2.	5.	13.	1.	0.	111.
DIRECTION													
COASTAL SECTOR													
DIR. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	100.00	100.00	63.16	94.55	28.57	0.00	0.00	0.00	16.67	0.00	0.00	1.72
2	0.00	0.00	0.00	31.58	16.36	57.14	76.00	100.00	25.00	66.67	0.00	0.00	42.24
3	0.00	0.00	0.00	5.26	9.09	1.29	24.00	0.00	62.50	10.67	100.00	0.00	41.58
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.66
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	6.	21.	19.	11.	7.	25.	4.	8.	12.	1.	0.	116.
COMPASS SECTOR													
DIR. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
BREAKER TYPE													
DIR. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	0.00	0.00	0.00	0.00	0.00	14.29	8.00	50.00	0.00	0.00	0.00	0.00	4.10
PLUNGE	0.00	100.00	100.00	100.00	100.00	85.71	92.00	50.00	100.00	100.00	100.00	0.00	95.90
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
CURRENT OBS.													
(FT/SEC)													
MEAN	0.00	1.34	-0.86	-1.03	-1.88	-0.89	-0.36	-0.81	-1.80	-0.67	-0.45	0.00	-0.67
STD. DEV	0.00	1.58	1.28	1.28	1.95	1.13	0.67	0.81	1.80	1.49	0.45	0.00	1.33
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
FORESHORE SLOPE													
MEAN (DEG)	0.00	7.15	7.00	5.58	7.64	8.20	8.00	9.75	9.50	7.92	6.00	0.00	7.94
STD. DEV	0.00	9.00	1.82	1.12	1.44	2.70	1.53	2.36	5.73	1.85	0.00	0.00	2.82
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
RIPS % OCC													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
CUSPS % OCC													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.

5307 REDWOOD CREEK CALIFORNIA SUMMARY FOR PERIOD STARTING 7-21-71 AND ENDING 12-19-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT - MEAN	0.00	0.00	0.00	0.00	0.00	0.00	4.88	4.46	5.50	7.67	10.00	13.50	5.53
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.46	1.66	1.64	2.52	0.00	2.12	2.77
NO. OBS.	0.	0.	0.	0.	0.	0.	6.	24.	6.	3.	2.	2.	45.
<b>PERIOD (SFC)</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	17.25	13.79	11.13	12.50	10.50	12.00	13.74
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	5.04	3.41	1.61	.87	0.00	0.00	3.98
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
NO. OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	62.50	50.00	100.00	33.33	100.00	100.00	62.22
4	0.00	0.00	0.00	0.00	0.00	0.00	37.50	50.00	0.00	66.67	0.00	0.00	37.78
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	37.50	20.43	0.00	0.00	0.00	0.00	17.78
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	62.50	79.17	100.00	100.00	100.00	100.00	82.22
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>CURRENT OBS.</b>													
(FT/SEC)													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	-1.15	-.78	-1.68	1.52	.42	2.45	-.90
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.13	.78	.68	1.52	.92	2.45	.96
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	6.75	6.33	6.17	6.00	6.00	10.00	7.93
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.75	2.18	1.83	2.00	0.00	0.00	2.19
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>RIPS</b>													
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
<b>CUSPS</b>													
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.



5307 REDWOOD CRKFC CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 3-72 AND ENDING 7-12-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OHS.</b>													
HEIGHT (FT)	10.00	4.50	6.00	6.00	4.00	8.00	7.00	0.00	0.00	0.00	0.00	0.00	6.33
MEAN	0.00	.71	0.00	0.00	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00	2.45
STD DEV	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
NO. OHS.													
<b>PERIOD (SEC)</b>													
MEAN	12.00	13.50	12.00	10.50	12.00	12.50	15.00	0.00	0.00	0.00	0.00	0.00	12.89
STD DEV	0.00	2.12	0.00	0.00	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00	2.25
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	50.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	48.44
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.56
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>BREAKER TYPE</b>													
BOCC SPILL	0.00	50.00	100.00	100.00	100.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	66.67
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	100.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-2.90	-1.21	2.60	1.20	1.00	-1.10	-7.74	0.00	0.00	0.00	0.00	0.00	-5.57
GROSS MEAN	2.90	1.21	2.60	1.20	1.00	1.10	7.74	0.00	0.00	0.00	0.00	0.00	1.41
STD DEV	0.00	1.76	0.00	0.00	0.00	0.00	.77	0.00	0.00	0.00	0.00	0.00	.94
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.00	7.00	5.00	7.00	6.00	14.00	10.00	0.00	0.00	0.00	0.00	0.00	8.11
STD DEV	0.00	1.41	0.00	0.00	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00	3.18
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>RIPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
<b>CUSPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.

WIND ROSES FOR 05307--REDWOOD CREEK  
(not available)

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	4.57	4.66	4.20	3.60	4.00	2.50	2.00	0.00	0.00	3.67	6.27	6.52	5.52
MEAN	1.51	1.35	1.92	1.67	1.41	0.00	1.00	0.00	0.00	1.97	2.34	4.79	3.55
STD DEV	7.	7.	5.	5.	4.	4.	3.	0.	0.	6.	15.	21.	79.
NO. OBS.	7.	7.	5.	5.	4.	4.	3.	0.	0.	6.	15.	21.	79.
<b>PERIOD (SEC)</b>													
MEAN	14.80	11.33	10.67	12.28	12.73	13.15	10.00	11.50	0.00	10.70	10.50	9.20	11.54
STD DEV	2.26	2.94	6.04	2.05	1.14	2.62	3.34	1.32	0.00	3.59	0.00	5.36	3.33
NO. OBS.	4.	3.	3.	4.	4.	2.	4.	3.	0.	6.	1.	4.	36.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
1 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	100.00	100.00	50.00	66.67	0.00	50.00	0.00	100.00	84.21
4	0.00	0.00	0.00	0.00	0.00	0.00	50.00	33.33	0.00	50.00	0.00	0.00	15.79
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	5.	3.	2.	4.	5.	2.	4.	3.	0.	6.	0.	4.	36.
<b>COMPASS SECTOR</b>													
1 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	0.00	50.00	0.00	23.53	20.51
W	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	0.00	50.00	0.00	76.47	79.49
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	2.	4.	2.	0.	0.	0.	6.	0.	0.	0.	14.	17.	39.
<b>BREAKER TYPE</b>													
ROCK SPILL	42.86	71.43	80.00	100.00	40.00	100.00	100.00	100.00	0.00	33.33	86.67	66.67	71.25
SPPL	14.29	28.57	0.00	0.00	60.00	0.00	0.00	0.00	0.00	33.33	0.00	14.29	13.75
PLUNGE	42.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	13.33	19.05	15.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	7.	5.	5.	5.	2.	4.	3.	0.	6.	15.	21.	80.
<b>CURRENT OBS.</b>													
<b>(FT/SEC)</b>													
NET MEAN	.18	.58	.68	1.23	0.92	0.36	0.67	0.63	0.00	0.48	.49	.57	.13
GROSS MEAN	.93	1.12	1.32	1.23	1.07	.36	.67	.63	0.00	1.47	.87	1.15	1.03
STD DEV	.72	.68	1.10	.48	.56	.25	.86	.30	0.00	1.21	.21	.78	.66
NO. OBS.	7.	7.	5.	5.	5.	2.	4.	3.	0.	6.	15.	20.	79.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	4.17	1.66	1.20	3.75	6.00	0.00	0.00	0.00	0.00	0.00	1.33	2.48	2.68
STD DEV	4.45	2.61	1.30	2.87	2.00	0.00	0.00	0.00	0.00	0.00	4.00	5.46	4.26
NO. OBS.	6.	7.	5.	4.	3.	0.	0.	0.	0.	0.	9.	21.	57.
<b>RIPPLE OCC</b>													
MEAN (DEG)	42.86	0.00	25.00	20.00	0.00	0.00	0.00	0.00	0.00	16.67	7.14	57.14	24.36
STD DEV	195.67	0.00	90.00	60.00	0.00	0.00	0.00	0.00	0.00	750.00	750.00	191.50	469.25
NO. OBS.	7.	7.	4.	5.	5.	2.	4.	3.	0.	6.	14.	21.	76.
<b>CURRSP X OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	7.	5.	5.	4.	2.	4.	3.	0.	6.	15.	21.	79.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50	7.71	7.16
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	3.02	2.72
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	1.70	3.10
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20	2.20
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
<b>BREAKER TYPE</b>													
XUCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.71	76.47	80.65
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	23.53	19.35
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.48	.47	.48
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.89	1.16	1.04
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.56	.79	.64
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	8.	17.	25.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69	64.71	40.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	750.00	859.09	811.82
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	13.	17.	30.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.



5306 MAD RIVER CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 3-71 AND ENDING 1- 3-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS. (FT)	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
PERIOD (SEC)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIRECTION													
COASTAL SECTOR													
0 OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
BREAKER TYPE													
XOCC SPILL	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SPYL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
CURRENT OBS. (FT/SEC)													
NET MEAN	-0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.45
GROSS MEAN	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
FURTH-SLOPE													
MEAN (DEG)	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
RIPS X OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
CUSPS X OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.

STOKA MAIN RIVER CALIFORNIA SUMMARY FOR PERIOD STARTING 1-7-72 AND ENDING 5-14-72. ALL OBS.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
WFLIGHT (FT)													
MEAN	3.75	5.33	3.33	4.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.21
STD DEV	1.26	1.53	2.06	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.53
NO. OBS.	4.	3.	3.	3.	1.	0.	0.	0.	0.	0.	0.	0.	14.
<b>PERIOD (SEC)</b>													
MEAN	14.80	11.33	10.87	11.67	14.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.51
STD DEV	2.26	2.84	6.09	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43
NO. OBS.	4.	3.	3.	3.	1.	0.	0.	0.	0.	0.	0.	0.	14.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	4.	3.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	13.
<b>BREAKER TYPE</b>													
XCC SPILL	50.00	33.33	66.67	100.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00
SP/PL	25.00	66.67	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.67
PLUNGE	25.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	15.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.03	-.94	-.43	-.65	-.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-.49
GROSS MEAN	1.12	.83	.65	.85	.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.85
STD DEV	.69	.71	.60	.71	.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.47
NO. OBS.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	15.
<b>FURFSHORE SLOPE</b>													
MEAN (DEG)	4.33	4.33	2.00	4.50	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.65
STD DEV	1.15	2.08	2.12	2.12	.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63
NO. OBS.	3.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	13.
<b>RIPS X DEC</b>													
MEAN SPAC.	50.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
STD DEV	143.50	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.27
NO. OBS.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	15.
<b>CUSPS X DEC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	15.

WIND ROSES 5306 MAD RIVER CALIFORNIA

INSUFFICIENT DATA

JANUARY

INSUFFICIENT DATA

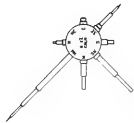
FEBRUARY

INSUFFICIENT DATA

MARCH

INSUFFICIENT DATA

APRIL



INSUFFICIENT DATA

MAY

INSUFFICIENT DATA

JUNE

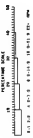
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JULY

INSUFFICIENT DATA

AUGUST

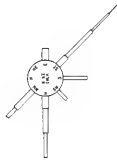
ANNUAL AVERAGE



DATA BASED ON OBSERVATIONS  
 FROM 1968 TO 1972  
 AT MAD RIVER, CALIFORNIA

NO DATA

INSUFFICIENT DATA



SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER



SUMMARY FOR PERIOD STARTING 11-5-69 AND ENDING 11-13-71.

CALIFORNIA

5302 CENTERVILLE RCM

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT	5.00	6.00	5.00	3.50	4.00	0.00	0.00	4.38	4.67	5.00	7.57	8.00	5.67
MEAN	2.18	1.00	2.03	.71	0.00	0.00	0.00	1.51	1.50	0.00	3.72	3.77	2.95
STD DEV	9.	3.	2.	2.	1.	0.	0.	8.	12.	1.	14.	9.	61.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	15.63	14.83	17.50	17.50	13.00	0.00	0.00	17.49	13.89	20.70	18.11	14.94	16.00
STD DEV	2.09	1.84	4.24	3.58	0.00	0.00	0.00	3.86	3.99	0.00	1.50	1.06	3.07
NO. OBS.	9.	3.	2.	2.	1.	0.	0.	8.	12.	1.	14.	9.	61.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
WAVE OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	8.	12.	1.	0.	5.	32.
<b>COMPASS SECTOR</b>													
WAVE OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	83.33	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	6.	3.	2.	2.	0.	0.	0.	8.	12.	0.	14.	9.	60.
<b>BREAKER TYPE</b>													
WAVE OCC.	33.33	100.00	50.00	0.00	0.00	0.00	0.00	37.50	25.00	0.00	57.14	33.33	90.00
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	11.11	15.00
SP/PL	66.67	0.00	0.00	0.00	0.00	0.00	0.00	37.50	33.33	0.00	42.86	55.56	45.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	9.	3.	2.	2.	1.	0.	0.	8.	12.	0.	14.	9.	60.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.59	1.09	0.00	.20	0.00	0.00	0.00	.16	.54	0.00	.68	.04	.66
GROSS MEAN	1.22	1.09	0.00	.20	0.00	0.00	0.00	1.20	1.19	3.12	1.71	2.29	1.95
STD DEV	1.53	.84	0.00	0.00	0.00	0.00	0.00	1.10	1.01	0.00	.93	2.02	1.13
NO. OBS.	4.	3.	0.	1.	0.	0.	0.	7.	9.	1.	10.	4.	39.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	9.67	0.00	0.00	7.50	0.00	0.00	0.00	0.78	10.00	11.00	0.00	13.60	10.35
STD DEV	4.56	0.00	0.00	.71	0.00	0.00	0.00	3.26	3.66	1.	0.00	2.70	3.22
NO. OBS.	3.	0.	0.	2.	0.	0.	0.	8.	12.	1.	0.	5.	31.
<b>RIPS &amp; OCC</b>													
MEAN SPAC.	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	9.	3.	2.	2.	1.	0.	0.	8.	12.	1.	0.	9.	61.
<b>CURBS &amp; OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.00	50.00	0.00	0.00	0.00	13.11
NO. OBS.	9.	3.	2.	2.	1.	0.	0.	9.50	137.67	0.00	0.00	0.00	39.68

5302 CENTERVILLE RCH CALIFORNIA SUMMARY FOR PERIOD STARTING 11- 5-69 AND ENDING 12- 8-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.57	10.50	8.22
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.72	4.51	3.96
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42	4.00	1.80
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.11	15.40	17.51
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	2.97	2.15
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.
DIRECTION													
COMPASS SECTOR													
DEC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	5.54
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.43	100.00	77.78
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	11.11
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.
BREAKER TYPE													
INCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.14	75.00	61.11
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.86	25.00	38.89
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.
CURRENT OBS.													
(FT)SEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.50	0.75
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.50	1.60
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.93
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.	1.	11.
FORESHORE SLIPE													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIPS X OCC													
MEAN SPEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.
CUSPS X OCC													
MEAN SPEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.	4.	18.

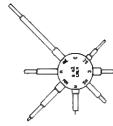
5302 CENTERVILLE RM CALIFORNIA SUMMARY FOR PERIOD STARTING 1-15-70 AND ENDING 12-29-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MHS.
<b>SURF MHS.</b>													
HEIGHT (FT)	5.67	6.00	5.00	3.50	4.00	9.00	6.00	4.38	4.67	5.00	0.00	6.00	4.98
MEAN	2.02	1.00	2.83	.71	0.00	9.00	0.00	1.51	1.50	0.00	0.00	1.41	4.0.
NO. MHS.	6.	3.	2.	2.	1.	0.	0.	8.	12.	1.	0.	5.	40.
<b>PERIOD (SEC)</b>													
MEAN	15.85	14.88	17.50	17.50	13.00	9.00	0.00	17.19	15.69	20.70	0.00	14.58	15.21
STD DEV	1.75	1.42	4.24	3.54	0.00	0.00	0.00	3.86	3.69	0.00	0.00	2.83	3.27
NO. MHS.	6.	3.	2.	2.	1.	0.	0.	8.	12.	1.	0.	5.	40.
<b>DIRECTION</b>													
<b>COASTAL SECT.</b>													
NO. OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CAL.</b>													
NO. MHS.	0.	0.	0.	2.	1.	0.	0.	0.	12.	1.	0.	5.	29.
<b>(NO-PASS SECT.)</b>													
NO. OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CAL.</b>													
NO. MHS.	0.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	11.
<b>WREAK TYPE</b>													
ZUCC SPILL	10.67	100.00	50.00	0.00	0.00	0.00	0.00	37.50	25.00	0.00	0.00	0.00	28.21
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.08
PL/BLDG	83.33	0.00	50.00	50.00	100.00	0.00	0.00	37.50	33.33	0.00	0.00	20.00	48.72
SHED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. MHS.	6.	3.	2.	2.	1.	0.	0.	8.	12.	0.	0.	5.	39.
<b>CURRENT MHS.</b>													
(FT/SEC)													
NO. MHS.	0.22	1.08	0.00	-3.20	0.00	0.00	0.00	-0.18	-1.54	0.00	0.00	-2.88	-0.47
<b>GROSS MHS.</b>													
NO. MHS.	0.22	1.08	0.00	0.20	0.00	0.00	0.00	1.20	1.14	3.12	0.00	2.88	1.32
<b>FUMES-ONLY SIBBE</b>													
NO. MHS.	0.00	0.00	0.00	7.50	0.00	0.00	0.00	9.75	10.00	11.00	0.00	15.60	10.43
<b>RIPS 2 OCC</b>													
NO. MHS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CUSPS &amp; OCC</b>													
NO. MHS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>NO. MHS.</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5302 CINCINNILLA BCH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-5-71 AND ENDING 1-13-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)													
MEAN	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.67
STD DEV	.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.58
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
PERIOD (SEC)													
MEAN	15.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.17
STD DEV	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.06
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
DIRECTION													
COASTAL SECTOR													
DEC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
4	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
BREAKER TYPE													
X OCC SPILL	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.67
SPYPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.02
GROSS MEAN													
STD DEV	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.02
NO. OBS.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
FORESHORE SLOPE													
MEAN (DEG)	9.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.67
STD DEV	.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.58
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
RIPS X OCC													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
CUSPS X OCC													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.

WIND ROSES 5302 CENTERVILLE BEACH CALIFORNIA



INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

APRIL

MARCH

FEBRUARY

JANUARY

INSUFFICIENT DATA

NO DATA

NO DATA

INSUFFICIENT DATA

ANNUAL AVERAGE



AUGUST

JULY

JUNE

MAY

INSUFFICIENT DATA

NO DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

DATA BASED ON OBSERVATIONS  
COLLECTED DURING THE PERIOD  
05 NOV 63 TO 13 JAN 71

DECEMBER

NOVEMBER

OCTOBER

SEPTEMBER

3301 SHELTER COVE CALIFORNIA SUMMARY FOR PERIOD STARTING 2-20-69 AND ENDING 7-11-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	3.29	3.29	2.24	2.46	2.05	1.65	1.35	1.60	3.95	2.55	3.19	2.90	2.33
MEAN	2.55	1.63	1.59	1.26	1.04	0.94	0.93	1.04	1.95	1.37	1.31	1.73	1.49
STD DEV	2.4	3.8	5.3	5.2	5.9	5.7	5.0	4.2	4.0	3.8	3.2	2.1	5.10.
NO. OBS.													
PERIOD (SEC)													
MEAN	11.96	14.04	12.01	11.76	11.76	11.96	9.41	11.66	12.46	11.36	11.25	11.76	11.74
STD DEV	3.63	3.43	2.28	3.25	3.25	3.40	2.96	3.27	2.52	3.10	2.81	2.41	3.19
NO. OBS.	23.	38.	53.	52.	59.	56.	50.	42.	40.	36.	32.	21.	508.
DIRECTION													
COASTAL SECTOR													
C O C C.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	97.37	96.97	100.00	100.00	100.00	90.7	100.00	100.00	98.33
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	93.75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	6.	11.	10.	33.	36.	33.	30.	20.	19.	22.	13.	6.	243.
COMPASS SECTOR													
C O C C.	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	93.75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	16.	27.	43.	19.	21.	24.	24.	22.	20.	16.	19.	15.	266.
BREAKER TYPE													
X O C C.	0.00	0.00	0.00	3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
S P I L L	25.00	26.32	18.67	93.65	35.59	28.07	32.52	4.9	5.00	0.00	0.00	0.00	29.08
PLUNGE	0.63	65.79	81.13	62.31	64.41	70.18	77.76	85.24	75.00	2.87	1.70	71.57	61.52
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
NO. OBS.	24.	36.	53.	82.	59.	57.	54.	42.	40.	38.	31.	21.	505.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.67	0.41	0.13	0.20	0.12	0.21	0.08	0.13	0.24	0.33	0.34	0.10	0.22
GROSS MEAN													
STDEV	0.95	0.98	0.56	0.66	0.78	0.66	0.53	0.48	0.59	0.66	0.68	0.69	0.64
NO. OBS.	247.	148.	142.	149.	144.	152.	142.	145.	151.	148.	148.	142.	146.
NO. OBS.	47.	38.	53.	50.	59.	57.	54.	42.	40.	38.	32.	21.	509.
FORESHORE SLOPE													
MEAN (OBS)	3.88	5.11	4.23	3.37	2.93	2.61	2.43	2.67	4.20	4.79	4.04	4.61	3.65
STD DEV	1.70	2.10	2.50	2.49	1.48	1.26	0.92	1.03	1.67	2.45	1.68	1.94	2.05
NO. OBS.	24.	38.	53.	52.	59.	57.	54.	42.	40.	38.	32.	21.	510.
RIPE X O C C													
MEAN	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.20
STD DEV	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
NO. OBS.	24.	38.	53.	52.	59.	57.	54.	42.	40.	38.	32.	21.	510.
CUSPS X O C C													
MEAN	87.50	69.47	81.13	69.23	80.81	21.08	84.44	71.43	45.00	23.68	90.63	90.48	57.25
STD DEV	96.24	102.00	107.63	86.47	59.24	44.17	60.63	74.77	67.61	143.56	97.48	102.32	80.99
NO. OBS.	24.	38.	53.	82.	59.	57.	54.	42.	40.	38.	32.	21.	510.

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.	
														MEAN
PERIOD (SEC)	0.00	2.71	1.74	2.16	2.05	1.46	1.50	1.77	3.90	2.69	2.79	2.93	2.25	
MEAN	0.00	.95	.96	1.30	.80	.93	1.32	1.27	1.79	1.25	1.13	1.79	1.44	
STD DEV	0.00	7.	7.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
DIRECTION	0.00	13.93	14.21	12.14	11.64	9.99	8.53	10.05	12.19	11.43	11.68	11.68	11.61	
COMPASS SECTOR	0.00	2.11	2.90	2.44	2.56	2.43	2.48	2.31	2.96	2.99	3.26	2.44	3.31	
SECTOR	0.00	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
REAKER TYPE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PLUNGE	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
CURRENT OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
(FT/SEC)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
NET MEAN	0.00	-.04	-.11	-.25	-.24	-.25	-.14	-.26	-.22	-.39	-.24	-.18	-.14	
GROSS MEAN	0.00	.27	.47	.61	.68	.48	.36	.44	.65	.70	.63	.62	.56	
STD DEV	0.00	.26	.34	.54	.69	.44	.38	.44	.59	.39	.45	.44	.58	
NO. OBS.	0.	7.	23.	17.	21.	24.	24.	22.	21.	16.	19.	15.	209.	
FORESHORE SLOPE	0.00	6.00	4.87	2.89	2.48	2.04	2.54	2.68	4.00	5.56	4.84	4.40	3.61	
MEAN (DEG)	0.00	2.58	2.10	2.83	1.08	1.75	1.02	.89	1.73	3.12	1.80	1.16	2.15	
STD DEV	0.00	7.	7.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
RIPS % OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
CUSPS % OCC	0.00	100.00	100.00	100.00	18.10	20.83	29.17	86.36	57.14	56.25	100.00	86.67	66.82	
MEAN SPAC	0.00	93.86	95.34	94.16	74.50	67.20	90.43	93.79	91.75	143.56	101.63	111.06	94.38	
STD DEV	0.00	7.	7.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.	

## 5301 SHELTER COVE

## CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-70 AND ENDING 12-19-70.

## SURF OBS.

HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	3.69	3.45	2.70	2.56	1.37	1.70	1.32	1.40	2.11	2.45	3.77	2.63	2.35
STD DEV	2.60	1.70	1.45	1.59	.50	.46	.44	.68	1.15	1.07	1.36	1.72	1.56
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216

## PERIOD (SEC)

MEAN	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	9.87	11.58	12.16	12.16	12.04	13.81	9.58	13.43	12.75	11.30	10.62	11.47	11.60
STD DEV	3.49	2.80	3.08	2.83	3.72	3.59	3.29	3.29	1.66	3.24	1.94	2.54	3.10
NO. OBS.	15	20	20	19	19	19	22	20	19	22	13	6	216

## DIRECTION

## COASTAL SECTOR

DIRECTION	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
0 OCC, 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	100.00	95.00	100.00	100.00	100.00	90.21	100.00	100.00	96.12
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
NO. OBS.	0	0	0	19	19	20	22	20	19	22	13	6	160

## COMPASS SECTOR

DIRECTION	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
0 OCC, 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.21
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79
NO. OBS.	16	20	20	19	19	0	0	0	0	0	0	0	56

## BREAKER TYPE

## % OCC SPILL

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
35% PL	0.00	0.00	0.00	10.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
PL	0.00	0.00	0.00	73.68	10.53	35.00	40.81	10.00	32.63	68.18	100.00	100.00	35.81
PL/SL	0.00	0.00	0.00	15.79	8.47	6.00	58.09	49.00	47.37	31.82	0.00	0.00	60.93
SL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
SL/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216

## CURRENT OBS.

## % OCC

## NET MEAN

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
% OCC	0.06	0.56	0.11	0.21	0.21	0.09	0.02	0.01	0.27	0.28	0.49	0.81	0.24
NET MEAN	0.06	0.56	0.11	0.21	0.21	0.09	0.02	0.01	0.27	0.28	0.49	0.81	0.24

## GROSS MEAN

## STD DEV

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
GROSS MEAN	0.87	0.79	0.72	0.60	0.70	0.77	0.71	0.52	0.53	0.62	0.77	0.85	0.69
STD DEV	0.53	0.57	0.50	0.49	0.52	0.55	0.43	0.52	0.43	0.55	0.61	0.74	0.48
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216

## FORKSHOKE SLOPE

## MEAN (DEG)

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN (DEG)	3.69	5.15	3.65	2.56	2.95	2.60	2.14	2.65	4.42	4.23	5.06	5.83	3.56
STD DEV	1.01	1.42	2.87	1.12	1.61	1.05	0.71	1.18	1.61	1.54	1.61	3.06	1.87
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216

## RIPS % OCC

## MEAN SPAC.

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216

## CUSPS % OCC.

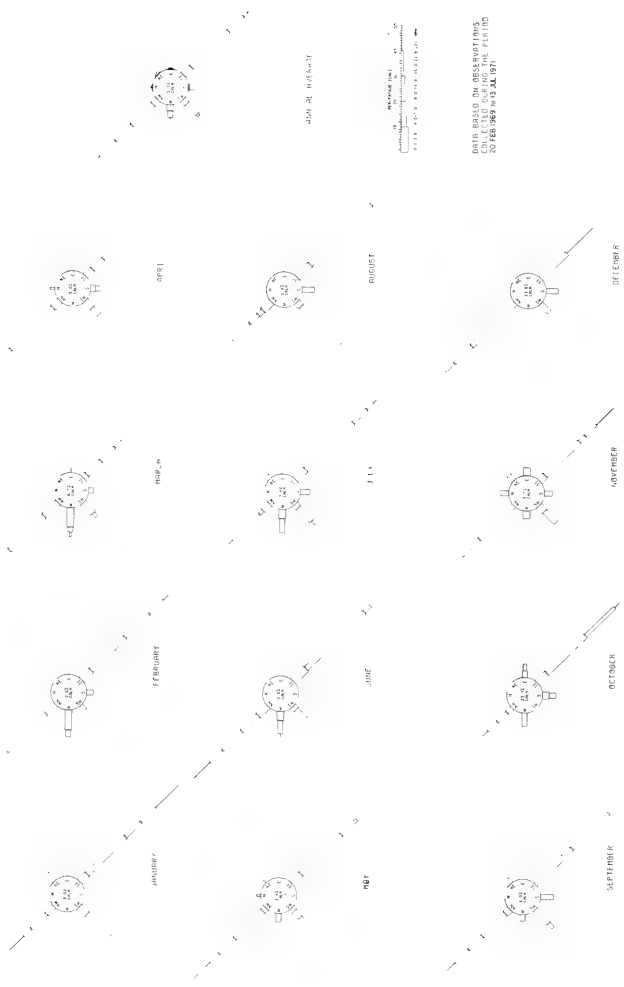
## MEAN SPAC.

TYPE	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
% OCC.	81.00	80.00	55.00	36.00	47.17	30.00	50.00	55.00	31.88	0.00	76.92	100.00	49.07
MEAN SPAC.	96.62	101.84	118.64	42.25	45.69	25.00	46.55	38.45	19.33	0.00	69.60	83.33	55.71
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	216



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	2.50	3.30	2.60	2.71	2.74	1.92	1.00	0.00	0.00	0.00	0.00	0.00	2.48
STD DEV	1.60	1.86	1.78	.99	1.24	1.04	0.00	0.00	0.00	0.00	0.00	0.00	1.43
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>PERIOD (SEC)</b>													
MEAN	11.79	11.40	12.42	11.64	11.61	12.91	11.60	0.00	0.00	0.00	0.00	0.00	11.90
STD DEV	2.04	1.76	2.45	.86	3.57	2.64	2.30	0.00	0.00	0.00	0.00	0.00	2.57
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>DIRECTION</b>													
<b>CONSTAL SECTOR</b>													
DEC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	94.74	100.00	100.00	0.00	0.00	0.00	0.00	0.00	1.20
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.80
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	75.00	90.91	100.00	100.00	100.00	69.23	37.50	0.00	0.00	0.00	0.00	0.00	85.54
PLUNGE	25.00	9.09	0.00	0.00	0.00	30.77	62.50	0.00	0.00	0.00	0.00	0.00	14.46
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	-1.10	-.37	-.20	-.12	-.44	-.33	-.21	0.00	0.00	0.00	0.00	0.00	-.37
GROSS MEAN	1.10	.43	.48	.82	.75	.82	.56	0.00	0.00	0.00	0.00	0.00	.71
STD DEV	.60	.45	.44	.52	.57	.66	.49	0.00	0.00	0.00	0.00	0.00	.46
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	4.25	4.45	3.90	5.07	3.42	3.69	2.88	0.00	0.00	0.00	0.00	0.00	3.96
STD DEV	2.66	2.73	2.47	2.67	1.64	1.65	.99	0.00	0.00	0.00	0.00	0.00	2.20
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>RIPS % CCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
<b>CUSPS % DEC.</b>													
MEAN SPAC.	100.00	100.00	90.00	71.43	0.00	7.69	75.00	0.00	0.00	0.00	0.00	0.00	54.22
NO. OBS.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	53.08

WIND ROSEC 05301 HELIP JNF



200 20 100 50 0

WIND ROSEC 05301  
HELIP JNF  
20 FEB 1989 09 53 AM EDT

WIND ROSEC 05301  
HELIP JNF  
20 FEB 1989 09 53 AM EDT

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>BURF OBBS.</b>													
HEIGHT (FT)	3-21	4-25	2-80	3-54	2-53	2-71	2-11	1-94	2-91	3-35	3-57	3-68	2-97
MEAN	1-66	2-69	1-61	1-59	3-35	.95	1-10	1-02	1-46	1-62	2-01	2-28	1-94
STD DEV	29	24	15	24	51	24	86	86	103	113	100	69	730
NO. OBS.													
<b>PERIOD (SEC)</b>	10.78	12.31	11.37	10.31	8.98	8.25	11.50	11.32	9.35	10.29	11.89	12.55	10.83
MEAN	29.6	19.4	24	20	28	25.1	49.5	35.6	18.7	22.8	28.6	2.59	3.09
STD DEV	28	23	14	24	49	25	91	84	108	108	100	72	716
NO. OBS.													
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
DEC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00	0.00	2.49	.85
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49	1.62
3	0.00	0.00	0.00	0.00	0.00	0.00	6.78	0.00	0.00	0.00	0.00	0.00	98.56
4	0.00	0.00	0.00	0.00	0.00	50.00	69.49	98.28	98.15	100.00	100.00	0.00	98.56
5	0.00	0.00	0.00	0.00	0.00	0.00	31.73	1.72	0.00	0.00	0.00	0.00	5.18
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	0	0	2	59	39	58	43	52	41	309
<b>COMPASS SECTOR</b>													
DEC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	370	370	370	370	370	370	370	370	370	370	370	370	370
NO. OBS.	27	23	15	24	29	25	78	24	82	82	22	22	401
<b>BREAKER TYPE</b>													
30CC SPILL	65.52	91.67	80.00	95.83	75.93	66.67	65.71	72.99	53.85	59.91	43.56	41.67	63.72
BP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.94	28.04	17.70	14.85	14.85	18.13
PLUNGE	27.59	4.17	0.00	4.17	12.96	29.17	4.20	9.41	6.85	13.77	27.72	6.33	15.77
SURGE	3.45	4.17	13.33	0.00	3.70	0.00	2.20	0.00	13.66	10.62	13.66	13.69	7.68
CALM	3.45	0.00	0.00	0.00	7.41	4.17	0.00	4.71	0.00	0.00	0.00	0.00	1.09
NO. OBS.	29	24	15	24	34	24	91	88	108	113	101	78	736
<b>CURRENT OBS.</b>													
(T)/SEC.													
NET MEAN	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.87	0.01	0.01	0.01	0.01
<b>GROSS MEAN</b>	.01	0.00	0.00	0.00	.13	.03	.13	.08	.87	.86	.82	.83	.85
STD DEV	.03	0.00	0.00	0.00	.30	.12	.20	.26	.78	.78	.71	.58	.48
NO. OBS.	26	20	10	19	36	28	80	46	78	78	71	58	488
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.77	8.09	6.53	6.20	6.79	7.14	7.02	7.20	6.87	7.01	6.80	7.09	7.62
STD DEV	.62	1.06	1.25	.62	2.07	1.23	1.55	1.55	1.85	1.64	1.33	1.59	1.59
NO. OBS.	26	22	15	20	33	18	66	49	68	83	71	58	501
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59
NO. OBS.	29	24	15	24	34	28	80	88	108	113	101	78	739
<b>CURPS % OCC</b>													
MEAN SPAC.	89.66	83.33	91.33	87.50	62.96	56.00	81.85	52.27	66.27	66.14	72.26	80.56	67.70
STD DEV	124.02	155.92	131.93	142.52	162.56	115.87	115.85	97.23	121.54	121.54	121.54	133.28	111.05
NO. OBS.	29	24	15	24	34	28	88	88	108	113	101	78	740

5026 MACFERRICHER CALIFORNIA SUMMARY FOR PERIOD STARTING 4-26-68 AND ENDING 12-31-68, ALL OBS.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	2.63	2.56	2.95	2.45	2.10	3.00	3.43	3.33	3.53	2.92
STD DEV	0.00	0.00	0.00	.92	3.52	.69	.91	1.35	1.62	1.39	1.24	1.83	1.95
NO. OBS.	0.	0.	0.	8.	43.	20.	79.	29.	24.	40.	33.	30.	256.
<b>PEPIND. (SEC)</b>													
MEAN	0.00	0.00	0.00	8.66	8.04	8.77	9.12	8.94	9.33	9.40	11.56	11.83	9.68
STD DEV	0.00	0.00	0.00	3.17	2.68	2.75	2.61	2.95	2.65	1.88	2.83	2.10	2.53
NO. OBS.	0.	0.	0.	8.	44.	20.	26.	25.	24.	39.	33.	31.	253.
<b>DIRECTION</b>													
<b>COMPS. SECTION</b>													
C. OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. OCC. NF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	25.00	13.00	30.00	0.00	18.00	9.00	13.00	0.00	0.00	11.00
N	0.00	0.00	0.00	75.00	73.91	60.00	78.57	80.99	80.57	82.73	84.03	100.00	81.27
CALM	0.00	0.00	0.00	0.00	13.04	0.00	7.14	2.69	4.25	2.78	3.03	0.00	5.77
NO. OBS.	0.	0.	0.	8.	46.	20.	28.	29.	22.	36.	33.	29.	231.
<b>BREAKER TYPE</b>													
KNOCC SPILL	0.00	0.00	0.00	87.50	78.26	65.00	82.76	70.37	87.50	82.50	52.94	70.97	74.52
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	12.50	15.22	35.00	13.79	14.61	12.50	15.00	47.06	19.35	20.89
SURGE	0.00	0.00	0.00	0.00	4.35	0.00	3.05	0.00	0.00	2.50	0.00	0.68	2.70
CALM	0.00	0.00	0.00	0.00	2.17	0.00	0.00	14.61	0.00	0.00	0.00	0.00	1.93
NO. OBS.	0.	0.	0.	8.	46.	20.	29.	27.	24.	40.	34.	31.	259.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.06	0.27	0.03	0.04	0.03	0.03
GROSS MEAN	0.00	0.00	0.00	0.00	0.17	0.04	0.00	0.06	0.27	0.16	0.05	0.06	0.11
STD DEV	0.00	0.00	0.00	0.00	0.34	0.12	0.00	0.19	0.59	0.32	0.18	0.19	0.29
NO. OBS.	0.	0.	0.	5.	26.	9.	13.	13.	18.	26.	26.	28.	164.
<b>FORESHORE SLOPP</b>													
MEAN (DEG)	0.00	0.00	0.00	6.00	7.08	7.45	8.31	7.72	7.81	8.00	7.23	7.89	7.63
STD DEV	0.00	0.00	0.00	1.14	2.27	1.13	0.95	1.56	1.11	0.94	0.95	1.01	1.36
NO. OBS.	0.	0.	0.	5.	25.	11.	16.	18.	16.	26.	26.	27.	170.
<b>RIPS</b>													
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	8.	46.	21.	29.	29.	24.	40.	34.	31.	262.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	62.50	56.22	52.38	55.17	55.17	75.00	57.50	73.53	90.32	64.12
NO. OBS.	0.	0.	0.	100.00	101.81	117.27	112.25	95.50	109.67	121.17	124.36	148.00	115.52
NO. OBS.	0.	0.	0.	8.	46.	21.	29.	29.	24.	40.	34.	31.	262.

5024 MACKERRICHIE CALIFORNIA SUMMARY FOR PERIOD STARTING 1-1-69 AND ENDING 12-31-69.

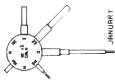
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS. (EST)</b>													
WIND (KTS)	3.57	0.41	2.79	4.00	2.38	.50	0.00	0.00	1.63	3.97	5.91	7.25	4.08
WIND DIR	157	275	167	167	210	71	0.00	0.00	147	171	219	324	231
NO. OBS.	27	22	14	16	6	2	0	0	24	30	22	6	173
<b>PERIOD (SFC)</b>													
MEAN	10.76	12.25	11.09	11.13	10.24	4.70	0.00	0.00	6.78	10.15	11.50	12.75	10.76
STD DEV	2.09	1.97	2.51	2.45	2.53	0.00	0.00	0.00	1.19	1.68	2.91	3.31	2.43
NO. OBS.	27	22	13	16	5	1	0	0	24	30	22	6	168
<b>DIRECTION</b>													
<b>COASTAL SECTION</b>													
WIND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIND DIR	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
<b>COMPASS SECTION</b>													
WIND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIND DIR	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>BREAKER TYPE</b>													
WIND	100.00	100.00	100.00	100.00	82.50	50.00	0.00	0.00	91.87	93.10	100.00	0.00	91.59
WIND DIR	21	0.00	14.29	0.00	37.50	50.00	0.00	0.00	8.33	6.29	12	0	6.02
NO. OBS.	25	21	14	14	8	2	0	0	24	29	12	0	151
<b>CURRENT OBS. (FT/SEC)</b>													
WIND	70.37	90.91	76.57	100.00	62.50	50.00	0.00	0.00	100.00	90.00	81.82	100.00	86.13
WIND DIR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	29.63	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>FRESHWATER SLOPE</b>													
WIND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIND DIR	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	27	22	14	16	8	2	0	0	24	30	22	6	173
<b>RIPS</b>													
WIND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WIND DIR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	27	22	14	16	8	2	0	0	24	30	22	6	173
<b>CUSPS</b>													
WIND	86.36	150.26	155.34	155.75	105.00	75.00	0.00	0.00	100.00	96.87	95.45	100.00	94.00
WIND DIR	123.67	123.67	123.67	123.67	123.67	123.67	0.00	0.00	123.67	123.67	123.67	123.67	123.67
NO. OBS.	27	22	14	16	8	2	0	0	24	30	22	6	173

5026 WACKENHICHER CALIFORNIA SUMMARY FOR PERIOD STARTING 10 06-70 AND ENDING 12-28-70.

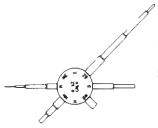
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF DRG.</b>													
HEIGHT (FT)	1.00	2.50	3.00	0.00	0.00	2.50	1.95	1.86	2.50	2.06	2.60	2.00	2.38
MEAN	1.01	2.71	0.00	0.00	0.00	2.71	0.81	0.82	1.77	2.12	1.23	1.60	1.34
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	2	2	1	0	0	2	66	50	55	43	45	31	301
<b>PERIOD (SEC)</b>													
MEAN	11.50	13.50	15.00	0.00	0.00	9.85	12.01	12.35	9.60	11.39	12.33	13.18	11.95
STD DEV	0.00	0.00	0.00	0.00	0.00	0.21	4.28	3.33	1.87	2.69	2.85	2.73	3.31
NO. OBS.	2	1	1	0	0	2	62	59	56	35	45	33	293
<b>DIRECTION</b>													
COASTAL SECTOR													
000.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00	0.00	3.03	0.68
010.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
020.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
030.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
040.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
050.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
060.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
070.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
090.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	0	0	2	59	58	54	43	44	33	293
<b>COMPASS SECTOR</b>													
000.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
010.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
020.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
030.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
040.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
050.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
060.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
070.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
090.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	2	2	1	0	0	0	0	0	0	0	0	0	5
<b>BREAKER TYPE</b>													
30CC SPILL	0.00	100.00	100.00	0.00	0.00	100.00	87.10	74.14	19.64	13.95	17.79	0.00	41.78
SMALL	0.00	0.00	0.00	0.00	0.00	0.00	11.89	10.87	44.84	48.51	33.33	74.79	38.21
PIECE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	2	2	1	0	0	2	62	58	56	43	45	33	304
<b>CURRENT OBS.</b>													
MEAN (FT/SEC)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	2	2	1	0	0	0	0	0	0	0	0	0	0
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.00	10.00	5.00	0.00	0.00	6.00	6.33	6.85	6.59	6.74	6.35	6.15	6.55
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.21	1.46	1.23	1.26	1.26	1.27	1.28
NO. OBS.	2	2	1	0	0	1	30	26	29	27	26	23	166
<b>RIPS ± UCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
NO. OBS.	2	2	1	0	0	2	61	59	56	43	45	33	304
<b>CUSPS ± OCC.</b>													
MEAN SPAC.	100.00	50.00	100.00	0.00	0.00	80.00	50.85	51.79	58.14	60.00	60.00	66.87	55.81
STD DEV	13.50	135.00	135.00	0.00	0.00	150.00	114.65	96.13	111.10	122.56	109.52	120.85	110.41
NO. OBS.	2	2	1	0	0	2	62	59	56	43	45	33	305

WIND ROSES 05026 MACKERRICHER

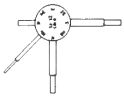
CALIFORNIA



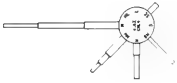
JANUARY



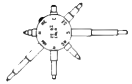
FEBRUARY



MARCH

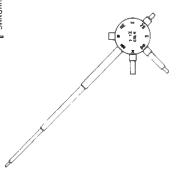


APRIL

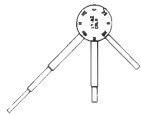


ANNUAL AVERAGE

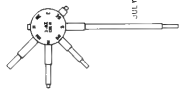
WIND ROSE DATA  
 COLLECTED DURING THE PERIOD  
 25 APR 68 TO 28 DEC 70



MAY



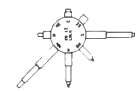
JUNE



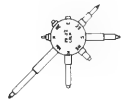
JULY



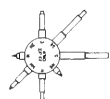
AUGUST



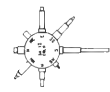
SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

WIND ROSES ON OBSERVATIONS  
 COLLECTED DURING THE PERIOD  
 25 APR 68 TO 28 DEC 70

3025 RUSSIAN GULCH CALIFORNIA SUMMARY FOR PERIOD STARTING 4-25-68 AND ENDING 8-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	1.12	1.43	1.21	1.11	1.80	.91	1.40	1.00	.38	1.15	1.62	1.94	1.35
STD DEV	.78	.65	.86	1.27	3.44	2.59	2.16	.45	.52	.92	.94	.73	1.69
NO. OBS.	17.	37.	29.	36.	44.	21.	35.	11.	6.	48.	48.	35.	373.
<b>PERIOD (SEC)</b>													
MEAN	10.54	10.51	11.13	10.12	10.10	10.22	10.41	12.26	10.48	10.30	11.29	11.81	10.69
STD DEV	1.80	2.54	1.39	2.73	3.33	1.82	1.63	1.68	2.01	2.04	2.59	3.39	2.51
NO. OBS.	15.	26.	23.	36.	45.	23.	35.	11.	8.	45.	47.	35.	349.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
DIR OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	88.89	100.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	18.	11.	0.	0.	0.	0.	29.
<b>COMPASS SECTOR</b>													
DIR OCC.	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	94.12	97.30	100.00	97.30	93.65	93.24	67.25	0.00	0.00	100.00	97.92	100.00	97.34
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	17.	37.	28.	37.	44.	21.	16.	0.	8.	48.	48.	34.	336.
<b>BREAKER TYPE</b>													
KOCC SP/PL	88.24	91.89	96.55	97.37	97.78	100.00	45.71	0.00	100.00	89.58	83.33	65.71	83.16
PLUNGE	5.88	8.11	3.45	2.63	2.22	0.00	0.00	0.00	0.00	6.33	10.67	3.29	6.29
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	5.88	0.00	0.00	0.00	0.00	0.00	54.29	100.00	0.00	0.00	0.00	0.00	6.82
NO. OBS.	17.	37.	29.	38.	45.	23.	35.	11.	8.	48.	48.	35.	374.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	.01	.02	.01	.00	0.00	0.00	0.00	.03	0.00	.01
GROSS MEAN	0.00	0.00	0.00	.01	.04	.01	.00	0.00	0.00	0.00	.03	0.00	.01
STD DEV	0.00	0.00	0.00	.07	.14	.03	.01	0.00	0.00	0.00	.13	0.00	.07
NO. OBS.	10.	19.	15.	24.	28.	14.	16.	0.	5.	29.	26.	21.	207.
<b>FORESHORE SLOPE</b>													
MEAN (NO. OBS)	2.73	2.76	2.10	2.55	4.11	5.00	7.07	6.09	6.60	5.08	3.04	3.62	4.17
STD DEV	1.42	1.20	1.00	1.26	4.04	4.38	2.20	1.22	1.89	1.26	1.04	1.16	2.73
NO. OBS.	11.	27.	21.	22.	27.	13.	29.	11.	5.	26.	24.	21.	237.
<b>RIPA % OCC</b>													
MEAN SPIC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	17.	37.	30.	36.	45.	23.	36.	11.	8.	48.	48.	35.	375.
<b>CUSPS % OCC</b>													
MEAN SPIC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	17.	37.	30.	36.	45.	23.	36.	11.	8.	48.	48.	35.	375.



5025 RUSSIAN GUICH CALIFORNIA SUMMARY FOR PERIOD STARTING 4-25-68 AND ENDING 12-20-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	1.18	2.04	.91	1.04	0.00	.38	.96	1.71	1.50	1.34
STD DEV	0.00	0.00	0.00	2.12	4.02	2.65	2.91	0.00	.52	.86	1.00	.73	2.43
NO. OBS.	0.	0.	0.	11.	32.	22.	16.	0.	8.	26.	74.	16.	157.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	9.95	9.90	10.18	10.26	0.00	10.48	9.84	10.50	9.72	10.08
STD DEV	0.00	0.00	0.00	3.40	3.78	1.65	1.19	0.00	2.01	1.05	1.07	1.52	2.57
NO. OBS.	0.	0.	0.	11.	33.	22.	16.	0.	8.	25.	24.	16.	155.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
O OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	9.13	95.00	6.25	0.00	0.00	0.00	0.00	0.00	1.30
NW	0.00	0.00	0.00	0.00	3.75	95.00	67.50	0.00	100.00	96.43	100.00	100.00	95.45
W CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W CALM	0.00	0.00	0.00	10.00	3.13	5.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	10.	32.	20.	16.	0.	8.	28.	24.	16.	154.
<b>BREAKER TYPE</b>													
X OCC	0.00	0.00	0.00	100.00	100.00	100.00	100.00	0.00	100.00	96.43	87.50	87.50	96.20
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	11.	33.	22.	16.	0.	8.	26.	24.	16.	156.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	.06	.03	.01	.00	0.00	0.00	0.00	.07	0.00	.02
GROSS MEAN	0.00	0.00	0.00	.06	.07	.01	.00	0.00	0.00	0.00	.07	0.00	.03
STD DEV	0.00	0.00	0.00	.15	.08	.03	.02	0.00	0.00	0.00	.19	0.00	.11
NO. OBS.	0.	0.	0.	6.	18.	13.	11.	0.	5.	16.	13.	11.	93.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	3.83	4.58	5.00	5.50	0.00	6.60	5.60	3.42	4.27	4.80
STD DEV	0.00	0.00	0.00	1.94	4.63	4.38	1.00	0.00	1.52	1.12	1.24	1.10	2.89
NO. OBS.	0.	0.	0.	6.	19.	13.	12.	0.	5.	15.	12.	11.	93.
<b>RIPS</b>													
X OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	11.	33.	22.	16.	0.	8.	28.	24.	16.	158.
<b>CUSPS</b>													
X OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	11.	33.	22.	16.	0.	8.	28.	24.	16.	158.

5025 RUSSELL GULCH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-1-69 AND ENDING 12-31-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
WEIGHT (FT)													
MEAN	1.00	1.28	.90	1.07	1.08	1.00	0.00	0.00	0.00	1.40	1.13	2.32	1.27
STD DEV	.60	.46	.55	.47	.29	0.00	0.00	0.00	0.00	.94	.80	.48	.74
NO. OBS.	12.	18.	20.	27.	12.	1.	0.	0.	0.	20.	24.	19.	153.
<b>PERIOD (SEC)</b>													
MEAN	9.84	9.01	10.77	10.20	10.63	11.20	0.00	0.00	0.00	10.69	12.11	13.57	10.96
STD DEV	1.01	1.14	1.07	2.46	1.50	0.00	0.00	0.00	0.00	2.75	3.06	3.56	2.67
NO. OBS.	12.	18.	20.	25.	12.	1.	0.	0.	0.	20.	23.	19.	150.
<b>DIRECTION</b>													
<b>COMPASS SECTION</b>													
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	18.	19.	27.	12.	1.	0.	0.	0.	20.	24.	18.	131.
<b>BREAKER TYPE</b>													
XOCC	100.00	63.33	95.00	96.30	91.67	100.00	0.00	0.00	0.00	80.00	79.17	47.37	83.66
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUNGE	0.00	16.67	5.00	3.70	6.33	0.00	0.00	0.00	0.00	20.00	20.83	52.83	16.34
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	18.	20.	27.	12.	1.	0.	0.	0.	20.	24.	19.	153.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRASS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	13.	13.	18.	10.	1.	0.	0.	0.	13.	13.	10.	98.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	2.17	2.20	2.15	2.06	3.00	0.00	0.00	0.00	0.00	4.36	2.67	2.90	2.66
STD DEV	1.60	1.14	1.14	.25	1.85	0.00	0.00	0.00	0.00	1.12	.65	.74	1.25
NO. OBS.	6.	10.	13.	16.	8.	0.	0.	0.	0.	11.	12.	10.	86.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	18.	21.	27.	12.	1.	0.	0.	0.	20.	24.	19.	154.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	4.17	5.26	7.79
NO. OBS.	12.	18.	21.	27.	12.	1.	0.	0.	0.	20.	20.	15.	8.26

SUMMARY FOR PERIOD STARTING 1-1-79 AND ENDING 8-30-79

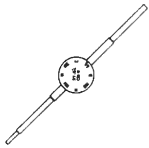
CALIFORNIA

5025 RUSSIAN GULCH

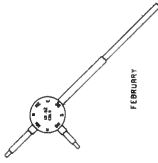
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SUNF. OBS.</b>													
HEIGHT (FT)	1.40	1.89	0.00	0.00	0.00	0.00	1.08	1.00	0.00	0.00	0.00	0.00	1.58
MEAN	1.14	1.05	0.00	0.00	0.00	0.00	1.25	.45	0.00	0.00	0.00	0.00	0.00
STD DEV	.77	.9	0.00	0.00	0.00	0.00	19.	11.	0.	0.	0.	0.	63.8
NO. OBS.	5.	19.	0.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.
<b>PERIOD (SEC)</b>													
MEAN	13.33	13.85	0.00	0.00	0.00	0.00	10.53	12.28	0.00	0.00	0.00	0.00	11.98
STD DEV	1.53	1.07	0.00	0.00	0.00	0.00	1.95	1.68	0.00	0.00	0.00	0.00	2.11
NO. OBS.	3.	4.	3.	0.	0.	0.	19.	11.	0.	0.	0.	0.	44.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
D UCC	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	88.89	100.00	0.00	0.00	0.00	0.00	93.10
4	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	3.45
5	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	3.45
NO. CAL.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	18.	11.	0.	0.	0.	0.	29.
<b>COMPASS SECTOR</b>													
D UCC	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	90.74	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.94
NO. CAL.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.00	5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.06
	5.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	33.
<b>BREAKER TYPE</b>													
TOCC	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59
SUNGE	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	47.62
CALM	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59
NO. OBS.	5.	19.	0.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	8.	2.	0.	0.	0.	5.	0.	0.	0.	0.	0.	16.
<b>FURROWSHORE SURF</b>													
MEAN CGL	3.00	2.00	0.00	0.00	0.00	0.00	8.16	8.09	0.00	0.00	0.00	0.00	5.40
STD DEV	1.18	.76	0.00	0.00	0.00	0.00	2.16	1.22	0.00	0.00	0.00	0.00	3.06
NO. OBS.	5.	17.	8.	0.	0.	0.	17.	11.	0.	0.	0.	0.	38.
<b>RIPS &amp; OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	5.	19.	9.	0.	0.	0.	19.	11.	0.	0.	0.	0.	0.
<b>CUSPS &amp; OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	5.	19.	9.	0.	0.	0.	19.	11.	0.	0.	0.	0.	0.

WIND ROSES 05025 RUSSIAN GULCH

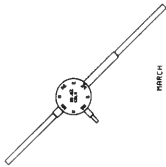
CALIFORNIA



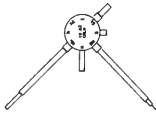
JANUARY



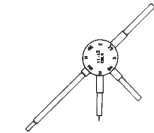
FEBRUARY



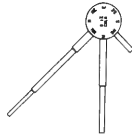
MARCH



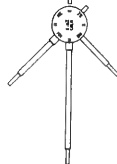
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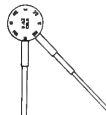
MAY



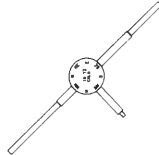
JUNE



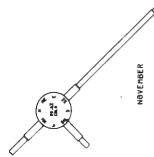
JULY



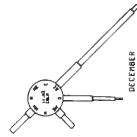
AUGUST



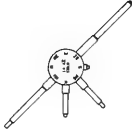
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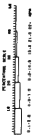
NOVEMBER



DECEMBER



ANNUAL AVERAGE



CALCULATED ON OBSERVATIONS  
CONTINUED FROM PAGE 10 TO 30 AUG 70  
25 APR 68 BY 5025 RUC/TJD

INSUFFICIENT DRIP

SEPTEMBER

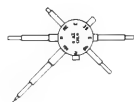
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	.84	.84	.50	.63	1.02	1.03	2.39	2.07	1.62	1.06
STD DEV	0.00	0.00	0.00	.53	2.79	.60	.63	1.36	.63	1.23	1.39	2.10	1.63
NO. OBS.	0.	0.	0.	0.	56.	56.	49.	52.	29.	23.	15.	11.	302.
<b>PIRIND (SEC)</b>													
MEAN	0.00	0.00	0.00	0.32	6.57	6.74	6.80	7.37	10.01	11.32	10.94	11.57	7.82
STD DEV	0.00	0.00	0.00	2.16	.98	1.31	1.52	1.49	3.16	2.76	2.02	2.57	2.51
NO. OBS.	0.	0.	0.	10.	33.	57.	50.	51.	28.	23.	13.	7.	294.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
G OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	1.85	0.00	0.00	1.92	6.90	0.00	0.00	0.00	1.35
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00	0.00	0.00	0.34
SW	0.00	0.00	0.00	0.00	87.04	94.55	70.83	82.69	65.52	0.00	0.00	0.00	68.35
W	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	3.45	34.78	66.67	33.33	11.78
NW	0.00	0.00	0.00	11.11	1.85	3.64	0.00	1.92	10.34	56.52	13.33	0.00	7.74
CALM	0.00	0.00	0.00	22.22	9.26	1.82	4.17	11.54	13.79	8.70	20.00	50.00	10.44
NO. OBS.	0.	0.	0.	0.	54.	55.	48.	52.	29.	23.	15.	12.	297.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	22.22	52.94	69.23	78.03	59.86	93.10	52.38	37.50	21.03	61.56
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	77.78	47.06	30.77	21.57	37.25	3.45	42.86	62.50	42.86	35.03
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	1.02
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	4.76	0.00	0.00	2.38
NO. OBS.	0.	0.	0.	0.	51.	52.	51.	51.	29.	21.	16.	14.	294.
<b>CURRENT OBS.</b>													
<b>(FT) SEC</b>													
NET MEAN	0.00	0.00	0.00	0.02	0.12	0.06	0.02	0.06	0.06	0.01	0.00	0.04	0.05
GROSS MEAN	0.00	0.00	0.00	0.03	0.16	0.09	0.08	0.07	0.06	0.03	0.00	0.04	0.08
STD DEV	0.00	0.00	0.00	0.05	0.22	0.10	0.07	0.08	0.06	0.08	0.00	0.10	0.11
NO. OBS.	0.	0.	0.	5.	29.	28.	25.	28.	25.	17.	18.	4.	161.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	4.60	6.04	6.61	6.54	6.86	6.86	5.50	4.56	4.21	6.07
STD DEV	0.00	0.00	0.00	1.67	2.31	1.29	1.23	0.88	0.73	1.46	1.15	0.89	1.61
NO. OBS.	0.	0.	0.	5.	27.	28.	28.	29.	21.	16.	16.	14.	184.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.32
NO. OBS.	0.	0.	0.	10.	58.	57.	51.	53.	30.	24.	17.	14.	314.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	50.00	50.00	49.12	52.94	49.06	76.67	29.17	35.99	18.29	48.73
NO. OBS.	0.	0.	0.	10.	58.	57.	51.	53.	30.	24.	17.	14.	314.

WIND ROSES 05024 VAN DAMME

CALIFORNIA

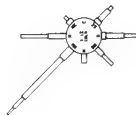
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JANUARY



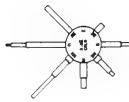
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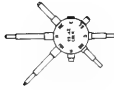
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MARCH



INSUFFICIENT DATA

APRIL



ANNUAL INVERSE

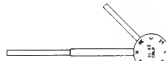
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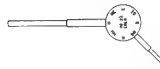
JUNE



JULY



AUGUST



DATA BASED ON OBSERVATIONS  
FROM APRIL 1960 TO  
28 APR 69 TO 31 DEC 69

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL DBB.
<b>BURE OBS.</b>													
HEIGHT (FT)	0.00	5.50	3.00	5.67	3.56	3.03	4.20	4.00	4.75	5.00	2.50	0.00	4.03
STD DEV	0.00	.71	0.00	.56	1.67	1.40	.85	.82	2.06	2.03	.71	0.00	1.84
NO. OBS.	0.	2.	2.	1.	0.	7.	5.	6.	4.	2.	2.	0.	40.
<b>PERIOD (SEC)</b>													
MEAN	0.00	13.75	0.00	14.25	15.60	11.66	15.80	15.00	15.13	19.50	15.00	0.00	14.80
STD DEV	0.00	4.60	0.00	2.47	4.49	1.46	3.13	2.48	2.46	6.16	4.24	0.00	3.52
NO. OBS.	0.	2.	0.	2.	6.	7.	5.	4.	6.	2.	2.	0.	36.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
COCC 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC 3	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
COCC 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	4.	0.	0.	0.	0.	0.	0.	6.
<b>COMPASS SECTOR</b>													
COCC NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC S	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC SW	0.00	0.00	0.00	0.00	0.00	0.00	60.00	100.00	100.00	100.00	100.00	0.00	44.88
COCC W	0.00	100.00	100.00	100.00	80.00	100.00	40.00	0.00	0.00	0.00	0.00	0.00	50.00
COCC NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	2.	2.	3.	5.	3.	5.	4.	6.	2.	2.	0.	32.
<b>BREAKER TYPE</b>													
COCC SPILL	0.00	0.00	100.00	66.67	100.00	100.00	100.00	100.00	100.00	50.00	100.00	0.00	90.00
COCC PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC SURGE	0.00	100.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COCC CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
NO. OBS.	0.	2.	2.	3.	6.	7.	5.	6.	6.	2.	2.	0.	40.
<b>CURRENT OBS.</b>													
(FT/SEC)	0.00	1.13	-.17	.47	.17	.09	.24	.53	.71	.21	0.00	0.00	.08
NET MEAN	0.00	.13	.17	.47	.42	.50	.60	.52	1.04	.21	.09	0.00	.45
GROSS MEAN	0.00	.18	.21	.53	.42	.41	.59	.41	.68	.30	.17	0.00	.36
STD DEV	0.00	.06	.02	.3.	.09	.07	.05	.06	.4.	.2.	.2.	0.	.40.
NO. OBS.	0.	2.	2.	3.	9.	7.	5.	6.	4.	2.	2.	0.	40.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	0.00	12.00	9.00	9.00	5.67	5.66	8.60	9.00	9.75	5.50	4.50	0.00	7.46
STD DEV	0.00	5.66	0.00	0.54	1.22	2.91	1.64	1.41	1.71	2.12	.71	0.00	3.52
NO. OBS.	0.	2.	1.	3.	9.	7.	5.	4.	4.	2.	2.	0.	39.
<b>RIPS &amp; DEC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	2.	2.	3.	6.	7.	5.	4.	4.	2.	2.	0.	40.
<b>CUSPS &amp; DEC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	11.11	28.87	80.00	75.00	75.00	50.00	50.00	0.00	37.50
STD DEV	0.00	0.00	0.00	0.00	43.00	90.00	79.75	60.00	71.67	200.00	50.00	0.00	70.66
NO. OBS.	0.	2.	2.	3.	6.	7.	5.	4.	4.	3.	2.	0.	40.

5300 NAVARRO

CALIFORNIA

SUMMARY FOR PERIOD STARTING 2-24-69 AND ENDING 11-12-69.

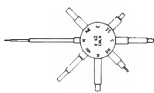
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	5.50	3.00	5.67	4.60	4.33	4.20	4.00	4.75	5.00	2.50	0.00	4.41
MEAN	0.00	0.71	0.00	0.58	1.52	1.53	.45	.82	2.06	2.83	.71	0.00	1.39
STD DEV	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	3.20
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	3.20
<b>PERIOD (SECT)</b>													
MEAN	0.00	13.75	0.00	14.25	16.20	11.00	15.90	15.00	15.13	19.50	15.00	0.00	15.10
STD DEV	0.00	4.60	0.00	2.47	5.83	1.73	3.13	2.85	2.46	6.36	4.24	0.00	3.71
NO. OBS.	0.00	2.00	0.00	2.00	4.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	26.00
<b>DIRECTION</b>													
COMPASS SECTOR													
DEC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13
SW	0.00	0.00	0.00	0.00	0.00	0.00	60.00	100.00	100.00	100.00	100.00	0.00	46.88
W	0.00	100.00	100.00	100.00	80.00	100.00	40.00	0.00	0.00	0.00	0.00	0.00	50.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	32.00
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	100.00	66.67	100.00	100.00	100.00	100.00	100.00	50.00	100.00	0.00	87.50
SPYPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLNCE	0.00	100.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.38
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	3.13
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	32.00
<b>CURRENT OBS.</b>													
(FT/SEC)	0.00	0.13	0.17	0.47	0.26	0.15	0.24	0.52	0.71	0.21	0.00	0.00	0.02
NET MEAN	0.00	0.13	0.17	0.47	0.31	0.57	0.40	0.52	1.04	0.21	0.09	0.00	0.44
GROSS MEAN	0.00	0.16	0.24	0.53	0.37	0.57	0.50	0.21	0.48	0.30	0.17	0.00	0.36
STD DEV	0.00	0.20	0.20	0.30	0.50	0.30	0.50	0.40	0.40	0.20	0.20	0.00	0.32
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	32.00
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	12.00	9.00	9.00	5.00	8.00	8.80	9.00	9.75	5.50	4.50	0.00	8.00
STD DEV	0.00	5.66	0.00	9.54	0.71	3.61	1.64	1.41	1.71	2.12	0.71	0.00	3.70
NO. OBS.	0.00	2.00	1.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	31.00
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	32.00
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	20.00	66.67	60.00	75.00	75.00	50.00	50.00	0.00	46.68
NO. OBS.	0.00	2.00	2.00	3.00	5.00	3.00	5.00	4.00	4.00	2.00	2.00	0.00	65.95



5300 NAVARRO CALIFORNIA SUMMARY FOR PERIOD STARTING 5- 7-70 AND ENDING 6-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	0.00	2.25	2.75	0.00	0.00	0.00	0.00	0.00	0.00	2.50
STD DEV	0.00	0.00	0.00	0.00	.50	.96	0.00	0.00	0.00	0.00	0.00	0.00	.76
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	15.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	13.75
STD DEV	0.00	0.00	0.00	0.00	3.46	1.00	0.00	0.00	0.00	0.00	0.00	0.00	2.71
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. 3	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
OCC. 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.00	.06	.05	0.00	0.00	0.00	0.00	0.00	0.00	.05
GROSS MEAN	0.00	0.00	0.00	0.00	.56	.45	0.00	0.00	0.00	0.00	0.00	0.00	.50
STD DEV	0.00	0.00	0.00	0.00	.46	.59	0.00	0.00	0.00	0.00	0.00	0.00	.36
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	6.50	4.25	0.00	0.00	0.00	0.00	0.00	0.00	5.38
STD DEV	0.00	0.00	0.00	0.00	1.29	.50	0.00	0.00	0.00	0.00	0.00	0.00	1.51
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
<b>CUSPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.

WIND ROSES 5300 NAVARRO CALIFORNIA



NO DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

JANUARY

FEBRUARY

MARCH

APRIL

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

ANNUAL AVERAGE

MAY

JUNE

JULY

AUGUST

NO DATA

NO DATA

NO DATA

NO DATA

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

DATA WINDS AND DIRECTIONALS  
COLLECTED DURING THE PERIOD  
24 FEB 69 TO 30 JUN 70

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
W EIGHT (FT)	3.05	0.00	0.00	3.80	3.46	3.19	3.60	3.68	3.64	3.61	4.42	4.07	3.57
STD DEV	1.01	0.00	0.00	0.84	1.15	0.83	1.80	0.76	1.34	1.28	0.66	1.73	1.25
NO. OBS.	38	0.	0.	10.	37.	56.	188.	84.	50.	31.	26.	27.	505.
<b>PERIOD (SEC)</b>													
MEAN	11.46	0.00	0.00	11.91	12.15	12.77	10.78	12.61	13.04	13.17	14.09	13.46	12.19
STD DEV	2.35	0.00	0.00	1.34	2.18	3.19	4.03	3.41	3.52	3.17	1.52	1.89	3.44
NO. OBS.	35.	0.	0.	10.	37.	55.	152.	84.	52.	30.	26.	27.	508.
<b>DIRECTION</b>													
<b>COSTAL SECTOR</b>													
0 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	2.59	0.00	0.00	0.00	0.00	0.00	1.56
4	0.00	0.00	0.00	0.00	0.00	0.00	30.77	24.00	0.00	0.00	0.00	0.00	70.31
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.13
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	3.19	25.	0.	0.	0.	0.	8.84
<b>COMPASS SECTOR</b>													
0 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>BREAKER TYPE</b>													
TOCC SPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOCC SPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	13.16	0.00	0.00	0.00	0.00	0.00	19.74	25.61	0.00	0.00	0.00	0.00	41.28
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.22
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.49
NO. OBS.	38.	0.	0.	10.	36.	55.	152.	84.	52.	30.	26.	27.	499.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-63	0.00	0.00	0.00	0.00	-1.15	-1.06	-1.05	0.84	0.51	0.25	0.33	0.75
GROSS MEAN	1.18	0.00	0.00	1.01	1.47	1.29	1.47	1.12	1.45	0.82	1.30	1.72	1.32
STD DEV	0.64	0.00	0.00	0.49	0.76	0.73	0.99	0.79	0.66	0.57	0.75	0.58	0.80
NO. OBS.	19.	0.	0.	5.	19.	27.	82.	51.	23.	16.	13.	14.	269.
<b>FORESHORE SLOPE</b>													
MEAN	12.00	0.00	0.00	3.00	18.50	13.52	9.75	13.20	15.83	15.00	14.93	13.71	12.62
STD DEV	0.00	0.00	0.00	0.00	0.85	5.54	5.19	4.18	3.39	3.75	4.01	2.05	4.61
NO. OBS.	19.	0.	0.	1.	14.	27.	77.	45.	23.	16.	14.	14.	250.
<b>RIPS % OCC</b>													
MEAN	17.39	0.00	0.00	88.84	40.63	42.33	30.07	5.13	26.63	5.88	13.33	13.33	25.06
STD DEV	0.00	0.00	0.00	775.00	630.77	654.55	442.24	442.50	645.45	800.00	800.00	750.00	656.98
NO. OBS.	23.	0.	0.	9.	32.	32.	133.	76.	61.	17.	15.	13.	435.
<b>CUSPS % OCC</b>													
MEAN	50.00	0.00	0.00	50.00	50.00	52.73	50.00	51.19	50.00	48.39	50.00	51.85	50.49
STD DEV	100.00	0.00	0.00	200.00	173.68	173.68	132.00	114.20	103.33	103.33	100.00	142.76	150.50
NO. OBS.	38.	0.	0.	10.	36.	55.	152.	84.	52.	31.	26.	27.	515.

5023 MANCHESTER BCH CALIFORNIA SUMMARY FOR PERIOD STARTING 4-26-68 AND ENDING 12-31-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
W EIGHT (FT)	0.00	0.00	0.00	3.40	3.46	3.21	3.55	3.49	3.64	3.81	4.42	4.07	3.63
STD DEV	0.00	0.00	0.00	.84	1.35	.77	1.81	1.07	1.34	1.28	.86	1.73	1.35
NO. OBS.	0.	0.	0.	10.	37.	43.	56.	59.	50.	31.	26.	27.	341.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	11.91	12.15	13.30	13.93	13.00	13.04	13.17	14.09	13.46	13.22
STD DEV	0.00	0.00	0.00	1.34	2.18	1.28	3.67	3.93	3.52	3.17	1.52	1.89	3.11
NO. OBS.	0.	0.	0.	10.	37.	44.	60.	59.	52.	30.	26.	27.	343.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D DEC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	83.78	95.33	94.74	100.00	85.11	89.66	86.46	100.00	91.62
NW	0.00	0.00	0.00	0.00	13.51	4.65	5.26	0.00	14.89	10.34	11.54	0.00	8.08
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	10.	37.	43.	57.	59.	47.	29.	26.	26.	334.
<b>WINDLAKER TYPE</b>													
XCC SUBL	0.00	0.00	0.00	20.00	69.44	59.09	25.86	5.88	10.64	67.86	37.50	66.67	36.84
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	28.22	40.91	74.14	94.82	89.36	28.57	62.50	33.33	68.18
SMOGE	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	3.57	0.00	0.00	1.60
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	10.	36.	44.	58.	59.	47.	26.	24.	27.	333.
<b>CURRENT OBS.</b>													
(FT/SEC)	0.00	0.00	0.00	-1.01	-1.18	-1.17	-1.25	-1.12	-0.84	-0.51	-0.25	-0.33	-0.69
NET MEAN	0.00	0.00	0.00	1.01	1.47	1.31	1.20	1.11	1.45	0.82	1.30	1.72	1.26
GROSS MEAN	0.00	0.00	0.00	.49	.76	.63	.72	.71	.66	.57	.75	.58	.68
STD DEV	0.00	0.00	0.00	0.	19.	22.	14.	35.	23.	16.	13.	14.	181.
NO. OBS.	0.	0.	0.	9.	19.	22.	14.	35.	23.	16.	13.	14.	181.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	3.00	18.50	15.76	15.50	16.00	15.83	15.06	14.93	13.71	15.61
STD DEV	0.00	0.00	0.00	0.00	.85	3.62	2.74	0.00	.39	3.75	4.01	2.05	2.84
NO. OBS.	0.	0.	0.	1.	14.	21.	30.	30.	23.	16.	14.	14.	163.
<b>RIPS</b>													
% OCC	0.00	0.00	0.00	44.44	40.63	39.02	30.51	3.77	26.83	5.88	13.33	13.33	24.47
MEAN SPAC	0.00	0.00	0.00	775.00	630.77	743.75	811.11	750.00	845.45	800.00	800.00	750.00	769.70
NO. OBS.	0.	0.	0.	9.	32.	41.	59.	53.	41.	17.	15.	15.	262.
<b>CUSPS % OCC.</b>													
MEAN SPAC	0.00	0.00	0.00	50.00	50.00	54.55	51.67	52.54	50.00	48.39	50.00	51.85	51.30
MEAN SPAC	0.00	0.00	0.00	200.00	173.64	114.58	109.00	100.00	101.85	103.33	100.00	142.86	116.11
NO. OBS.	0.	0.	0.	10.	36.	44.	60.	59.	52.	31.	26.	27.	347.

5023 MANCHESTER BCH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-2-59 AND ENDING 7-31-59.

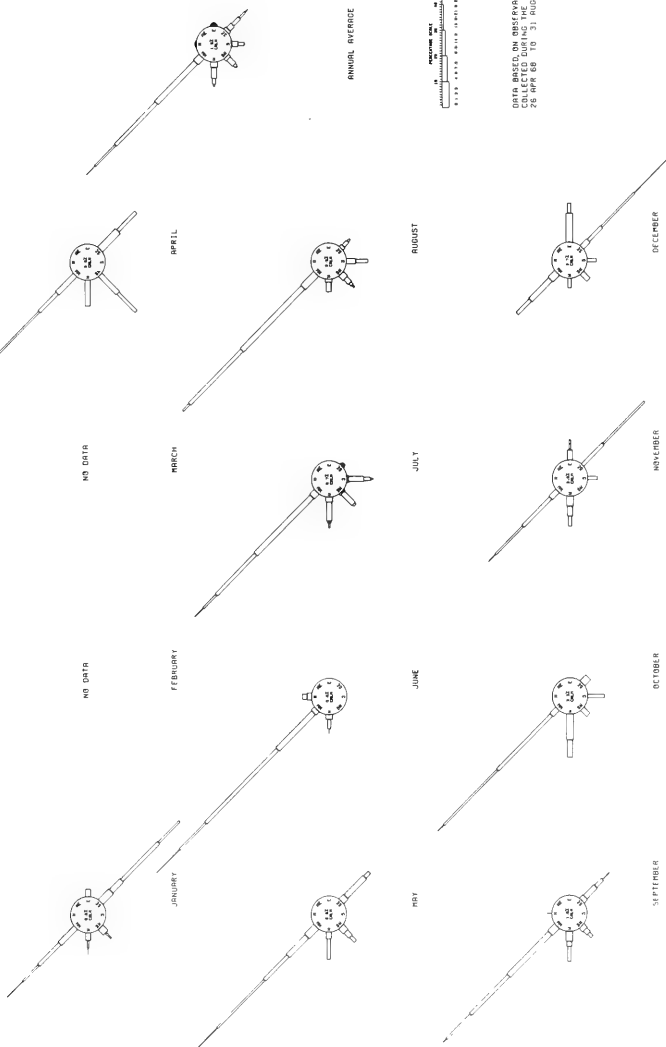
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL DRS.
<b>SURF DRS.</b>													
HEIGHT (FT)													
MEAN	3.05	0.00	0.00	0.00	0.00	3.09	3.38	0.00	0.00	0.00	0.00	0.00	3.22
STD DEV	1.01	0.00	0.00	0.00	0.00	1.04	.82	0.00	0.00	0.00	0.00	0.00	.97
NO. DRS.	30.	0.	0.	0.	0.	11.	50.	0.	0.	0.	0.	0.	99.
<b>PERIOD (SEC)</b>													
MEAN	11.46	0.00	0.00	0.00	0.00	10.62	8.26	0.00	0.00	0.00	0.00	0.00	9.67
STD DEV	2.35	0.00	0.00	0.00	0.00	1.59	1.89	0.00	0.00	0.00	0.00	0.00	2.53
NO. DRS.	15.	0.	0.	0.	0.	11.	52.	0.	0.	0.	0.	0.	98.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
UCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UCC. NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	27.27	30.19	0.00	0.00	0.00	0.00	0.00	53.13
CALM	0.00	0.00	0.00	0.00	0.00	72.73	69.81	0.00	0.00	0.00	0.00	0.00	46.88
NO. DRS.	32.	0.	0.	0.	0.	11.	53.	0.	0.	0.	0.	0.	96.
<b>BREAKER TYPE</b>													
XOCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPILL	86.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.70
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	13.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.45
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.65
NO. DRS.	38.	0.	0.	0.	0.	11.	54.	0.	0.	0.	0.	0.	103.
<b>CURRENT DRS.</b>													
(FT/SEC)													
NET MEAN	.63	0.00	0.00	0.00	0.00	-1.05	-2.17	0.00	0.00	0.00	0.00	0.00	-0.97
GROSS MEAN	1.18	0.00	0.00	0.00	0.00	1.05	2.18	0.00	0.00	0.00	0.00	0.00	1.70
STD DEV	.64	0.00	0.00	0.00	0.00	.61	1.02	0.00	0.00	0.00	0.00	0.00	.94
NO. DRS.	19.	0.	0.	0.	0.	5.	28.	0.	0.	0.	0.	0.	52.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	12.00	0.00	0.00	0.00	0.00	3.67	5.60	0.00	0.00	0.00	0.00	0.00	7.82
STD DEV	0.00	0.00	0.00	0.00	0.00	3.44	2.01	0.00	0.00	0.00	0.00	0.00	3.56
NO. DRS.	19.	0.	0.	0.	0.	6.	30.	0.	0.	0.	0.	0.	55.
<b>RIPS</b>													
X OCC	17.39	0.00	0.00	0.00	0.00	54.55	51.93	0.00	0.00	0.00	0.00	0.00	43.18
SPAC	175.00	0.00	0.00	0.00	0.00	416.67	533.66	0.00	0.00	0.00	0.00	0.00	608.26
NO. DRS.	21.	0.	0.	0.	0.	11.	54.	0.	0.	0.	0.	0.	88.
<b>CUSPS</b>													
X OCC	50.00	0.00	0.00	0.00	0.00	45.45	51.85	0.00	0.00	0.00	0.00	0.00	50.49
SPAC	100.00	0.00	0.00	0.00	0.00	130.40	111.89	0.00	0.00	0.00	0.00	0.00	109.48
NO. DRS.	18.	0.	0.	0.	0.	11.	54.	0.	0.	0.	0.	0.	103.

5023 MANCHESTER BCH CALIFORNIA SUMMARY FOR PERIOD STARTING 7-6-70 AND ENDING 8-31-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
MEAN (FT)	0.00	0.00	0.00	0.00	0.00	0.00	4.08	3.44	0.00	0.00	0.00	0.00	5.83
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.12	1.71	0.00	0.00	0.00	0.00	1.02
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.	0.	65.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	9.34	12.37	0.00	0.00	0.00	0.00	10.51
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	3.46	3.40	0.00	0.00	0.00	0.00	3.72
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.	0.	65.
DIRECTION													
COASTAL SECTOR													
0 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00	0.00	0.00	0.00	0.00	1.56
3	0.00	0.00	0.00	0.00	0.00	0.00	66.67	76.00	0.00	0.00	0.00	0.00	70.31
4	0.00	0.00	0.00	0.00	0.00	0.00	30.77	24.00	0.00	0.00	0.00	0.00	28.13
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM													
NO. OBS.	0.	0.	0.	0.	0.	0.	59.	25.	0.	0.	0.	0.	64.
BREAKER TYPE													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	10.00	4.35	0.00	0.00	0.00	0.00	7.90
PUNGL	0.00	0.00	0.00	0.00	0.00	0.00	75.00	4.58	0.00	0.00	0.00	0.00	46.95
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	13.50	0.00	0.00	0.00	0.00	0.00	9.52
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	1.59
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.	0.	65.
CURRENT OBS. (FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	-0.60	-0.91	0.00	0.00	0.00	0.00	-0.75
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.93	1.16	0.00	0.00	0.00	0.00	1.03
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.96	1.02	0.00	0.00	0.00	0.00	0.95
NO. OBS.	0.	0.	0.	0.	0.	0.	20.	16.	0.	0.	0.	0.	36.
FURROWSLOPE													
MEAN (DEC)	0.00	0.00	0.00	0.00	0.00	0.00	6.94	7.60	0.00	0.00	0.00	0.00	7.25
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	2.14	2.13	0.00	0.00	0.00	0.00	2.13
NO. OBS.	0.	0.	0.	0.	0.	0.	17.	15.	0.	0.	0.	0.	32.
RIPE X OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.	0.	51.32
CUSPS X OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	45.00	48.00	0.00	0.00	0.00	0.00	46.15
NO. OBS.	0.	0.	0.	0.	0.	0.	210.89	130.58	0.00	0.00	0.00	0.00	180.46
							40.	25.	0.	0.	0.	0.	65.

CALIFORNIA

WIND ROSES 05023 MANCHESTER



SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
PERIOD (SEC)	MEAN	12.47	12.68	11.36	10.68	10.46	10.10	10.25	10.82	11.85	11.94	12.35	11.29
	STD DEV	1.81	2.73	1.98	1.59	2.48	3.40	2.50	1.75	1.88	1.57	2.33	2.40
	NO. OBS.	198.	176.	174.	229.	234.	242.	230.	227.	229.	223.	223.	2347.
DIRECTION	COASTAL VECTOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0 OCC.	0	0	0	0	0	0	0	0	0	0	0	0
	1	10.72	38.39	4.76	1.72	1.80	6.96	4.59	3.65	10.38	12.24	10.28	6.26
	2	81.93	28.44	42.24	25.28	81.98	81.98	77.90	78.65	80.19	78.57	82.24	79.47
BREAKER TYPE	SOCC	16.27	34.18	43.03	33.66	50.21	52.28	43.18	45.33	35.40	41.89	28.87	43.73
	SPALL	42.03	42.03	21.68	21.68	13.30	19.96	15.79	16.44	20.80	22.07	17.66	16.96
	PLUNGE	19.86	19.86	21.74	21.74	38.48	38.48	33.52	33.50	41.39	27.48	31.27	31.84
	BURGE	6.12	11.34	4.69	4.69	0.00	3.73	3.51	2.22	2.22	6.56	18.30	5.47
CURRENT OBS.	NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. OBS.	186.	186.	186.	186.	186.	186.	186.	186.	186.	186.	186.	186.
FORESHORE SLOPE	MEAN (DEG)	6.66	6.30	5.48	5.80	5.93	5.38	5.52	6.17	5.99	6.09	6.26	5.94
	STD DEV	2.68	1.93	1.98	2.21	2.21	1.98	2.01	1.82	2.01	2.43	2.68	2.23
	NO. OBS.	134.	105.	109.	140.	140.	153.	160.	160.	139.	131.	131.	1562.
RIPS % OCC	MEAN SLOPE	6.67	6.30	5.48	5.80	5.93	5.38	5.52	6.17	5.99	6.09	6.26	5.94
	STD DEV	2.68	1.93	1.98	2.21	2.21	1.98	2.01	1.82	2.01	2.43	2.68	2.23
	NO. OBS.	134.	105.	109.	140.	140.	153.	160.	160.	139.	131.	131.	1562.
CUSPS % OCC	MEAN SLOPE	6.67	6.30	5.48	5.80	5.93	5.38	5.52	6.17	5.99	6.09	6.26	5.94
	STD DEV	2.68	1.93	1.98	2.21	2.21	1.98	2.01	1.82	2.01	2.43	2.68	2.23
	NO. OBS.	134.	105.	109.	140.	140.	153.	160.	160.	139.	131.	131.	1562.



SUMMARY FOR PERIOD STARTING 5-1-68 AND ENDING 12-31-68.

CALIFORNIA

5020 GOAT RUCK

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	3.81	3.64	3.56	3.96	4.39	5.76	5.69	5.25	4.51
MEAN	0.00	0.00	0.00	0.00	1.09	1.27	1.27	2.02	2.49	1.63	2.11	2.46	2.02
STD DEV	0.00	0.00	0.00	0.00	0.53	0.59	0.53	0.48	0.59	0.54	0.59	0.51	0.45
NO. OBS.	0.	0.	0.	0.	53.	59.	53.	48.	59.	54.	59.	51.	45.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	9.68	6.82	9.29	10.12	9.77	11.46	12.08	11.46	10.35
STD DEV	0.00	0.00	0.00	0.00	1.95	1.59	1.58	2.06	1.66	1.48	1.72	1.71	2.03
NO. OBS.	0.	0.	0.	0.	52.	56.	63.	51.	59.	59.	56.	53.	45.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
C OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	1.62	0.00	2.17	3.70	1.92	9.09	18.00	4.50
NW	0.00	0.00	0.00	0.00	0.00	17.73	81.03	80.43	89.89	90.38	87.27	82.00	79.15
WIND	0.00	0.00	0.00	0.00	30.77	25.45	17.24	15.22	7.41	7.69	3.64	20.00	15.88
CALM	0.00	0.00	0.00	0.00	0.00	0.00	1.72	2.17	0.00	0.00	0.00	0.00	0.47
NO. OBS.	0.	0.	0.	0.	52.	55.	46.	46.	54.	58.	55.	50.	42.
<b>BREAKER TYPE</b>													
XDCC SPILL	0.00	0.00	0.00	0.00	71.70	88.14	82.26	73.08	72.88	43.86	57.89	57.69	68.74
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	86.30	11.86	17.74	26.82	27.12	56.14	40.32	30.52	27.81
SURF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	11.54	1.25
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	53.	59.	68.	52.	59.	57.	57.	52.	45.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.11	0.00	0.15	0.03	0.05	0.23	0.31	0.31	0.04
GROSS MEAN	0.00	0.00	0.00	0.00	0.30	0.39	0.55	0.62	0.80	0.89	0.73	0.92	0.65
STD DEV	0.00	0.00	0.00	0.00	0.27	0.35	0.57	0.72	0.78	0.86	0.66	0.73	0.68
NO. OBS.	0.	0.	0.	0.	27.	35.	37.	30.	33.	31.	32.	28.	25.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	4.31	5.19	5.68	6.15	6.52	5.21	5.97	6.88	5.74
STD DEV	0.00	0.00	0.00	0.00	2.49	3.57	3.28	3.22	2.76	2.75	4.01	4.06	3.22
NO. OBS.	0.	0.	0.	0.	26.	31.	34.	27.	33.	33.	31.	26.	24.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	5.66	5.08	6.35	11.54	15.25	27.12	8.47	24.07	12.88
STD DEV	0.00	0.00	0.00	0.00	233.33	400.00	250.00	350.00	188.89	58.75	220.00	211.23	237.80
NO. OBS.	0.	0.	0.	0.	53.	59.	63.	52.	59.	59.	59.	54.	45.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	49.06	49.15	46.03	40.38	50.85	52.54	32.20	37.04	44.76
STD DEV	0.00	0.00	0.00	0.00	166.27	195.48	180.03	146.76	136.80	107.48	184.32	155.06	168.23
NO. OBS.	0.	0.	0.	0.	53.	59.	63.	52.	59.	59.	59.	54.	45.

5020 GOAT ROCK CALIFORNIA SUMMARY FROM PFRIED STARTING 1-1-69 AND ENDING 12-31-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	5.53	6.65	5.37	5.37	4.70	3.29	3.71	3.51	4.12	5.18	4.86	7.90	4.99
STD DEV	1.56	1.83	1.28	1.41	1.43	.79	1.29	.89	1.53	1.61	2.28	2.68	2.04
NO. OBS.	59	49	57	57	60	59	62	61	59	61	59	61	704
<b>PERIOD (SEC)</b>													
MEAN	10.6A	12.71	12.51	11.50	11.15	10.56	9.23	9.14	11.23	12.08	12.14	14.02	11.59
STD DEV	1.15	1.47	1.89	2.45	1.66	2.21	2.21	1.68	1.60	1.69	1.65	1.77	2.2A
NO. OBS.	57	51	58	58	60	59	62	62	60	61	59	62	709
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	23.64	18.18	1.89	5.16	5.08	5.36	3.39	3.39	3.39	3.39	5.00	1.84	1.13
W	72.73	92.36	92.86	91.23	90.61	90.56	90.61	90.56	90.61	100.00	95.20	11.89	9.52
NW	3.64	15.91	1.82	1.79	0.00	3.51	0.00	1.84	0.00	0.00	0.00	0.00	2.62
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	55	48	55	56	59	57	55	61	59	60	60	61	686
<b>BREAKER TYPE</b>													
X OCC SPILL	47.17	18.00	17.31	54.39	60.00	47.46	53.23	43.55	55.93	57.38	66.33	25.81	46.34
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	50.94	62.00	74.85	35.09	35.00	52.54	46.77	56.45	44.07	39.34	25.00	40.32	46.63
SURGE	1.89	20.00	3.85	10.53	5.00	0.00	0.00	0.00	0.00	3.28	6.87	33.87	7.03
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	53	50	52	57	60	59	62	62	59	61	60	62	697
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
GROSS MEAN	1.16	1.62	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
STD DEV	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
NO. OBS.	29	24	29	29	30	30	32	31	30	31	30	31	355
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	9.03	7.00	5.88	5.31	6.23	5.29	3.81	3.48	5.67	5.54	5.64	7.11	5.79
STD DEV	4.51	3.10	2.59	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93
NO. OBS.	10	21	25	29	30	31	31	31	30	28	28	28	344
<b>RIPS X OCC</b>													
MEAN SPAC.	18.33	20.00	22.41	16.97	13.33	13.56	17.74	20.97	25.00	29.51	33.33	11.29	20.37
STD DEV	63.64	265.00	162.54	170.91	197.50	253.75	103.36	136.46	105.00	117.50	106.25	217.14	158.04
NO. OBS.	60	50	58	58	60	59	62	62	60	61	60	62	712
<b>CUSPS X OCC</b>													
MEAN SPAC.	35.00	7.64	46.55	43.33	40.68	16.13	25.81	25.81	45.00	49.18	43.33	30.36	36.02
STD DEV	161.21	243.00	157.41	182.07	169.92	132.63	133.60	111.84	108.93	163.20	187.23	319.66	170.66
NO. OBS.	60	52	58	58	60	59	62	62	60	61	60	61	708

5020 GOAT ROCK

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-70 AND ENDING 12-31-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	4.91	4.73	4.53	4.53	3.78	3.60	3.27	3.13	3.75	4.58	4.85	6.11	44.36
MEAN	1.87	1.68	1.68	1.51	.89	.95	.74	.78	1.27	2.33	1.45	2.37	1.78
STD DEV	6.2	5.8	5.8	5.9	5.9	5.6	5.9	6.1	5.3	5.9	5.3	5.7	6.91
NO. OBS.	62	58	58	59	59	58	59	61	53	59	53	57	691
<b>PERIOD (SEC)</b>													
MEAN	11.95	12.71	12.51	11.20	10.86	11.32	9.65	10.30	11.44	12.03	11.16	12.25	11.66
STD DEV	1.55	1.84	2.10	1.39	1.18	2.55	2.23	1.91	1.84	2.59	1.52	2.03	2.09
NO. OBS.	62	55	58	59	59	58	59	63	54	59	52	57	693
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	1.67	1.79	1.75	5.08	3.85	12.77	9.26	4.87	4.21
3	7.00	0.00	0.00	59.26	66.67	83.93	91.23	71.19	71.15	86.21	82.68	87.04	78.72
4	0.00	0.00	0.00	0.00	31.67	18.29	7.02	23.73	23.08	10.34	4.26	3.70	16.60
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CALM</b>													
NO. OBS.	0	0	0	27	60	56	57	50	52	58	47	50	470
<b>COMPASS SECTOR</b>													
OCC N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37	20.37
5	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63
6	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63	79.63
<b>CALM</b>													
NO. OBS.	62	58	58	57	60	56	57	50	52	58	47	50	470
<b>BREAKER TYPE</b>													
KOCC SPILL	69.35	77.78	76.57	53.93	60.00	32.14	45.76	37.70	37.74	12.07	11.54	21.05	45.27
SP/L	0.00	0.00	0.00	22.03	28.33	17.86	15.25	26.23	33.85	51.28	53.65	15.28	21.69
PLUNGE	2.19	1.81	1.66	2.34	11.67	50.00	38.96	34.43	28.42	34.48	28.85	47.37	29.11
SURGE	6.45	7.41	3.57	1.89	0.00	0.00	0.00	1.64	0.00	1.72	5.77	1.90	3.93
WALL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	42	54	58	58	60	56	59	61	53	58	52	57	667
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.12	.17	.33	.30	.29	.13	.06	.38	.39	.13	.13	.44	.03
GROSS MEAN	.76	1.08	.68	.81	.74	.86	.56	.61	.75	.88	1.11	1.82	.81
STD DEV	.60	1.00	.70	.65	.46	.63	.57	.51	.66	.66	.78	.86	.81
NO. OBS.	31	27	30	28	30	31	30	31	28	29	25	30	350
<b>FORESHORE SLOPE</b>													
MEAN (D/C)	6.00	5.18	4.17	4.68	5.89	5.89	6.03	6.07	5.82	6.24	6.04	5.50	5.61
STD DEV	2.02	1.70	1.39	1.46	1.26	1.40	1.84	.98	.57	1.06	1.56	1.07	1.56
NO. OBS.	78	28	30	25	28	28	30	30	26	28	24	28	334
<b>RIPS &amp; UCC</b>													
MEAN SPAC.	8.04	5.43	3.43	6.07	16.67	18.07	3.39	12.70	16.36	16.95	5.56	0.00	9.16
STD DEV	22.02	14.07	150.00	132.00	62.70	87.14	100.00	87.75	105.00	134.50	370.67	0.00	132.40
NO. OBS.	62	58	58	59	60	56	59	63	55	59	54	51	690
<b>CUSPUS &amp; OCC</b>													
MEAN SPAC.	0.88	18.18	8.62	11.66	26.07	15.52	20.34	28.57	30.81	36.98	46.10	35.09	24.07
STD DEV	172.81	163.80	102.80	102.80	85.13	79.69	122.95	104.50	112.53	144.13	168.44	200.00	162.65
NO. OBS.	61	58	58	59	60	58	59	63	55	59	54	57	698

5020 GOAT ROCK

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-71 AND ENDING 12-31-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURE OBS.</b>													
HEIGHT (FT)													
MEAN	5.08	6.74	5.63	4.01	4.03	3.67	3.00	3.63	3.71	4.04	5.32	4.77	4.56
STD DEV	2.51	2.18	2.27	.87	.61	1.21	.67	1.44	1.63	1.02	2.36	1.27	1.93
NO. OBS.	13	27	30	29	30	30	26	23	26	23	28	26	335
<b>PERIOD (SEC)</b>													
MEAN	12.54	12.35	12.63	11.21	10.85	10.92	9.58	11.11	10.96	11.33	11.49	10.94	11.34
STD DEV	2.00	1.87	1.53	1.17	1.16	1.46	2.77	1.79	1.39	1.07	1.55	1.17	2.04
NO. OBS.	31	26	31	29	30	30	29	24	28	24	29	26	337
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	6.25	5.00	0.00	0.00	0.00	0.00	3.57	5.00	0.00	0.00	7.04	12.23	4.00
3	93.75	90.00	80.00	100.00	86.21	85.19	69.29	85.00	92.59	95.05	78.57	63.38	66.09
4	0.00	0.00	20.00	0.00	13.79	14.81	7.44	10.00	7.41	0.00	14.29	15.38	9.12
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	32	20	30	29	29	27	26	26	27	22	26	26	310
<b>BREAKER TYPE</b>													
XOCC SPILL	15.15	7.41	19.35	60.74	41.38	43.33	31.03	47.83	21.43	56.17	42.86	23.08	31.64
SP/PL	9.09	7.41	38.44	25.91	44.63	23.33	27.59	30.43	17.66	25.00	32.14	42.31	26.57
PLUNGE	75.76	70.37	35.44	33.33	13.79	33.33	37.93	21.74	50.00	20.83	14.29	30.77	37.31
SURGE	0.00	14.81	9.68	0.00	0.00	0.00	3.45	0.00	10.71	0.00	10.71	3.65	4.48
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	13	27	31	27	29	30	29	23	26	24	26	26	335
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.14	-.10	-.09	-.35	-.20	.01	-.09	-.16	-.20	-.45	-.34	.26	-.13
GROSS MEAN	.83	.61	.81	.47	.94	.63	.58	.66	.81	.59	.78	.86	.74
STD DEV	.62	.65	.43	.64	.48	.64	.56	.64	.85	.41	.56	.66	.62
NO. OBS.	29	26	28	29	30	29	29	24	28	22	28	25	327
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	6.52	6.27	5.99	5.69	6.24	6.43	6.18	5.71	6.21	6.13	6.96	6.77	6.25
STD DEV	2.16	2.20	1.19	1.09	1.25	1.25	.98	1.08	1.47	1.01	1.49	1.02	1.40
NO. OBS.	29	26	27	28	29	30	28	24	28	23	25	22	320
<b>RIPS</b>													
X OCC	3.03	0.00	0.00	6.90	0.00	3.33	6.90	12.50	0.00	4.17	10.34	7.69	4.41
MEAN SPAC.	100.00	0.00	0.00	75.00	0.00	200.00	107.50	120.00	0.00	99.00	126.67	150.00	80.65
NO. OBS.	33	27	31	29	30	30	29	24	28	24	29	26	340
<b>CUSPS</b>													
X OCC	40.85	70.37	74.19	75.86	76.67	76.67	68.97	75.00	71.43	79.17	93.10	96.15	78.53
MEAN SPAC.	162.57	203.16	171.63	131.41	157.48	140.87	130.45	134.33	146.50	111.63	137.19	162.56	149.80
NO. OBS.	33	27	31	29	30	30	29	24	28	24	29	26	340

5020 GOAT ROCK CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 12-31-72.

SURF OBS.	HEIGHT (FT)	SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 12-31-72.											
		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	5.17	4.61	5.29	4.74	3.48	3.64	3.00	3.63	3.19	4.38	7.28	5.65	4.47
STD DEV	1.59	1.20	2.23	1.63	.99	1.10	1.02	1.33	.80	1.50	2.42	2.74	2.00
NO. OBS.	23	29	26	27	29	30	30	30	26	26	25	27	327
PERIOD (SEC)													
MEAN	11.47	11.66	13.42	11.54	10.59	11.33	15.17	12.00	11.02	11.37	12.39	11.81	12.01
STD DEV	2.54	2.81	5.22	2.58	1.40	1.05	5.91	4.38	1.51	1.32	2.59	3.60	3.51
NO. OBS.	24	26	29	28	28	29	29	30	26	26	25	27	329
DIRECTION													
COASTAL SECTOR													
0 UCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62
1	0.00	14.29	6.90	14.29	3.70	3.57	20.00	3.33	8.00	30.77	17.39	3.70	10.49
2	0.00	78.57	72.00	57.14	74.07	78.57	66.67	86.67	80.00	53.65	69.57	89.89	73.46
3	73.91	26.09	7.14	26.09	22.22	17.86	6.67	10.00	12.00	11.54	13.04	7.41	15.12
4	26.09	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	23	28	29	28	27	28	30	30	25	26	23	27	324
BREAKER TYPE													
KOCC SPIR	8.33	3.70	13.70	7.14	6.90	20.69	20.69	13.33	0.00	0.00	4.00	0.00	8.51
SPILL	41.67	62.96	55.17	60.71	68.97	48.68	48.68	43.33	50.00	42.31	48.00	81.08	52.69
PLUNGE	37.50	33.33	20.69	32.14	31.03	27.59	24.24	20.00	46.31	50.00	16.00	11.11	28.67
SURGE	12.50	0.00	10.30	0.00	3.45	0.00	27.59	23.33	7.69	7.69	32.00	7.41	10.94
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	24	27	28	28	29	29	29	30	26	26	25	27	329
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-.22	.40	.01	-.42	-.30	-.18	.03	.78	.12	.79	.05	.34	.13
GROSS MEAN	.97	.64	.74	.63	.69	1.07	1.32	1.50	1.07	1.14	.78	.63	.96
STD DEV	.46	.56	.47	.56	.40	1.08	.98	1.01	.79	.76	.79	.78	.77
NO. OBS.	24	28	29	28	26	28	30	30	26	25	24	27	325
FORESHORE SLOPE													
MEAN (DEG)	7.09	6.86	6.15	6.04	6.37	6.38	6.00	6.43	6.84	7.04	5.91	5.15	6.34
STD DEV	1.24	1.51	1.77	1.95	.79	1.27	1.64	1.35	1.80	1.89	1.44	.86	1.57
NO. OBS.	23	28	29	28	27	29	30	28	25	26	23	27	314
RIPS & TCC													
MEAN SPAC	0.00	10.71	31.03	25.00	6.90	10.34	51.61	6.67	3.85	11.54	24.00	0.00	15.66
NO. OBS.	24	28	29	28	29	29	31	30	26	26	25	27	332
CUSPS & OCC													
MEAN SPAC	100.00	96.43	93.10	89.29	82.74	89.66	83.87	96.67	65.38	76.92	100.00	88.69	88.55
NO. OBS.	24	28	29	28	29	29	31	30	26	26	25	27	332

## 5020 GOAT ROCK

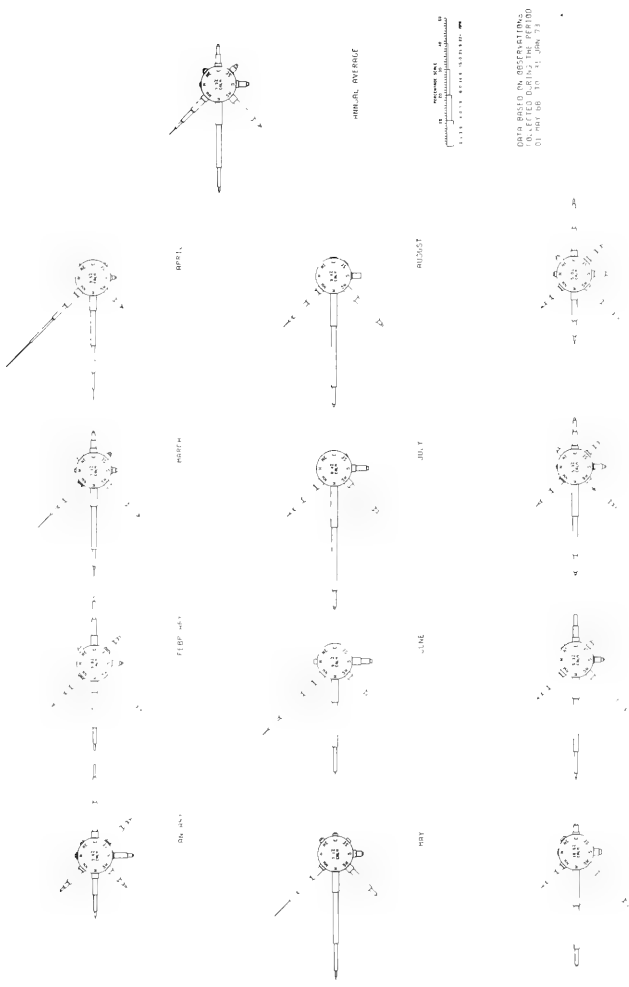
## CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-73 AND ENDING 1-31-73.

SURF. OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	6.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.52
STD DEV	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.57
NO. OBS.	23	0	0	0	0	0	0	0	0	0	0	0	23
PERIOD (SEC)													
MEAN	10.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.76
STD DEV	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
NO. OBS.	74	0	0	0	0	0	0	0	0	0	0	0	74
DIRECTION													
COASTAL SECTOR													
OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	17.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.39
3	78.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.26
4	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.35
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	23	0	0	0	0	0	0	0	0	0	0	0	23
BREAKER TYPE													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7% SPL	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00
PLUNGE	18.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.33
SURGE	18.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.67
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	24	0	0	0	0	0	0	0	0	0	0	0	24
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.15
GROSS MEAN	.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.86
STD DEV	.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.87
NO. OBS.	24	0	0	0	0	0	0	0	0	0	0	0	24
FURROWS SLOPE													
MEAN (DEG)	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.33
STD DEV	.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.62
NO. OBS.	24	0	0	0	0	0	0	0	0	0	0	0	24
RIPS													
OCC	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
MEAN SPAC.	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00
NO. OBS.	24	0	0	0	0	0	0	0	0	0	0	0	24
CUSPS													
OCC	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
MEAN SPAC.	207.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	207.17
NO. OBS.	24	0	0	0	0	0	0	0	0	0	0	0	24

WIND ROSES 05020 GOAT ROCK

CALIFORNIA



DATA BASED ON OBSERVATIONS  
COLLECTED DURING THE PERIOD  
01 MAY 00 TO 31 NOV 73

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	5.27	5.36	4.79	4.03	3.59	3.57	3.54	4.00	4.85	5.06	5.03	6.03	4.61
MEAN	2.03	2.15	1.64	1.41	1.28	1.40	1.12	1.09	1.72	2.07	2.19	1.99	1.99
STD DEV	2.08	1.68	1.75	1.69	2.38	2.30	2.22	2.22	2.33	2.26	2.31	2.74	2.76
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	11.51	12.38	12.50	11.50	10.89	10.61	10.13	10.39	10.77	11.96	11.05	12.03	11.32
STD DEV	1.02	2.11	2.27	2.33	1.97	2.24	3.32	2.59	1.68	1.89	1.78	2.46	2.38
NO. OBS.	209	166	177	170	240	231	245	224	227	235	228	229	2563
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
W OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W OCC. 2	4.94	10.91	3.51	7.06	6.87	5.08	5.08	5.56	9.91	9.45	10.00	7.98	5.09
1	93.12	81.82	80.70	69.41	73.91	85.06	86.44	79.63	76.70	75.66	80.52	67.59	81.42
3	4.94	7.27	15.79	23.53	25.22	13.16	8.47	13.89	20.37	15.68	4.81	3.68	11.91
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	81	55	57	85	115	114	118	108	108	116	104	102	1163
<b>COMPASS SECTOR</b>													
W OCC. NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W OCC. SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	18.16	15.82	2.41	12.76	2.75	2.68	1.79	4.27	9.15	9.18	6.08	16.36	6.28
W	83.19	75.73	92.92	92.77	73.28	83.49	80.78	83.93	91.45	91.18	91.30	71.36	85.70
N	2.85	11.65	2.65	4.82	16.38	13.76	9.92	13.39	4.27	1.62	2.61	7.77	7.64
CALM	0.00	0.00	0.00	0.00	2.59	0.00	0.83	0.80	0.00	0.00	0.00	0.00	0.00
NO. OBS.	113	103	113	83	116	109	121	112	117	110	115	110	1322
<b>BREAKER TYPE</b>													
SOCC SPILL	44.00	37.20	40.30	48.52	61.84	50.22	66.20	59.19	50.22	35.23	46.43	30.87	47.92
SP/PL	16.00	15.68	19.53	19.53	19.99	17.63	16.93	14.39	19.03	35.23	20.03	16.44	18.25
PLUNGE	33.50	31.20	38.93	28.26	19.92	31.88	21.03	21.52	29.03	35.23	23.06	16.44	20.03
SURGE	6.50	9.76	9.08	4.69	1.27	8.7	4.82	9.0	4.20	2.18	2.69	10.00	2.69
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	200	164	176	169	236	229	243	223	227	228	224	225	2544
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.21	-0.14	-0.35	-0.34	-0.18	-0.09	-0.09	-0.18	-0.24	-0.19	-0.08	-0.16	-0.15
GROSS MEAN	0.01	0.07	0.82	0.71	0.67	0.70	0.67	0.70	0.72	0.88	0.76	0.93	0.79
STD DEV	0.22	0.26	0.62	0.61	0.63	0.62	0.70	0.66	0.62	0.70	0.66	0.74	0.66
NO. OBS.	142	111	116	111	131	152	157	143	149	150	147	145	1672
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.31	6.60	6.79	6.93	7.19	7.66	7.05	6.13	6.81	6.80	7.11	7.00	6.99
STD DEV	3.10	2.76	2.07	2.37	2.76	1.99	2.56	1.58	2.82	2.48	2.86	2.18	2.63
NO. OBS.	140	103	113	108	145	151	155	156	140	147	142	141	1620
<b>RIPS &amp; DEC</b>													
MEAN SPAC	103.64	178.16	160.53	137.23	247.53	169.13	150.36	189.11	121.72	101.58	128.26	140.88	151.48
NO. OBS.	206	166	178	170	240	233	246	224	228	236	230	231	2592
<b>CUSPS &amp; OCC.</b>													
MEAN SPAC	64.59	63.19	63.48	62.94	58.25	53.22	37.80	39.73	48.91	54.66	60.87	61.90	54.97
MEAN SFC	165.86	175.65	174.75	169.79	182.52	152.80	152.80	152.80	136.12	160.86	160.86	171.63	161.73
NO. OBS.	206	166	176	170	240	233	246	224	228	236	230	231	2592



5021 WRIGHTS BFACH CALIFORNIA SUMMARY FOR PERIOD STARTING 5P 1-6H AND ENDING 12-31-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURE OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	3.65	3.67	3.53	3.93	4.20	5.59	5.83	5.12	4.44
MEAN	0.00	0.00	0.00	0.00	1.27	1.46	1.91	1.74	1.66	1.66	2.29	2.29	1.99
STD DEV	0.00	0.00	0.00	0.00	60.	54.	64.	54.	59.	59.	58.	58.	466.
NO. OBS.	0.	0.	0.	0.	60.	54.	64.	54.	59.	59.	58.	58.	466.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	10.17	9.25	9.21	10.41	9.81	11.60	11.60	11.32	10.46
STD DEV	0.00	0.00	0.00	0.00	1.79	1.65	1.97	2.23	1.57	1.30	1.67	1.61	2.00
NO. OBS.	0.	0.	0.	0.	60.	55.	66.	54.	58.	59.	58.	58.	466.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	1.89	1.64	3.45	3.51	0.00	8.93	22.45	5.66
W	0.00	0.00	0.00	0.00	63.16	77.05	77.05	87.31	87.2	96.00	85.71	61.22	77.01
NW	0.00	0.00	0.00	0.00	31.98	20.75	19.67	24.92	8.77	4.00	5.36	16.33	16.78
N	0.00	0.00	0.00	0.00	5.26	0.00	1.64	1.92	0.00	0.00	0.00	0.00	1.15
CALM	0.00	0.00	0.00	0.00	5.7	53.	61.	52.	57.	50.	56.	49.	435.
NO. OBS.	0.	0.	0.	0.	57.	53.	61.	52.	57.	50.	56.	49.	435.
<b>BRAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	81.36	85.19	92.31	71.70	66.67	39.29	54.39	45.45	67.54
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	18.64	14.81	7.69	28.30	33.33	58.93	43.86	45.45	30.92
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	1.75	9.09	1.54
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	59.	54.	65.	53.	57.	56.	57.	55.	450.
<b>CURRENT OBS.</b>													
<b>(FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.15	0.21	0.12	0.28	0.18	0.47	0.23	0.18
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.46	0.58	0.40	0.72	0.70	0.82	0.97	0.93
STD DEV	0.00	0.00	0.00	0.00	0.85	0.60	0.80	0.68	0.80	0.71	0.86	0.70	0.80
NO. OBS.	0.	0.	0.	0.	31.	30.	38.	30.	33.	33.	33.	31.	263.
<b>FRESHORE SLOPE</b>													
MEAN (D/G)	0.00	0.00	0.00	0.00	7.96	9.72	7.35	5.96	9.79	7.78	7.21	7.13	7.87
STD DEV	0.00	0.00	0.00	0.00	4.40	4.32	3.20	3.22	4.25	3.96	4.48	3.31	4.04
NO. OBS.	0.	0.	0.	0.	27.	32.	17.	26.	28.	32.	33.	31.	246.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	3.33	0.00	1.52	9.43	5.08	16.95	12.07	20.69	8.53
NO. OBS.	0.	0.	0.	0.	60.	56.	66.	53.	59.	59.	58.	58.	210.68
<b>CUSPS X OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	48.67	50.00	45.45	44.04	45.76	40.68	50.00	53.45	47.02
NO. OBS.	0.	0.	0.	0.	175.18	162.50	176.07	140.08	163.22	173.38	177.14	165.42	167.32
NO. OBS.	0.	0.	0.	0.	60.	56.	66.	54.	59.	59.	58.	58.	470.

5021 WRIGHT'S BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-69 AND ENDING 12-31-69.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.														
														HEIGHT (FT)	MEAN	STD DEV	NO. OBS.	PERIOD (SEC)	STD DEV	NO. OBS.	DIRECTION	COMPASS SECTOR	D OCC.	N	E	S	SW
5.53	5.27	5.33	5.27	4.81	3.36	3.52	3.25	4.12	5.25	4.97	7.76	4.94															
2.05	1.15	1.23	1.15	1.58	.85	1.32	.84	1.47	1.50	2.30	2.74	2.10															
61.	55.	61.	55.	59.	59.	60.	60.	59.	60.	60.	60.	62.	709.														
10.71	12.50	12.32	12.50	11.23	10.73	9.18	9.20	10.98	12.23	12.27	13.56	11.37															
14.15	1.95	1.27	1.27	1.71	2.53	2.14	1.82	1.60	1.60	1.61	2.14	2.24															
62.	55.	61.	56.	59.	59.	61.	59.	59.	59.	59.	59.	62.	709.														
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
17.9A	12.24	12.24	12.24	15.25	3.57	3.33	3.33	5.00	3.39	3.39	11.48	9.21															
66.	66.	66.	66.	66.	66.	66.	66.	66.	66.	66.	66.	66.															
5.66	24.49	24.49	24.49	0.00	1.69	7.14	0.00	1.67	0.00	0.00	0.00	3.03															
53.	49.	49.	59.	56.	59.	56.	60.	60.	60.	60.	60.	61.															
48.15	28.00	28.00	26.67	48.21	57.63	44.07	75.41	90.00	70.00	73.33	81.67	29.03	56.49														
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00														
42.44	52.00	52.00	42.44	37.29	54.24	24.59	10.00	20.00	30.00	15.00	41.94	35.61															
7.41	20.00	20.00	6.53	12.50	5.08	1.69	0.00	0.00	0.00	6.67	3.33	29.03	7.70														
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00														
54.	50.	50.	60.	56.	59.	59.	61.	60.	60.	60.	60.	62.	701.														
-0.3A	0.06	0.06	0.35	0.37	0.14	0.17	0.15	0.03	0.16	0.10	0.01	0.08	0.11														
1.3A	1.26	1.26	1.10	0.92	0.58	0.44	0.40	0.42	0.58	0.74	0.43	1.10	0.78														
0.81	0.65	0.65	0.78	0.84	0.73	0.44	0.29	0.50	0.83	2.16	0.71	0.72	352.														
30.	27.	27.	31.	27.	29.	29.	30.	30.	30.	30.	30.	30.	30.														
9.03	6.63	6.63	6.65	6.40	6.14	7.07	5.63	4.79	4.83	5.55	8.21	6.49	6.49														
3.53	3.08	3.08	2.50	2.71	2.59	3.66	1.79	1.85	1.97	1.59	2.72	2.79	2.79														
30.	24.	24.	31.	25.	29.	29.	30.	28.	30.	29.	29.	30.	344.														
14.52	19.23	19.23	19.67	21.03	13.56	6.78	4.92	3.33	11.67	23.33	31.67	14.52	15.31														
60.00	230.00	230.00	175.00	140.17	345.00	237.50	146.33	300.00	91.43	106.79	101.32	148.33	172.60														
62.	52.	52.	61.	56.	59.	59.	61.	60.	60.	60.	60.	62.	712.														
45.16	50.94	50.94	50.82	53.37	50.85	40.68	9.84	6.67	28.33	46.67	45.00	50.00	39.69														
167.14	224.61	224.61	213.61	197.50	164.73	122.86	135.33	87.00	131.53	156.07	135.30	219.13	162.15														
62.	51.	51.	61.	56.	59.	59.	61.	60.	60.	60.	60.	62.	713.														

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	5.32	5.27	5.27	4.55	3.75	3.41	3.17	3.20	3.80	4.41	5.08	6.39	4.44
STD DEV	2.07	2.02	1.57	1.65	.84	1.06	.59	.82	1.41	1.87	1.74	3.06	1.93
NO. OBS.	62.	58.	58.	58.	58.	58.	58.	58.	58.	58.	55.	58.	692.
<b>PERIOD (SFC)</b>													
MEAN	11.97	12.80	12.66	11.19	10.67	11.34	9.52	10.44	11.32	12.04	11.27	11.92	11.83
STD DEV	1.31	1.34	2.05	1.30	1.17	2.01	1.99	2.23	1.65	2.23	1.56	2.89	2.00
NO. OBS.	62.	58.	58.	58.	61.	58.	58.	58.	58.	61.	55.	57.	701.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.21
1	0.0	0.0	0.0	3.33	1.42	1.42	1.72	3.45	0.0	1.67	10.00	1.92	1.92
2	0.0	0.0	0.0	56.67	68.97	85.45	67.93	74.14	69.64	76.67	86.00	92.16	78.20
3	0.0	0.0	0.0	31.03	31.03	12.73	10.34	22.41	30.36	21.67	4.00	1.96	18.79
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NO. OBS.	0.	3.	0.	30.	58.	58.	58.	58.	58.	60.	50.	51.	476.
<b>COMPASS SECTOR</b>													
0 OCC.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	11.67	12.96	7.41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	86.33	87.04	67.04	85.19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	87.18
NW	0.0	0.0	5.56	14.81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.59
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NO. OBS.	63.	58.	58.	27.	0.	0.	0.	0.	0.	0.	0.	0.	193.
<b>BREAKER TYPE</b>													
NOCC SPILL	75.00	71.93	77.59	62.07	68.10	42.11	50.86	50.00	44.64	71.14	16.98	30.36	50.22
SP/PL	0.0	3.51	1.24	28.03	22.81	15.79	24.14	28.57	60.71	52.63	8.93	20.96	20.96
PLUNGE	20.97	17.54	18.97	11.86	33.33	33.33	25.86	28.79	32.14	24.53	33.29	23.18	23.18
SURGE	3.23	7.62	3.45	1.72	0.00	1.75	0.00	0.00	0.00	0.00	5.66	21.43	3.64
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NO. OBS.	62.	57.	58.	58.	58.	57.	57.	58.	58.	56.	53.	56.	667.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.29	.13	.31	.42	.33	.60	.14	.41	.02	.21	.36	.55	.02
GROSS MEAN	.77	.97	.78	.84	.71	.93	.23	.65	.74	.97	1.09	1.03	.93
STD DEV	.49	.58	.51	.47	.47	.60	.27	.68	.65	.60	.62	.79	.61
NO. OBS.	31.	28.	31.	28.	31.	31.	30.	31.	26.	31.	28.	31.	369.
<b>FURSHORE SLOPE</b>													
MEAN (D/C)	5.72	6.07	5.96	7.18	6.94	7.32	7.03	6.20	5.93	6.58	6.96	7.72	6.84
STD DEV	1.26	1.92	2.01	2.42	2.31	2.18	1.59	1.27	2.28	2.28	2.24	1.98	1.98
NO. OBS.	30.	28.	26.	26.	31.	31.	30.	30.	28.	31.	28.	29.	350.
<b>RIPS % DEC</b>													
MEAN SPAC.	24.19	20.69	25.86	13.79	1.64	6.90	3.39	1.72	10.71	14.75	3.57	3.45	10.95
NO. OBS.	120.33	135.00	171.33	155.50	60.00	93.78	68.00	50.00	77.80	105.00	150.00	125.00	108.84
NO. OBS.	47.	58.	58.	58.	61.	58.	58.	58.	58.	61.	58.	58.	703.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	43.95	41.38	46.85	44.83	34.81	37.93	16.64	20.69	46.43	46.18	50.00	51.72	40.40
NO. OBS.	170.67	192.43	210.67	236.35	223.24	170.45	119.00	189.75	171.65	98.20	136.32	164.70	173.23
NO. OBS.	62.	58.	58.	58.	61.	58.	58.	58.	61.	61.	56.	56.	703.

5021 WRIGHTS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-71 AND ENDING 12-31-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	5.03	6.50	5.77	4.03	4.20	3.77	3.10	3.77	4.43	3.72	5.07	4.41	4.55
STD DEV	1.88	2.13	2.24	.88	.92	1.14	.72	2.20	2.73	.98	2.12	1.28	1.95
NO. OBS.	34	28	30	28	30	30	29	22	28	25	30	27	341
<b>PERIOD (SEC)</b>													
MEAN	12.87	12.35	11.93	11.29	10.65	10.26	10.10	11.23	10.80	11.51	11.15	10.65	11.29
STD DEV	2.44	2.93	1.63	1.48	1.07	1.89	3.40	1.91	1.45	1.42	1.28	1.19	2.09
NO. OBS.	34	28	30	28	30	30	29	23	28	26	30	26	382
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3.23	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	91.55	95.65	72.41	92.86	85.19	90.00	93.10	90.00	92.31	98.15	86.21	65.38	87.65
4	3.33	4.35	21.50	3.57	14.81	10.00	0.00	5.00	7.69	0.00	6.90	15.38	8.95
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	31	23	29	28	27	30	29	20	26	26	29	26	324
<b>BREAKER TYPE</b>													
XOCC	24.24	14.29	20.69	44.84	62.07	46.67	41.38	36.36	25.00	42.31	50.00	34.62	36.72
SPILL	15.15	21.83	37.93	25.93	24.14	33.33	37.93	50.00	32.14	42.31	17.86	38.46	30.75
PLUNGE	7.56	57.14	34.44	14.81	13.79	20.00	20.69	13.64	28.57	15.38	21.43	23.08	27.46
SURGE	3.03	7.14	6.90	14.81	0.00	0.00	0.00	0.00	14.29	0.00	10.71	3.85	5.07
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	33	29	29	27	29	30	29	22	28	26	28	26	335
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.39	-0.52	-0.43	-0.30	-0.47	-0.19	-0.10	-0.20	-0.43	-0.66	-0.29	-0.09	-0.34
GROSS MEAN	.71	.81	.78	.58	1.04	.68	.77	1.03	.81	.69	.69	.88	.79
STD DEV	.78	.80	.45	.60	.56	.49	.60	.75	.78	.39	.53	.75	.62
NO. OBS.	30	28	27	28	30	29	29	23	28	26	30	27	335
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	7.87	7.76	7.46	6.54	7.57	7.10	7.45	6.52	6.36	6.80	7.00	7.81	7.20
STD DEV	4.11	3.88	1.86	1.75	1.89	2.16	1.94	1.44	1.37	.76	1.41	1.30	2.25
NO. OBS.	30	25	28	28	28	29	29	21	28	25	28	26	325
<b>RIPS</b>													
% OCC	0.00	0.00	13.33	14.29	0.00	6.67	10.34	13.04	14.29	3.85	10.00	25.93	9.04
MEAN SPAC	0.00	0.00	166.00	73.75	0.00	95.50	98.33	311.33	83.00	123.00	150.00	116.43	100.49
NO. OBS.	34	28	30	28	30	30	29	23	28	26	30	27	343
<b>CUSPS % OCC</b>													
MEAN SPAC	88.24	100.00	93.33	92.86	100.00	80.00	68.97	95.45	75.00	76.92	100.00	100.00	89.18
MEAN SPAC	155.57	149.43	109.64	122.08	143.23	143.17	167.65	150.36	133.86	110.10	145.00	136.15	142.55
NO. OBS.	30	28	30	28	30	30	29	22	28	26	30	27	342

5021 WRIGHT(S) BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 12-31-72.

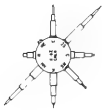
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL
SURF ORS.													
HEIGHT (FT)	4.61	4.76	5.1A	4.71	3.63	3.86	3.35	3.90	3.27	4.47	7.12	5.04	4.68
MEAN	1.69	1.43	1.85	1.58	1.00	1.19	.91	1.12	.72	1.86	2.39	2.22	1.61
STD DEV	27.	29.	28.	28.	30.	29.	31.	30.	26.	30.	26.	26.	340.
NO. OBS.													
PERIOD (SEC)													
MEAN	11.58	11.70	12.76	12.16	12.13	11.88	15.31	11.97	11.22	11.97	12.62	11.60	12.28
STD DEV	1.69	2.59	4.21	4.08	3.57	2.70	4.80	4.29	1.64	2.55	2.25	3.99	3.50
NO. OBS.	27.	29.	26.	28.	30.	29.	30.	30.	26.	30.	26.	26.	339.
DIRECTION													
COASTAL SECTOR													
OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3.85	7.14	3.33	4.81	3.33	0.00	16.13	13.33	3.85	30.00	16.00	4.00	11.31
3	44.62	72.41	73.33	59.51	73.33	82.76	77.42	83.33	84.62	56.67	80.00	92.00	77.68
4	11.54	8.90	3.57	25.93	23.33	17.24	6.95	3.33	11.54	4.00	4.00	4.00	11.01
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	26.	29.	28.	27.	30.	29.	31.	30.	26.	30.	25.	25.	336.
BREAKER TYPE													
XOCC SPILL	25.93	6.90	13.79	25.00	23.33	17.24	28.03	10.00	7.69	0.00	3.65	0.00	13.78
SP/PL	33.33	62.07	44.63	57.14	66.67	55.17	29.03	53.33	65.38	46.15	19.23	84.62	53.96
PLUNGE	29.63	31.03	17.24	14.29	10.00	27.59	35.48	30.00	23.08	46.67	3.77	7.69	24.63
SURGE	11.11	0.00	24.14	3.57	0.00	0.00	6.45	6.67	3.65	0.00	3.77	7.69	7.62
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	27.	29.	29.	28.	30.	29.	31.	30.	26.	30.	26.	26.	341.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.45	.14	-.32	-.29	-.18	-.40	-.11	.33	-.39	-.08	.02	.06	-.14
GROSS MEAN	.8A	.61	.79	.93	.83	.86	1.11	1.09	.76	1.09	.81	.60	.87
STD DEV	.53	.42	.49	.47	.56	.49	.78	.63	.63	.79	.75	.81	.63
NO. OBS.	27.	28.	29.	28.	30.	29.	30.	29.	26.	30.	26.	26.	336.
FORESHORE SLOPE													
MEAN (DEG)	8.42	6.81	7.04	7.56	7.40	6.90	7.76	7.20	7.85	7.17	5.92	5.28	7.13
STD DEV	1.98	1.62	1.55	2.47	1.77	1.03	1.53	1.94	1.97	1.46	1.36	1.62	1.82
NO. OBS.	26.	28.	28.	27.	30.	30.	29.	30.	26.	30.	24.	25.	331.
RIPS % OCC													
MEAN SPAC.	0.00	0.00	10.93	140.71	141.75	206.00	153.19	122.25	113.20	134.25	148.50	80.00	114.62
NO. OBS.	27.	28.	29.	28.	30.	30.	31.	30.	26.	30.	26.	26.	341.
CUSPS % OCC													
MEAN SPAC.	100.00	93.10	93.10	89.29	86.67	86.67	83.87	93.33	80.77	90.00	100.00	92.31	90.64
NO. OBS.	136.26	136.41	123.81	140.24	160.77	162.54	169.00	158.18	137.67	143.70	214.62	176.54	159.50
NO. OBS.	77.	29.	29.	28.	30.	30.	31.	30.	26.	30.	26.	26.	342.

5021 WRIGHT IS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 2-73 AND ENDING 1-31-73.

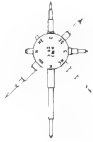
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88
STD DEV	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.36
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>PERIOD (SEC)</b>													
MEAN	10.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.39
STD DEV	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>DIRECTION</b>													
<b>CONSTANT FACTOR</b>													
G OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33
	3	91.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.67
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CALM</b>													
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00
PLUNGE	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50
SURGE	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50
<b>CALM</b>													
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.18
<b>GROSS MEAN</b>													
	74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74
STD DEV	82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	5.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.25
STD DEV	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>RIPS % OCC</b>													
MEAN SPAC.	246.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	246.00
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.
<b>CUSPS % OCC</b>													
MEAN SPAC.	220.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	220.91
NO. OBS.	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.

CALIFORNIA

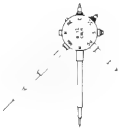
WIND ROSES 05021 WRIGHT'S



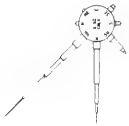
JANUARY



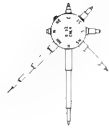
FEBRUARY



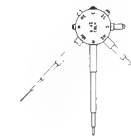
MARCH



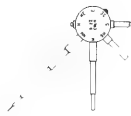
APRIL



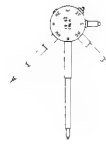
MAY



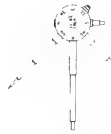
JUNE



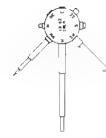
JULY



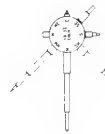
AUGUST



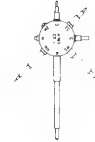
SEPTEMBER



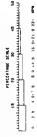
OCTOBER



NOVEMBER



DECEMBER



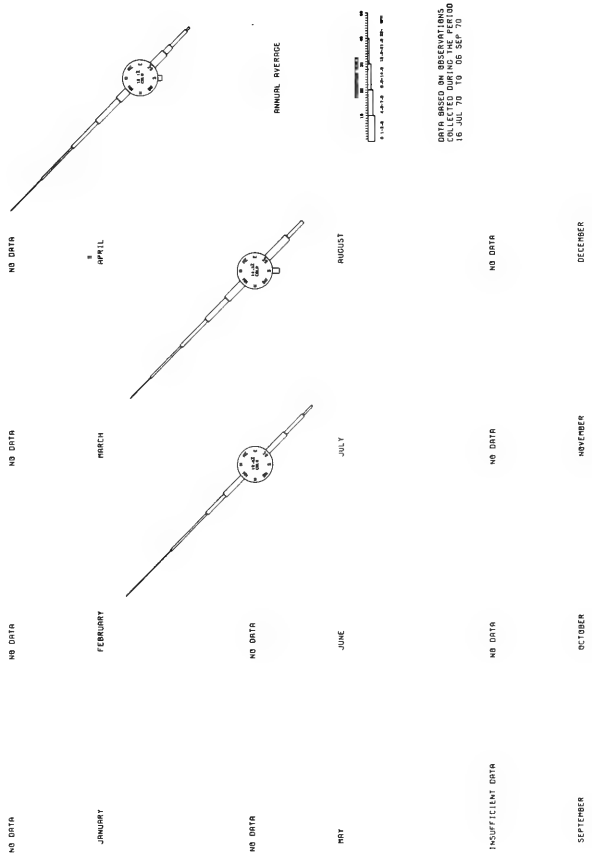
DATA BASED ON OBSERVATIONS  
COLLECTED DURING THE PERIOD  
01 MAY 66 TO 31 JAN 72

SUMMARY FOR PERIOD STARTING 7-16-70 AND ENDING 9- 6-70.

CALIFORNIA		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>														
HEIGHT (FT)		0.00	0.00	0.00	0.00	0.00	0.00	1.47	2.19	2.00	0.00	0.00	0.00	1.95
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.04	.82	0.00	0.00	0.00	1.11
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	1.90	3.60	4.00	0.00	0.00	0.00	5.00
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	190	360	400	0.00	0.00	0.00	500
<b>PERIOD (SEC)</b>														
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	18.77	14.89	15.68	0.00	0.00	0.00	16.17
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	6.73	1.11	1.36	0.00	0.00	0.00	4.22
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	160	350	400	0.00	0.00	0.00	570
<b>DIRECTION</b>														
<b>COASTAL SECTOR</b>														
0 OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00	100.00	95.84	100.00	0.00	0.00	0.00	90.56
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>CALM</b>														
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	190	350	400	0.00	0.00	0.00	580
<b>RREAKER TYPE</b>														
XOCC SPILL		0.00	0.00	0.00	0.00	0.00	0.00	20.00	19.44	0.00	0.00	0.00	0.00	18.33
SP/PL		0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	13.33
PLUNGE		0.00	0.00	0.00	0.00	0.00	0.00	40.00	80.56	100.00	0.00	0.00	0.00	68.33
SURGE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	200	360	400	0.00	0.00	0.00	600
<b>CURRENT OBS.</b>														
(FT/SEC)		0.00	0.00	0.00	0.00	0.00	0.00	.13	-.13	-.12	0.00	0.00	0.00	-.04
NET MEAN		0.00	0.00	0.00	0.00	0.00	0.00	.44	.20	.39	0.00	0.00	0.00	.30
GROSS MEAN		0.00	0.00	0.00	0.00	0.00	0.00	.52	.28	.30	0.00	0.00	0.00	.34
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.90	3.00	0.00	0.00	0.00	3.30
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	110	190	300	0.00	0.00	0.00	330
<b>FORESHORE SLOPE</b>														
MEAN (DFG)		0.00	0.00	0.00	0.00	0.00	0.00	5.45	5.26	5.33	0.00	0.00	0.00	5.13
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	1.37	1.24	.58	0.00	0.00	0.00	1.22
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	110	190	300	0.00	0.00	0.00	330
<b>RIPS</b>														
X OCC		0.00	0.00	0.00	0.00	0.00	0.00	45.00	50.00	75.00	0.00	0.00	0.00	50.00
MEAN SPAC.		0.00	0.00	0.00	0.00	0.00	0.00	70.89	70.50	61.00	0.00	0.00	0.00	70.00
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	20.00	36.00	40.00	0.00	0.00	0.00	60.00
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	200	360	400	0.00	0.00	0.00	600
<b>CUSPS</b>														
X OCC.		0.00	0.00	0.00	0.00	0.00	0.00	55.00	56.33	75.00	0.00	0.00	0.00	58.33
MEAN SPAC.		0.00	0.00	0.00	0.00	0.00	0.00	94.55	95.10	87.33	0.00	0.00	0.00	90.39
STD DEV		0.00	0.00	0.00	0.00	0.00	0.00	20.00	36.00	40.00	0.00	0.00	0.00	60.00
NO. OBS.		0.00	0.00	0.00	0.00	0.00	0.00	200	360	400	0.00	0.00	0.00	600



WIND ROSES 5355 DRAKE'S BEACH CALIFORNIA



5500 BULINAS CALIFORNIA SUMMARY FOR PERIOD STARTING 4-30-66 AND ENDING 9-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	4.02	4.27	1.96	1.88	1.81	1.43	2.15	2.17	2.45	2.65	3.04	1.45	2.65
MEAN	1.81	1.72	1.12	.62	.49	.56	.74	.71	.85	1.03	1.06	1.61	1.36
STD DEV	6.0	4.9	2.4	1.6	7.7	6.4	8.1	6.3	7.4	5.3	5.4	5.3	6.68
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	11.81	11.67	12.50	14.10	14.94	13.79	15.07	14.27	14.67	14.32	13.04	11.43	13.64
STD DEV	1.59	2.98	.71	0.00	1.59	2.44	1.52	2.62	1.53	2.18	1.23	2.21	2.40
NO. OBS.	61.	45.	2.	1.	61.	54.	58.	46.	56.	53.	54.	54.	54.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
D OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	11.11	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	51.11	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	98.33	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	33.33	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	9.	23.	15.	16.	11.	22.	19.	18.	0.	0.	0.	133.
<b>COMPASS SECTOR</b>													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	61.	40.	0.	1.	61.	54.	55.	43.	65.	52.	54.	52.	528.
<b>BREAKER TYPE</b>													
X OCC. ALL	0.00	2.08	6.35	31.25	9.33	6.15	18.25	20.63	5.41	0.00	0.00	0.00	7.29
PLUNGE	100.00	18.33	91.30	62.50	9.33	10.77	18.50	11.11	18.92	0.00	0.00	0.00	12.77
SURF	0.00	81.67	4.35	5.25	81.33	83.68	71.25	58.28	78.68	100.00	100.00	100.00	79.94
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	61.	49.	23.	16.	73.	63.	80.	83.	74.	31.	31.	50.	658.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.16	-0.26	-0.07	.17	.12	.35	.37	.98	.01	.30	.38	.42	.09
GROSS MEAN	.48	.45	.18	.45	.45	.60	.77	.96	.68	.42	.49	.59	.57
STD DEV	.38	.33	.20	.46	.45	.75	.72	.54	.54	.21	.27	.36	.36
NO. OBS.	31.	29.	22.	16.	45.	38.	48.	46.	47.	26.	27.	26.	399.
<b>FORESHORE SLOPE</b>													
MEAN (OBS)	3.70	4.03	2.91	2.73	2.24	2.35	2.22	3.82	4.81	3.63	3.69	3.54	3.39
STD DEV	1.34	1.48	.89	.80	1.40	.82	1.11	1.38	.87	.74	.55	.59	1.27
NO. OBS.	27.	29.	22.	15.	40.	37.	48.	30.	47.	27.	26.	28.	390.
<b>RIPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.13
NO. OBS.	62.	69.	24.	16.	77.	88.	81.	69.	74.	53.	54.	54.	674.
<b>CUSPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	43.75	9.08	0.00	2.47	13.55	8.46	0.00	0.00	0.00	4.75
NO. OBS.	62.	49.	24.	16.	77.	69.	40.	70.33	80.00	50.	54.	50.	31.07

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
WAVE HEIGHT (FT)	0.00	0.00	0.00	2.00	1.87	1.83	2.36	2.27	2.68	2.85	3.04	3.45	2.50
MEAN	0.00	0.00	0.00	0.00	.43	.58	.67	.73	.81	1.03	1.06	1.61	1.06
STD DEV	0.00	0.00	0.00	0.00	.41	.53	.58	.44	.56	.53	.54	.53	433.
NO. OBS.	0.	0.	0.	1.	61.	53.	58.	44.	56.	53.	54.	53.	433.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	14.10	14.94	13.79	15.07	14.27	14.67	14.32	13.04	11.63	13.99
STD DEV	0.00	0.00	0.00	0.00	1.59	2.64	1.52	2.62	1.53	2.18	1.23	2.21	2.24
NO. OBS.	0.	0.	0.	1.	61.	54.	58.	44.	56.	53.	54.	54.	437.
<b>DIRECTION</b>													
<b>COMPASS N SECTOR</b>													
0 UCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	100.00	100.00	100.00	100.00	86.05	89.99	100.00	100.00	100.00	2.11
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	97.19
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.23
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.65	0.00	0.00	0.00	0.00	.47
NO. OBS.	0.	0.	0.	1.	61.	54.	55.	43.	55.	52.	54.	52.	427.
<b>BREAKER TYPE</b>													
TOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.27	3.57	0.00	0.00	0.00	.71
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	100.00	100.00	100.00	100.00	97.73	96.43	100.00	100.00	100.00	99.29
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	61.	54.	57.	44.	56.	51.	51.	50.	425.
<b>CURRENT OBS.</b>													
<b>(FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	1.08	.26	.32	.49	.79	.20	.30	.38	.42	.10
<b>GROSS MEAN</b>													
MEAN	0.00	0.00	0.00	1.08	.39	.42	.56	.83	.40	.42	.44	.99	.51
STD DEV	0.00	0.00	0.00	0.00	.25	.35	.33	.40	.31	.27	.32	.36	.32
NO. OBS.	0.	0.	0.	1.	31.	26.	29.	27.	29.	26.	27.	26.	222.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	2.00	1.71	2.44	3.23	4.26	4.59	3.63	3.69	3.54	3.37
STD DEV	0.00	0.00	0.00	0.00	1.24	.89	.65	1.12	.78	.74	.55	.59	1.25
NO. OBS.	0.	0.	0.	1.	31.	27.	26.	31.	29.	27.	26.	24.	222.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	61.	54.	58.	46.	56.	53.	54.	54.	437.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	61.	54.	58.	46.	56.	53.	54.	54.	437.

## 5500 BOLINAS

## CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-69 AND ENDING 2-23-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF (URS, HEIGHT (FT))													
MEAN	4.02	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.33
STD DEV	1.81	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68
NO. OBS.	60.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	100.
PERIOD (SEC)													
MEAN	11.81	11.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.62
STD DEV	1.59	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85
NO. OBS.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.
DIRECTION													
COMPASS SECTOR													
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.
BREAKER TYPE													
XOCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-.16	-.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-.24
GROSS MEAN	.48	.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.49
STD DEV	.38	.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.32
NO. OBS.	31.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	52.
FORESHORE SLOPE													
(% AN (D/G))													
MEAN	3.70	3.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73
STD DEV	.54	.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.57
NO. OBS.	27.	21.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	48.
RIPS X OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	62.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	102.
CUSPS X OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	62.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	102.

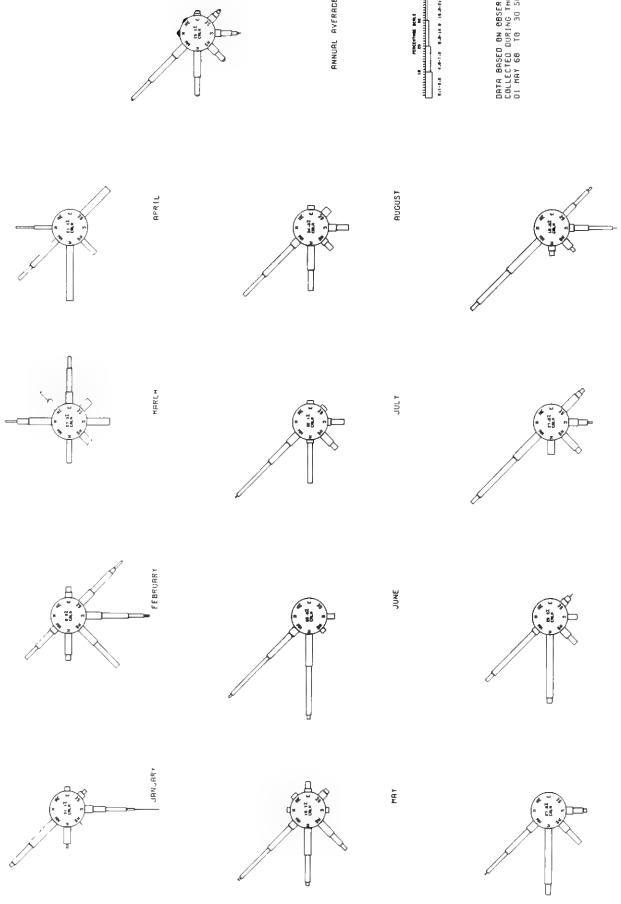
5500 ROLINAS CALIFORNIA

SUMMARY FOR PERIOD STARTING 2-18-70 AND ENDING 9-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	1.89	1.96	1.87	1.56	1.82	1.81	1.95	1.72	0.00	0.00	0.00	0.00	1.79
STD DEV	0.00	0.12	0.64	0.63	0.60	0.66	0.62	0.46	0.00	0.00	0.00	0.00	0.74
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	18.	0.	0.	0.	135.
<b>PERIOD (SEC)</b>													
MEAN	16.20	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.18
STD DEV	5.62	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.49
NO. OBS.	0.	5.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7.
<b>DIRECTION</b>													
<b>CUMULATIVE SECTOR</b>													
0 OCC 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	11.11	4.35	0.00	0.00	9.09	9.09	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	55.56	66.67	75.00	72.73	65.64	65.64	65.64	50.00	0.00	0.00	0.00	3.76
4	0.00	33.33	30.43	33.33	25.00	18.18	27.27	10.53	0.00	0.00	0.00	0.00	67.67
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	9.	23.	15.	16.	11.	22.	19.	18.	0.	0.	0.	133.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	11.11	4.35	33.33	50.00	36.36	56.82	63.16	11.11	0.00	0.00	0.00	34.09
SP/PL	0.00	88.89	91.30	66.67	50.00	63.64	43.68	36.84	77.78	0.00	0.00	0.00	63.64
PLUNGE	0.00	0.00	4.35	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	2.27
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	9.	23.	15.	14.	11.	23.	19.	18.	0.	0.	0.	132.
<b>CURRENT OBS.</b>													
NET MEAN	0.00	-0.03	-0.07	0.11	-0.20	0.42	0.17	1.10	-0.29	0.00	0.00	0.00	0.15
GRUSS MEAN	0.00	0.32	0.18	0.41	0.57	1.08	1.10	1.16	0.88	0.00	0.00	0.00	0.72
STD DEV	0.00	0.29	0.20	0.23	0.72	1.30	1.01	0.86	0.74	0.00	0.00	0.00	0.79
NO. OBS.	0.	6.	22.	15.	14.	10.	19.	19.	18.	0.	0.	0.	125.
<b>FORESHORE SLOPE</b>													
MEAN (NEG)	0.00	4.75	2.91	2.79	3.33	2.10	2.55	3.11	5.17	0.00	0.00	0.00	3.28
STD DEV	0.00	1.28	0.88	0.80	1.05	0.99	1.41	1.09	1.15	0.00	0.00	0.00	1.46
NO. OBS.	0.	6.	22.	14.	15.	10.	22.	19.	18.	0.	0.	0.	128.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	18.	0.	0.	0.	135.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.67	0.75	0.00	0.70	0.73	0.89	0.00	0.00	0.00	23.70
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	18.	0.	0.	0.	135.

CALIFORNIA

WIND ROSES 05500 BÖLINAS



JANUARY

MARCH

MAY

FEBRUARY

JUNE

APRIL

ANNUAL AVERAGE

0 10 20 30 40 50 60 70 80 90 100  
 PERCENTAGE OF  
 WINDS THAT EXCEEDED

DATA BASED ON OBSERVATIONS  
 COLLECTED DURING THE PERIOD  
 01 MAY 68 TO 30 SEP 70

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	3.57	4.29	3.90	4.17	3.70	3.46	3.14	3.41	3.54	3.51	3.82	3.83	3.64
STD DEV	1.36	1.29	1.02	1.81	.99	.96	.86	1.17	1.32	1.32	1.19	1.30	1.31
NO. OBS.	124.	87.	87.	86.	153.	145.	150.	140.	127.	132.	112.	86.	181.
<b>PERIOD (SEC)</b>													
MEAN	12.92	14.81	14.08	14.79	13.20	12.14	12.08	12.06	12.05	12.14	12.26	12.83	12.91
STD DEV	3.63	4.16	3.86	3.69	3.19	2.82	2.90	2.87	2.65	2.63	1.98	2.99	2.97
NO. OBS.	122.	86.	86.	87.	154.	145.	149.	140.	126.	132.	112.	86.	182.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
D OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	90.00	71.00	91.30	75.00	75.99	69.90	90.91	81.82	65.00	73.33	86.67	5.50
4	0.00	0.00	28.00	0.00	16.60	10.30	17.24	0.00	0.00	20.00	20.00	10.00	82.13
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	27.	80.	21.	23.	33.	29.	29.	22.	22.	20.	151	30.	291.
<b>COMPASS SECTOR</b>													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	6.38	1.84	0.00	0.00	0.88	0.88	0.87	0.87	0.00	0.00	0.00	0.00	0.80
SW	21.70	53.00	18.70	40.00	13.90	3.79	9.30	20.19	19.09	19.09	8.29	53.57	22.51
W	21.00	40.00	33.00	33.00	7.00	91.30	71.82	66.54	71.82	66.54	40.43	69.57	6.14
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	94.	95.	67.	64.	118.	116.	121.	115.	104.	110.	98.	56.	1124.
<b>BREAKER TYPE</b>													
DCC SPILL	87.47	86.21	83.91	83.72	91.50	93.06	90.87	86.33	88.82	88.28	86.39	85.00	86.46
PLUNGE	19.53	11.49	16.09	16.88	5.23	5.56	5.76	9.82	10.16	10.71	21.18	21.18	10.30
BURGE	0.00	1.18	0.00	0.00	1.96	.89	0.00	0.00	0.00	0.00	18.84	18.84	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	3.33	7.91	4.76	1.56	.89	0.00	2.03
NO. OBS.	121.	87.	87.	86.	153.	148.	150.	138.	126.	125.	114.	85.	1416.
<b>CURRENT OBS.</b>													
NET MEAN	0.04	-0.33	0.08	0.33	0.32	0.81	0.30	0.01	0.08	0.59	0.24	0.07	0.23
<b>GROSS MEAN</b>													
STD DEV	0.82	.98	.81	.73	.86	.83	.55	.87	.88	.85	.80	.51	.81
NO. OBS.	74.	45.	47.	48.	77.	73.	78.	71.	58.	48.	58.	43.	704.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	6.09	4.93	5.16	5.91	5.60	5.39	5.03	4.88	5.10	5.08	5.06	6.30	5.41
STD DEV	3.00	1.48	1.80	2.18	1.99	1.82	1.68	1.88	1.35	1.82	1.80	1.79	1.80
NO. OBS.	55.	44.	44.	48.	75.	78.	78.	76.	58.	58.	53.	44.	700.
<b>RIPS % OCC</b>													
MEAN SPAC.	37.10	39.53	42.05	40.91	37.01	26.21	6.00	3.87	12.60	24.81	30.36	43.32	26.46
NO. OBS.	124.	86.	86.	86.	154.	145.	150.	140.	127.	129.	112.	86.	1829.
<b>CURBS % OCC</b>													
MEAN SPAC.	29.84	30.08	43.18	42.05	42.66	39.04	26.87	20.71	23.82	22.73	30.36	46.51	32.91
NO. OBS.	124.	87.	86.	86.	154.	146.	150.	140.	127.	132.	112.	86.	1834.

5022 STINSON HEADCH CALIFORNIA SUMMARY FOR PERIOD STARTING 5- 1-68 AND ENDING 12-31-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL	OBS.
SURF DRS.	0.00	0.00	0.00	0.00	3.64	3.82	3.19	3.41	3.53	3.55	3.92	1.83	3.60	
HEIGHT (FT)	0.00	0.00	0.00	0.00	.82	.87	.62	1.09	1.03	1.95	.98	1.33	1.08	
STD DEV	0.	0.	0.	0.	61.	60.	62.	61.	58.	60.	51.	54.	467.	
NO. OBS.														
PERIOD (SEC)	0.00	0.00	0.00	0.00	12.29	11.62	12.74	13.27	12.62	12.82	12.82	11.72	12.39	
MEAN	0.00	0.00	0.00	0.00	2.04	2.08	2.76	2.69	2.83	2.83	1.86	2.35	2.38	
STD DEV	0.	0.	0.	0.	61.	59.	61.	61.	37.	60.	51.	54.	464.	
NO. OBS.														
DIRECTION														
COMPASS SECTOR														
0 OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SE	0.00	0.00	0.00	0.00	0.00	1.72	0.00	1.67	0.00	0.00	0.00	0.00	0.00	
S	0.00	0.00	0.00	0.00	0.00	0.00	3.23	6.67	5.26	5.86	13.73	51.85	12.68	
SW	0.00	0.00	0.00	0.00	0.00	0.00	96.77	90.00	89.47	85.52	78.43	68.15	79.91	
W	0.00	0.00	0.00	0.00	25.86	5.17	0.00	0.00	3.51	6.90	7.84	0.00	6.11	
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.22	
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	1.72	1.72	0.00	0.00	0.44	
NO. OBS.	0.	0.	0.	0.	58.	58.	62.	60.	37.	58.	51.	54.	456.	
BREAKER TYPE														
XOCC SPILL	0.00	0.00	0.00	0.00	93.33	98.28	91.94	81.97	89.66	96.55	98.04	86.79	91.97	
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PLUNGE	0.00	0.00	0.00	0.00	3.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SURGE	0.00	0.00	0.00	0.00	3.73	0.00	0.00	0.00	0.00	0.00	0.00	13.21	1.95	
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.06	18.03	10.34	3.95	1.96	0.00	6.07	
NO. OBS.	0.	0.	0.	0.	80.	80.	82.	61.	36.	50.	51.	53.	461.	
CURRENT DRS.														
(FT/SEC)														
NET MEAN	0.00	0.00	0.00	0.00	-0.09	-0.13	-0.22	-0.31	-0.22	-0.07	-0.26	-0.12	-0.01	
GROSS MEAN	0.00	0.00	0.00	0.00	-0.53	-0.50	-0.41	-0.73	-0.41	-0.39	-0.62	-0.55	-0.56	
STD DEV	0.00	0.00	0.00	0.00	0.47	0.36	0.31	0.53	0.50	0.33	0.58	0.52	0.50	
NO. OBS.	0.	0.	0.	0.	30.	30.	31.	31.	24.	13.	25.	25.	200.	
FORESHORE SLOPE														
MEAN (DEG)	0.00	0.00	0.00	0.00	6.17	5.79	5.23	4.70	5.54	5.69	7.58	7.08	5.98	
STD DEV	0.00	0.00	0.00	0.00	1.37	1.54.	0.92	1.24	1.33	1.19	1.32	1.06	1.54	
NO. OBS.	0.	0.	0.	0.	30.	29.	31.	30.	26.	27.	24.	26.	223.	
RIPS % OCC														
MEAN SPAC.	0.00	0.00	0.00	0.00	16.07	22.03	3.23	0.00	15.52	36.67	56.86	46.15	26.39	
NO. OBS.	0.	0.	0.	0.	313.86	476.92	400.00	0.00	388.89	352.27	295.86	327.88	318.82	
CUSPS % OCC														
MEAN SPAC.	0.00	0.00	0.00	0.00	44.26	40.00	66.77	34.43	36.21	16.67	52.94	46.30	39.40	
NO. OBS.	0.	0.	0.	0.	76.67	134.17	68.10	101.71	110.00	129.50	78.70	90.60	102.93	
NO. OBS.	0.	0.	0.	0.	61.	60.	82.	61.	58.	60.	51.	54.	467.	



5022 STINSIN BLACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-69 AND ENDING 12- 1-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF ORS. (FT)													
HIGH MEAN	5.52	4.50	3.83	4.61	3.90	3.27	3.57	3.57	3.74	3.33	3.62	4.50	3.76
STD DEV	1.40	1.26	1.10	2.03	1.17	.78	1.10	1.11	1.04	1.06	1.19	.71	1.34
NO. ORS.	61.	56.	59.	57.	60.	55.	59.	56.	47.	52.	45.	2.	611.
PERIOD (SEC)													
MEAN	12.68	14.38	16.54	14.72	13.67	11.58	10.51	10.02	10.33	11.46	11.14	11.75	12.57
STD DEV	3.62	2.98	3.14	3.26	3.15	2.40	2.12	2.32	2.36	2.38	1.67	1.06	3.59
NO. ORS.	62.	55.	59.	57.	60.	56.	59.	56.	47.	52.	45.	2.	610.
DIRECTION													
COMPASS SECTR													
OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. SE	9.68	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCC. S	41.94	45.45	16.95	67.66	26.67	0.00	6.47	5.45	36.30	11.94	0.00	0.00	1.15
OCC. SW	11.94	52.73	63.05	30.36	61.67	60.71	69.63	92.73	59.87	78.65	100.00	0.00	24.51
OCC. W	0.00	0.00	0.00	1.79	16.67	39.29	1.69	1.62	0.00	0.62	0.00	0.00	6.58
OCC. NW	1.61	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
OCC. CALM	4.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13	0.00	0.00	0.00	1.66
NO. ORS.	62.	55.	59.	56.	60.	56.	59.	55.	47.	52.	45.	2.	608.
BREAKER TYPE													
FOCC SPILL													
OCC. SPILL	100.00	98.21	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.83
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
NO. ORS.	61.	56.	59.	55.	60.	56.	59.	55.	46.	51.	45.	2.	603.
CURRENT ORS. (FT/SEC)													
NET MEAN	.34	-.71	-.65	-.21	-.52	-.69	-.47	-.37	-.87	-.45	-.37	-.50	-.41
GROSS MEAN	1.06	1.24	1.04	.76	.61	.81	.49	.47	.65	.51	.45	.50	.75
STD DEV	.92	.76	.78	.48	.27	.51	.20	.24	.42	.33	.24	0.00	.57
NO. ORS.	31.	28.	31.	30.	30.	28.	29.	28.	22.	26.	23.	1.	307.
FORESHORE SLOPE													
MEAN (DEG)	7.03	5.36	6.00	7.40	5.87	5.64	5.34	4.57	5.14	5.16	4.61	5.00	5.66
STD DEV	3.51	1.39	1.31	1.81	1.85	1.10	1.32	1.17	1.01	1.18	1.12	0.00	1.61
NO. ORS.	30.	28.	29.	29.	30.	28.	29.	28.	21.	25.	21.	1.	299.
RIPS X OCC													
MEAN SPAC.	38.10	48.21	47.46	47.37	45.00	30.36	3.39	1.79	6.38	4.68	0.00	0.00	25.94
STD DEV	29.54	21.56	20.45	24.11	443.00	348.76	400.00	300.00	316.67	80.00	0.00	0.00	330.41
NO. ORS.	63.	56.	59.	57.	60.	56.	59.	56.	47.	49.	45.	2.	609.
CURSPS X OCC													
MEAN SPAC.	30.16	41.07	47.44	50.88	48.33	42.86	5.08	1.79	8.51	25.00	0.00	0.00	28.27
STD DEV	85.16	94.55	99.46	117.59	124.26	97.71	83.31	75.00	90.71	92.31	0.00	0.00	68.11
NO. ORS.	63.	56.	59.	57.	60.	56.	59.	56.	47.	52.	45.	2.	612.

5022 STATION: MACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-1-70 AND ENDING 12-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SUM ORES.	3.70	3.70	4.14	3.00	3.63	3.13	1.60	3.27	2.60	2.25	2.60	3.50	3.42
MEAN	1.26	1.95	1.40	1.76	1.52	1.33	1.18	1.21	1.29	1.50	2.07	1.66	1.35
STD DEV	1.33	1.00	0.70	0.80	0.80	0.80	0.50	0.70	0.40	0.40	0.50	1.20	1.10
NO. OBS.	33	100	70	80	80	80	50	70	40	40	50	120	110
PERIOD (SEC)	11.68	10.94	10.86	10.35	10.06	11.68	9.94	10.61	12.28	17.20	11.08	13.31	11.64
MEAN	2.56	1.58	1.61	1.47	1.31	2.23	1.95	3.41	3.59	8.91	1.99	2.60	3.07
STD DEV	3.30	1.00	0.80	0.80	0.90	0.80	0.50	0.70	0.40	0.40	0.50	1.20	1.10
NO. OBS.	33	100	80	80	90	80	50	70	40	40	50	120	110
DIRECTION													
COASTAL SECTION													
OCC.	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	100.00	75.00	100.00	100.00	100.00	100.00	20.00	90.00	90.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	0	9	8	5	7	4	4	5	12	53
COMPRESS. SECTION													
OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	100.00	100.00	0.00	37.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
NO. OBS.	32	100	80	80	90	80	50	70	40	40	50	120	110
BREAKER TYPE													
ROCC	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	60.00	56.33	92.42
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	40.00	33.33	6.19
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	33	100	80	80	90	80	50	70	40	40	50	120	110
CURRENT OBS.													
(KT/SEC)													
NET MEAN	-50	57	24	1.06	1.17	4.48	4.44	1.15	2.9	4.52	4.25	1.11	4.33
GROSS MEAN	73	70	24	1.06	1.17	4.48	4.35	2.0	4.1	4.82	4.75	4.00	4.53
STD DEV	226	1.09	17	4.0	4.0	4.0	3.3	3.3	3.6	0.00	0.50	0.38	6.3
NO. OBS.	180	50	40	40	50	40	30	40	30	10	40	60	60
FRESHMORE SLIPE													
MEAN (MGS)	0.30	5.00	3.75	4.50	4.40	5.25	3.67	3.50	4.00	7.00	4.25	5.25	4.80
STD DEV	1.30	1.71	2.63	3.58	3.55	1.50	1.00	1.00	1.00	2.83	1.60	1.51	1.51
NO. OBS.	100	50	40	40	50	40	30	40	30	10	40	60	50
RIPS													
MEAN	42.42	22.22	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.33
STD DEV	414.29	650.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	214.83
NO. OBS.	30	90	80	80	90	80	50	70	40	40	50	120	110
CUSPS													
MEAN	30.50	40.00	37.80	12.50	55.56	50.00	20.00	42.86	25.00	25.00	40.00	66.67	36.05
STD DEV	134.00	93.75	150.00	60.00	92.00	83.75	60.00	40.00	50.00	60.00	42.50	96.67	49.06
NO. OBS.	30	100	80	80	90	80	50	70	40	40	50	120	110

5022 STINSON BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 2-71 AND ENDING 12-25-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF ORS.</b>													
HEIGHT (FT)	3.33	1.50	4.00	3.17	3.00	2.88	2.75	0.00	0.00	3.75	4.63	3.88	3.51
MEAN	1.56	1.76	1.10	.98	1.07	1.13	.50	0.00	0.00	1.16	1.30	.99	1.21
STD DEV	12.	6.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.
NO. OBS.													
<b>PERIOD (SFC)</b>													
MEAN	14.26	14.80	15.33	15.50	13.56	12.19	13.63	0.00	0.00	12.74	13.86	14.29	13.98
STD DEV	2.71	2.27	2.98	3.55	4.48	3.70	2.53	0.00	0.00	1.06	1.45	1.75	2.82
NO. OBS.	12.	8.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
1 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	87.50	100.00	100.00	75.00	85.71	100.00	0.00	0.00	87.50	0.00	12.50	4.11
4	0.00	12.50	0.00	0.00	0.00	14.29	0.00	0.00	0.00	12.50	28.57	25.00	9.59
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	11.	8.	6.	6.	8.	7.	4.	0.	0.	8.	7.	8.	73.
<b>BREAKER TYPE</b>													
XOCC	33.33	12.50	16.67	16.67	87.50	75.00	50.00	0.00	0.00	37.50	12.50	0.00	34.21
SP/L	66.67	87.50	83.33	83.33	0.00	25.00	50.00	0.00	0.00	62.50	87.50	100.00	64.47
PLUNGE	0.00	0.00	0.00	0.00	16.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	8.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.
<b>CURRENT ORS.</b>													
(FT/SEC)													
NET MEAN	-0.34	-0.22	-0.15	-0.35	.19	-0.68	-0.92	0.00	0.00	-0.23	-0.03	.03	-0.24
GROSS MEAN	.39	.26	.37	.65	.36	.68	.92	0.00	0.00	.37	.04	.03	.39
STD DEV	.50	.30	.29	.73	.41	.73	1.30	0.00	0.00	.41	.08	.05	.40
NO. OBS.	6.	4.	3.	3.	4.	4.	2.	0.	0.	4.	4.	4.	36.
<b>FURF SHORE SLOPE</b>													
MEAN (DFC)	4.00	3.33	3.67	3.33	4.00	3.50	3.50	0.00	0.00	4.75	4.75	4.00	3.94
STD DEV	1.10	.58	.58	1.53	0.00	.71	.71	0.00	0.00	1.26	1.26	.82	1.00
NO. OBS.	6.	3.	3.	3.	2.	4.	2.	0.	0.	4.	4.	4.	35.
<b>RIPS % OCC</b>													
MEAN SPAC	271.07	328.75	290.00	766.67	0.00	825.00	0.00	0.00	0.00	1125.00	1366.67	912.50	606.10
NO. OBS.	12.	8.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.
<b>CUSPS % OCC</b>													
MEAN SPAC	128.67	110.00	125.00	186.67	75.00	400.00	0.00	0.00	0.00	78.33	71.67	112.50	113.06
NO. OBS.	12.	8.	6.	6.	8.	4.	0.	0.	0.	8.	8.	8.	76.

5022 STUSSINK BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 12-30-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	2.63	3.20	4.38	3.67	3.75	3.83	3.20	3.75	3.75	4.75	5.00	4.00	3.77
MEAN	1.41	1.92	.92	1.00	.46	.41	.79	.69	.71	1.28	0.00	1.05	1.12
STD DEV	8.	5.	8.	9.	8.	6.	10.	6.	6.	8.	3.	10.	9.1.
NO. OBS.													
PERIOD (SEC)													
MEAN	14.51	12.32	14.09	14.28	14.73	14.73	14.20	15.20	14.39	14.34	13.83	17.28	14.65
STD DEV	3.69	2.83	1.14	2.28	2.17	1.16	1.17	.63	.97	1.88	2.29	3.02	2.26
NO. OBS.	7.	5.	8.	9.	8.	6.	10.	8.	6.	8.	3.	10.	90.
DIRECTION													
COASTAL SECTOR													
D OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	12.50	33.33	20.00	0.00	12.50	37.50	0.00	0.00	10.00
3	100.00	30.00	37.50	77.78	30.00	33.33	30.00	75.00	50.00	25.00	66.67	100.00	41.11
4	0.00	0.00	0.00	22.22	37.50	33.33	50.00	25.00	37.50	33.33	33.33	0.00	28.89
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	4.	8.	9.	8.	6.	10.	8.	8.	8.	3.	10.	90.
BREAKER TYPE													
XOCC SPILL	28.57	60.00	0.00	11.11	0.00	0.00	30.00	12.50	0.00	0.00	0.00	10.00	12.50
SP/PL	71.43	20.00	100.00	88.89	100.00	100.00	70.00	87.50	100.00	100.00	100.00	60.00	82.95
PUNGE	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	4.55
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	5.	7.	9.	8.	6.	10.	8.	8.	7.	3.	10.	88.
CURRENT OBS.													
(FT) SEC	-27	.42	-.14	-.16	-.03	-.13	.13	.03	.15	.18	-.03	.24	.04
NET MEAN	.39	.54	.14	.23	.10	.13	.14	.06	.15	.28	.03	.86	.28
STD DEV	.43	.47	.22	.26	.13	.24	.26	.07	.19	.16	.04	.76	.36
NO. OBS.	4.	4.	4.	5.	4.	3.	5.	4.	4.	4.	2.	5.	48.
FORESHORE SLOPE													
MEAN (DEG)	3.60	3.50	2.00	3.40	2.75	2.33	2.20	2.75	3.00	4.75	4.50	4.40	3.27
STD DEV	1.52	1.91	1.00	1.34	.50	.58	1.30	.96	1.83	1.50	2.12	2.19	1.57
NO. OBS.	5.	4.	3.	5.	4.	3.	5.	4.	4.	4.	2.	5.	48.
RIPS													
X OCC	12.50	20.00	50.00	33.33	50.00	50.00	50.00	50.00	50.00	50.00	66.67	0.00	38.46
SPAC	100.00	150.00	747.50	825.00	713.75	533.33	585.00	593.75	487.50	308.25	600.00	0.00	517.42
NO. OBS.	8.	5.	6.	9.	8.	6.	10.	8.	8.	3.	3.	10.	91.
CUSPS													
X OCC	25.00	60.00	50.00	44.44	37.50	50.00	50.00	50.00	50.00	37.50	66.67	30.00	43.86
MEAN SPAC	167.50	171.67	121.25	151.00	74.33	105.00	74.00	62.50	78.75	68.33	95.00	50.00	98.39
NO. OBS.	8.	5.	9.	9.	6.	6.	10.	8.	8.	8.	3.	10.	91.

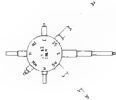
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	3.63	5.00	3.57	3.50	3.38	2.63	2.30	1.75	2.80	0.00	0.00	0.00	3.13
MEAN	1.06	1.07	.53	.76	1.06	.92	.95	.46	.63	0.00	0.00	0.00	1.20
STD DEV	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	16.44	24.26	21.10	20.44	18.49	16.49	15.70	15.25	13.07	0.00	0.00	0.00	17.84
STD DEV	5.76	4.68	5.95	5.83	4.83	2.49	3.39	1.60	2.54	0.00	0.00	0.00	5.22
NO. OBS.	8.	8.	7.	7.	8.	8.	10.	8.	10.	0.	0.	0.	74.
<b>DIRECTION</b>													
COASTAL SECTOR													
SECTOR 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SECTOR 2	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33
SECTOR 3	0.00	87.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	98.00
SECTOR 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67
SECTOR 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.
<b>BREAKER TYPE</b>													
XOCC SPILL	12.50	75.00	71.43	87.50	100.00	87.50	100.00	87.50	50.00	0.00	0.00	0.00	74.67
SP/PL	87.50	25.00	28.57	12.50	0.00	0.00	0.00	12.50	40.00	0.00	0.00	0.00	25.67
PLUNGE	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	10.00	0.00	0.00	0.00	2.67
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-.23	.03	-.17	-.73	-.25	-.15	.08	.25	.21	0.00	0.00	0.00	-.10
GROSS MEAN	.48	.72	.41	.73	.25	.25	.30	.25	.24	0.00	0.00	0.00	.40
STD DEV	.59	.82	.30	.82	.38	.34	.29	.37	.21	0.00	0.00	0.00	.35
NO. OBS.	4.	4.	5.	4.	4.	4.	5.	4.	5.	0.	0.	0.	39.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	4.75	4.50	4.20	4.50	4.50	5.00	6.20	4.25	5.00	0.00	0.00	0.00	4.79
STD DEV	1.26	1.00	1.00	1.00	.58	1.41	2.17	.50	.71	0.00	0.00	0.00	1.24
NO. OBS.	4.	4.	5.	4.	4.	8.	5.	4.	5.	0.	0.	0.	39.
<b>RIPS X OCC</b>													
MEAN SPAC.	12.50	0.00	0.00	37.50	50.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	12.00
NO. OBS.	8.	8.	7.	8.	8.	700.00	10.	8.	10.	0.	0.	0.	162.22
<b>CUSPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67
NO. OBS.	8.	8.	7.	8.	8.	70.00	10.	8.	10.	0.	0.	0.	7.68

WIND ROSES 05022 STINSON

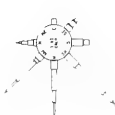
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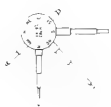
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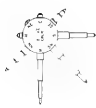
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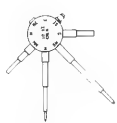
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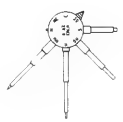
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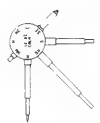
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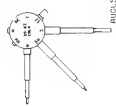
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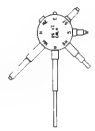
JUNE



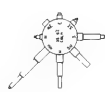
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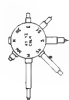
AUGUST



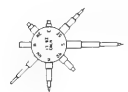
SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

STATION NUMBER 05022  
 NAME STINSON  
 COUNTY CALIFORNIA  
 DATE 1953-1954

DATA BASED ON OBSERVATIONS  
 AT STATION 05022  
 ON 1953-1954

5002 THOMPSON BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 40-20-01 AND ENDING 7-25-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MHS.
<b>SURF OBS.</b>													
HEIGHT (FT)	4.4	5.7	5.17	4.10	3.88	3.54	3.51	3.25	3.17	4.05	4.04	4.51	4.18
MEAN	1.68	3.07	3.56	1.07	1.06	.84	1.14	1.35	1.66	1.66	1.84	1.80	1.83
STD DEV	.62	.63	.56	.83	.80	.89	.80	.57	.52	.65	.54	.53	.707
NO. OBS.	62	63	56	83	100	89	80	57	52	65	54	53	707
<b>PERIOD (SEC)</b>													
MEAN	10.98	11.12	10.32	12.03	10.69	10.47	9.82	10.72	12.58	11.71	11.14	11.03	11.04
STD DEV	1.69	2.27	3.79	3.02	3.12	2.87	2.73	3.30	3.80	2.28	3.04	2.67	2.97
NO. OBS.	62	63	56	84	94	83	75	50	51	65	54	52	776
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 UCC	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	100.00	84.62	0.00	62.55	0.00	0.00	0.00	0.00	0.00	83.53
4	0.00	0.00	0.00	0.00	0.00	0.00	37.50	0.00	0.00	0.00	0.00	0.00	13.53
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	8	13	0	8	0	0	0	0	0	30
<b>COMPASS SECTOR</b>													
0 UCC	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.00	0.00	0.00	1.14
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	28.81	28.03	9.34	9.59	16.75	3.57	2.86	14.53	11.76	12.31	1.64	18.37	13.23
W	7.80	70.87	65.63	64.38	66.75	91.67	94.29	78.18	62.57	76.92	63.02	77.59	75.99
NW	0.00	0.00	0.00	26.03	14.50	3.57	2.86	7.27	19.61	6.15	9.23	4.08	9.14
CALC	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.82	0.00	3.04	3.00	4.68
NO. OBS.	58	62	52	73	80	84	70	53	51	65	53	49	733
<b>BREAKER TYPE</b>													
0 UCC	SPILL	3.23	14.75	50.00	12.05	6.19	12.50	30.86	32.76	57.81	43.94	32.73	21.04
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	6.77	65.25	40.00	4.82	10.31	7.41	6.12	5.79	6.52	42.59	58.06	67.27	2.54
SURGE	0.00	0.00	0.00	86.72	70.10	69.82	56.79	67.52	48.59	59.66	67.27	70.36	70.36
CALC	0.00	0.00	0.00	2.41	13.40	18.18	4.84	1.72	0.00	0.00	0.00	0.00	4.58
NO. OBS.	62	61	52	83	97	88	81	58	54	66	54	49	786
<b>CURRENT OBS.</b>													
(FT/SEC)	.01	.20	.52	.39	.07	.20	.08	.17	.21	.48	.68	.11	.68
NET MEAN	1.11	1.16	.81	.75	.75	.75	.73	.57	.77	.85	1.00	.82	.82
STD DEV	.67	.71	.58	.58	.58	.58	.51	.50	.76	.81	.54	.60	.62
NO. OBS.	27	27	28	45	47	47	50	28	35	28	18	20	397
<b>FRESHWATER SURGE</b>													
MEAN (DEC)	2.97	2.88	4.84	2.28	2.89	3.77	4.26	5.29	7.57	6.88	4.78	5.04	4.46
STD DEV	1.34	1.12	1.57	.97	1.09	1.09	2.05	2.69	5.08	3.28	1.78	3.18	2.95
NO. OBS.	32	17	7	36	46	46	50	48	55	40	28	28	411
<b>RIPS &amp; UCC</b>													
MEAN SPAC	1.61	0.00	0.20	16.33	11.24	12.91	16.21	13.68	19.70	15.68	5.62	15.14	15.14
STD DEV	30.00	36.67	15.02	10.29	16.00	191.63	111.93	111.93	101.54	101.54	14.50	15.00	39.65
NO. OBS.	62	62	53	83	94	84	84	54	54	66	54	54	789
<b>TUSPS &amp; UCC</b>													
MEAN SPAC	107.14	0.00	2.78	5.88	2.00	7.87	16.29	37.93	31.70	6.06	7.02	11.52	9.33
STD DEV	107.14	0.00	180.00	108.00	89.03	64.27	63.43	100.00	80.50	300.00	250.17	120.14	120.14
NO. OBS.	61	63	36	85	100	69	82	58	54	66	57	53	804

5002 THOMASON HEADCH CALIFORNIA SUMMARY FOR PERIOD STARTING 4-2-68 AND ENDING 12-31-68.

SUMMARY FOR PERIOD STARTING 4-2-68 AND ENDING 12-31-68.		JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		ALL OBS.	
<b>SUMMARY OBS.</b>																											
MEAN (FT)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>PARALLEL (FT)</b>																											
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>DIRECTION</b>																											
<b>COMPASS SECTOR</b>																											
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>HEAVEN TYPE</b>																											
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>CURRENT OBS.</b>																											
<b>(FT/SEC)</b>																											
MEAN		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>FURROWSHIP SLIPE</b>																											
MEAN (FT)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>REPS X (CC)</b>																											
MEAN SPAC.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>CUSPS X (CC)</b>																											
MEAN SPAC.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.



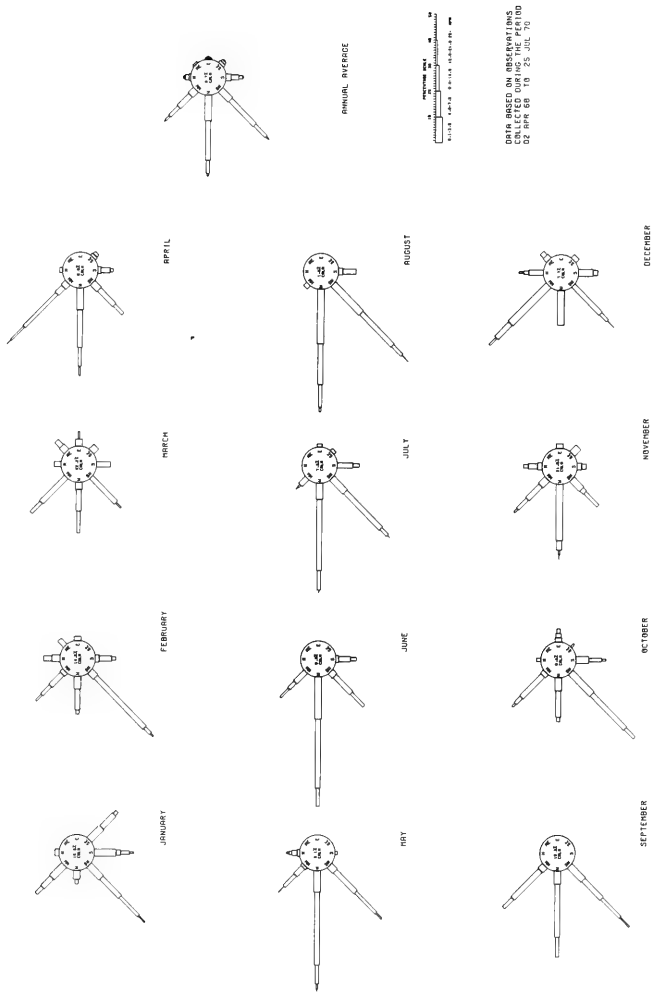
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	4.29	6.45	5.38	5.16	3.94	3.10	2.69	2.91	4.00	4.92	4.07	6.90	4.40
STD DEV	1.00	3.54	3.49	1.36	1.11	1.86	1.07	1.31	1.63	1.20	1.69	2.02	2.33
NO. OBS.	49.	42.	32.	19.	32.	30.	24.	33.	19.	26.	14.	10.	335.
<b>PERIOD (SEC)</b>													
MEAN	10.95	10.48	10.14	9.87	10.07	10.24	9.54	9.55	14.90	12.28	11.46	11.83	10.73
STD DEV	1.73	2.29	3.93	2.10	3.34	2.62	2.73	2.08	4.71	3.71	2.10	4.26	3.09
NO. OBS.	49.	42.	32.	19.	31.	30.	29.	33.	20.	26.	14.	10.	334.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.31
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	26.09	40.48	7.14	0.00	0.00	0.00	7.14	0.00	0.00	12.00	0.00	48.44	17.08
W	71.74	59.52	67.86	27.78	32.26	66.67	85.71	96.01	75.00	72.00	56.33	55.56	64.01
NW	0.00	0.00	25.00	72.22	3.00	3.33	7.14	3.03	20.00	12.00	33.33	0.00	13.98
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	46.	42.	28.	19.	31.	30.	28.	33.	20.	25.	12.	9.	322.
<b>BREAKER TYPE</b>													
X OCC SPILL	0.00	14.63	90.00	5.36	3.23	36.67	66.97	54.55	60.00	11.54	38.46	11.11	28.13
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUME	100.00	85.37	50.00	94.84	98.77	63.33	31.03	45.45	40.00	88.46	61.54	86.89	71.67
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	49.	41.	28.	19.	31.	30.	29.	33.	20.	26.	13.	9.	327.
<b>CURRENT OBS.</b>													
(FT./SEC.)													
NET MEAN	0.01	0.21	-0.52	-0.49	-0.55	-0.48	-0.44	-0.01	-0.60	-1.31	0.00	0.00	-0.32
GROSS MEAN	1.11	1.18	0.81	0.86	0.56	0.72	0.77	0.51	1.08	1.31	0.00	0.00	0.87
STD DEV	0.67	0.75	0.62	0.72	0.51	0.68	0.51	0.51	0.87	0.95	0.00	0.00	0.65
NO. OBS.	27.	23.	24.	16.	20.	16.	21.	19.	13.	6.	0.	0.	185.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	3.25	3.40	4.86	0.00	4.43	3.62	3.93	4.23	2.70	3.00	3.67	2.50	3.67
STD DEV	1.24	0.78	1.57	0.00	2.57	1.50	1.51	2.10	0.95	1.73	0.98	0.71	1.62
NO. OBS.	26.	13.	7.	0.	7.	21.	28.	26.	10.	11.	3.	2.	156.
<b>RIPS % OCC</b>													
MEAN SPAC.	2.04	0.00	6.90	0.00	46.68	33.33	65.82	48.48	10.00	0.00	0.00	0.00	19.58
STD DEV	360.00	0.00	325.00	0.00	453.33	168.00	39.42	121.88	175.00	0.00	0.00	0.00	157.64
NO. OBS.	49.	41.	29.	19.	32.	30.	29.	33.	20.	26.	14.	10.	332.
<b>CUSPS % OCC</b>													
MEAN SPAC.	14.58	0.00	3.13	0.00	0.00	33.33	48.28	51.52	5.00	0.00	0.00	0.00	14.03
STD DEV	107.44	0.00	160.00	0.00	89.23	69.23	67.63	79.31	180.00	0.00	0.00	0.00	61.05
NO. OBS.	49.	42.	32.	19.	32.	30.	27.	31.	20.	26.	14.	10.	335.

5002 THORNTON BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 9-70 AND ENDING 7-25-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS. (FT)</b>													
MEAN	5.00	4.38	3.50	4.50	4.53	0.00	3.88	0.00	0.00	0.00	0.00	0.00	4.44
STD DEV	2.45	1.12	1.29	1.27	1.18	0.00	.89	0.00	0.00	0.00	0.00	0.00	1.87
NO. OBS.	13.	21.	4.	10.	17.	0.	8.	0.	0.	0.	0.	0.	73.
<b>PERIOD (SECT)</b>													
MEAN	11.12	12.40	11.63	11.90	10.47	0.00	8.01	0.00	0.00	0.00	0.00	0.00	11.13
STD DEV	1.54	1.62	2.27	.32	2.32	0.00	1.03	0.00	0.00	0.00	0.00	0.00	2.10
NO. OBS.	13.	21.	4.	10.	17.	0.	8.	0.	0.	0.	0.	0.	73.
<b>DIRECTION</b>													
<b>COASTAL SECTION</b>													
DOCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	100.00	84.62	0.00	62.50	0.00	0.00	0.00	0.00	0.00	34.33
4	0.00	0.00	0.00	0.00	7.69	0.00	37.50	0.00	0.00	0.00	0.00	0.00	13.33
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	9.	13.	0.	8.	0.	0.	0.	0.	0.	30.
<b>COMPRESS SECTION</b>													
DOCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	38.46	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.92
W	53.85	95.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.68
NW	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
CALM	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
NO. OBS.	13.	20.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	37.
<b>BREAKER TYPE</b>													
DOCC SPILL	15.34	0.00	50.00	10.00	31.25	0.00	25.00	0.00	0.00	0.00	0.00	0.00	21.13
SPILL	0.00	0.00	0.00	40.00	62.50	0.00	75.00	0.00	0.00	0.00	0.00	0.00	58.17
PLUNGE	85.00	50.00	50.00	50.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	13.	20.	4.	10.	16.	0.	8.	0.	0.	0.	0.	0.	71.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	.14	0.00	0.00	0.00	0.00	.74	0.00	0.00	0.00	0.00	0.00	-.30
GROSS MEAN	0.00	1.00	0.00	0.00	0.00	0.00	.74	0.00	0.00	0.00	0.00	0.00	.87
STD DEV	0.00	.89	0.00	0.00	0.00	0.00	.81	0.00	0.00	0.00	0.00	0.00	.48
NO. OBS.	0.	4.	0.	0.	0.	0.	4.	0.	0.	0.	0.	0.	8.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	1.00	1.00	0.00	2.00	2.23	0.00	13.00	0.00	0.00	0.00	0.00	0.00	2.19
STD DEV	0.00	.87	0.00	.9.	1.3.	0.	11.	0.	0.	0.	0.	0.	2.18
NO. OBS.	4.	4.	0.	9.	13.	0.	11.	0.	0.	0.	0.	0.	31.
<b>RIPS &amp; OCC</b>													
MEAN SPAC.	0.00	4.76	25.00	60.00	6.67	0.00	75.00	0.00	0.00	0.00	0.00	0.00	21.13
STD DEV	0.00	60.00	450.00	1750.00	1000.00	0.00	466.67	0.00	0.00	0.00	0.00	0.00	71.15
NO. OBS.	13.	21.	4.	10.	15.	0.	8.	0.	0.	0.	0.	0.	71.
<b>CUSPS &amp; OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	80.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.22
STD DEV	0.00	0.00	0.00	180.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.33
NO. OBS.	13.	21.	4.	10.	17.	0.	8.	0.	0.	0.	0.	0.	73.

CALIFORNIA

WIND ROSES 05002 THORNTON



5003 FRANCIS BEACH CALIFORNIA

SUMMARY FOR PERIOD STARTING 00 3-68 AND ENDING 9-18-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MRS.
<b>SURF OBS.</b>													
WEIGHT (LFT)	4.70	6.43	5.28	4.86	3.55	4.99	4.00	3.25	4.69	5.33	5.11	4.65	4.57
MEAN	1.90	2.50	1.30	1.61	1.25	1.99	1.19	1.23	1.40	2.24	1.45	1.96	1.62
STD DEV	48.	42.	48.	76.	60.	36.	62.	83.	35.	55.	36.	40.	62.3.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	10.11	10.32	13.42	11.01	12.75	13.35	11.04	11.70	13.04	10.64	10.81	9.66	11.61.
STD DEV	2.82	2.58	2.64	2.31	2.46	2.44	2.53	3.46	4.45	3.00	2.67	3.51	4.13
NO. OBS.	48.	42.	47.	76.	61.	34.	60.	76.	34.	55.	34.	45.	61.
<b>DIRECTION SECTOR</b>													
DIR OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	7.	0.	22.	48.	2.	0.	0.	0.	80.
<b>COMPASS SECTOR</b>													
DIR OCC.	0.00	0.00	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>BREAKER TYPE</b>													
TOCC SPILL	75.00	66.67	36.96	68.75	93.33	45.95	59.02	13.41	48.87	45.45	50.00	65.91	50.73
SPUR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	25.00	33.33	6.00	0.00	3.33	0.00	29.51	63.41	5.71	0.00	0.00	0.00	11.95
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	19.51	34.59	54.55	50.00	34.09	33.26	33.26
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	48.	42.	48.	73.	60.	37.	61.	82.	33.	55.	36.	44.	61.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.37	-0.07	-0.75	-0.90	-0.50	-0.16	-0.34	-0.09	-0.61	-0.04	-0.41	-0.26	-0.33
GROSS MEAN	1.00	1.08	0.98	1.06	0.82	0.46	0.64	0.51	0.75	0.69	1.20	1.06	0.96
STD DEV	0.98	1.20	0.96	1.05	0.89	0.63	0.86	0.48	0.67	0.51	1.26	1.06	0.96
NO. OBS.	26.	22.	27.	40.	34.	22.	40.	41.	28.	32.	20.	23.	35.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	6.47	6.17	7.30	11.69	7.64	10.90	11.15	9.65	11.07	9.04	7.29	6.74	9.04
STD DEV	2.37	2.57	3.59	3.16	3.06	3.04	2.71	2.92	1.62	3.26	2.87	2.71	3.48
NO. OBS.	19.	18.	23.	32.	32.	21.	26.	40.	27.	32.	17.	19.	30.
<b>RIP</b>													
DIR OCC	48.00	52.27	50.17	32.44	10.59	47.17	75.61	77.65	40.00	34.18	36.69	51.11	49.05
MEAN SPAC	274.50	236.62	261.00	261.00	274.50	326.15	429.70	207.63	210.57	262.66	316.04	265.03	265.03
NO. OBS.	48.	46.	48.	76.	61.	34.	65.	82.	33.	55.	36.	45.	63.
<b>CUSPS X OCC.</b>													
MEAN SPAC	2.04	0.00	2.06	22.37	6.2.	39.47	19.67	3.49	34.90	9.09	2.76	2.22	11.51
NO. OBS.	48.	44.	48.	76.	61.	38.	61.	86.	35.	55.	27.00	180.00	49.71

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SUBS. OBS.</b>													
MEAN (FT)	0.00	0.00	0.00	4.08	3.15	4.23	3.75	2.86	4.64	5.24	5.11	4.44	4.23
STD. DEV.	0.00	0.00	0.00	1.32	.87	1.08	.88	1.11	1.19	2.29	1.07	1.56	1.63
NO. OBS.	0.	0.	0.	50.	46.	30.	32.	21.	26.	51.	35.	36.	329.
<b>PERIODS (SEC)</b>													
MEAN	0.00	0.00	0.00	10.99	13.14	13.46	13.51	16.63	14.12	10.49	10.60	9.07	11.96
STD. DEV.	0.00	0.00	0.00	2.15	2.11	2.00	1.04	3.86	4.61	3.05	2.31	2.94	3.36
NO. OBS.	0.	0.	0.	50.	47.	30.	30.	16.	27.	51.	35.	41.	325.
<b>DIRECTION</b>													
<b>COMPASS SECTION</b>													
DIR. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIR. SW	0.00	0.00	0.00	0.00	13.04	3.33	0.00	4.76	3.57	16.37	12.12	21.95	10.37
DIR. NW	0.00	0.00	0.00	0.00	86.96	10.00	0.00	95.24	82.14	55.10	75.81	76.52	76.52
CALM	0.00	0.00	0.00	35.82	0.00	13.33	0.00	0.00	14.84	24.69	12.16	2.44	12.80
NO. OBS.	0.	0.	0.	48.	46.	30.	32.	21.	28.	48.	33.	41.	328.
<b>BREAKER TYPE</b>													
NO. SPLIT	0.00	0.00	0.00	62.50	45.65	16.97	78.13	31.58	53.57	43.14	48.57	65.00	52.58
NO. SPL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. FLUDGE	0.00	0.00	0.00	25.00	41.30	50.00	15.63	52.63	32.14	56.86	51.03	35.00	39.82
NO. CALM	0.00	0.00	0.00	12.50	13.04	13.33	6.25	15.79	14.29	0.00	0.00	0.00	7.60
NO. OBS.	0.	0.	0.	48.	46.	30.	32.	19.	28.	51.	35.	40.	329.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	-1.28	-0.32	-0.11	-0.65	-0.18	-0.66	-0.02	-0.38	-0.29	-0.39
ROSS MEAN	0.00	0.00	0.00	1.36	.75	.95	1.16	.30	.79	.89	1.21	2.20	1.10
STD. DEV.	0.00	0.00	0.00	.89	.63	.59	.59	.28	.68	.53	1.30	1.97	1.01
NO. OBS.	0.	0.	0.	26.	25.	18.	22.	9.	21.	30.	19.	20.	190.
<b>FOR SWELL SLOPE</b>													
MEAN (FT/SEC)	0.00	0.00	0.00	11.20	6.60	10.00	10.31	8.43	11.04	8.97	7.99	6.72	8.94
STD. DEV.	0.00	0.00	0.00	3.74	1.78	2.26	1.18	2.57	1.74	3.35	2.07	2.27	3.06
NO. OBS.	0.	0.	0.	20.	25.	18.	13.	7.	23.	30.	17.	18.	170.
<b>RIPS &amp; CCC</b>													
MEAN SPAC.	0.00	0.00	0.00	20.00	6.34	40.00	48.75	57.14	35.71	15.29	37.14	46.34	35.52
NO. OBS.	0.	0.	0.	50.	47.	30.	32.	21.	28.	51.	35.	41.	335.
<b>CURSES &amp; DIC.</b>													
MEAN SPAC.	0.00	0.00	0.00	30.00	10.64	50.00	37.50	9.52	42.86	9.60	2.86	2.44	20.90
NO. OBS.	0.	0.	0.	50.	47.	30.	32.	21.	28.	51.	35.	41.	335.

5003 FRANCIS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 2-69 AND ENDING 12-15-69.

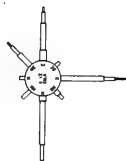
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS. - HEIGHT (FT)</b>													
MEAN	4.69	6.18	5.2A	6.39	5.29	5.00	5.63	5.15	5.80	6.50	5.00	6.50	5.54
STD DEV	2.00	2.00	1.3A	1.94	1.25	.76	1.30	1.34	.84	1.00	0.00	1.86	
NO. OBS.	45.	40.	47.	23.	7.	8.	8.	13.	5.	4.	1.	4.	285.
<b>PERIOD (SEC)</b>													
MEAN	9.95	10.10	13.43	12.32	12.99	12.96	11.56	10.69	12.20	12.55	11.00	15.65	11.62
STD DEV	2.81	2.81	2.87	2.54	3.43	2.27	3.30	1.32	.77	1.28	0.00	3.59	3.02
NO. OBS.	45.	41.	46.	23.	7.	8.	8.	12.	5.	4.	1.	4.	204.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
UCC. N	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
4E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	23.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	76.74	42.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.57
NW	0.00	0.00	53.33	91.30	100.00	100.00	100.00	91.87	100.00	100.00	100.00	100.00	10.62
W	0.00	0.00	0.00	8.70	0.00	0.00	0.00	8.53	0.00	0.00	0.00	0.00	10.61
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	45.	38.	45.	23.	7.	8.	8.	12.	5.	4.	1.	4.	198.
<b>BREAKER TYPE</b>													
10CC SPILL	73.33	67.50	37.7A	68.18	100.00	65.71	100.00	45.45	40.00	75.00	100.00	75.00	63.64
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	26.67	32.50	62.22	31.82	0.00	14.29	0.00	54.53	60.00	25.00	0.00	25.00	36.36
SHRAGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	45.	40.	45.	22.	7.	7.	7.	11.	5.	4.	1.	4.	198.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	-41	-69	-73	-24	-77	-42	-62	-66	-56	-93	-100	-68	-38
GROSS MEAN	1.15	1.15	.97	.50	.77	.42	.62	.49	.56	.93	1.00	.42	.89
STD DEV	1.02	1.21	.66	.43	.64	.52	.69	.41	.62	1.10	0.00	.38	.82
NO. OBS.	20.	20.	26.	11.	4.	4.	7.	7.	2.	2.	1.	3.	111.
<b>FOURSHORE SLOPE</b>													
MEAN (OBS)	6.06	6.01	7.30	12.50	13.00	14.75	17.00	14.14	11.00	10.50	0.00	7.00	8.91
STD DEV	1.55	2.03	1.59	1.68	3.00	3.60	0.00	2.54	3.00	.71	0.00	0.00	4.07
NO.	18.	17.	23.	12.	3.	4.	1.	7.	3.	2.	0.	0.	91.
<b>RIPS OCC</b>													
MEAN J-AC	47.81	50.00	53.19	52.17	71.43	75.00	100.00	58.33	60.00	75.00	100.00	100.00	56.52
NO. OBS.	275.00	228.19	228.00	297.92	275.00	300.00	381.25	407.14	383.33	325.00	275.00	368.75	275.10
NO. OBS.	42.	42.	47.	23.	7.	8.	6.	12.	5.	4.	1.	4.	207.
<b>CUSPS X OCC</b>													
MEAN SPAC	2.17	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.96
NO. OBS.	70.00	0.00	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.63
NO. OBS.	46.	42.	47.	23.	7.	8.	6.	13.	5.	4.	1.	4.	208.

500 B FRANCIS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-4-70 AND ENDING 9-14-70.

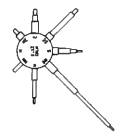
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF WRS.</b>													
MEAN	7.50	4.00	6.00	4.43	0.00	3.77	2.92	2.90	0.00	0.00	0.00	0.00	1.57
STD DEV	.71	0.00	0.00	1.62	0.00	1.11	.87	.71	0.00	0.00	0.00	0.00	1.37
NO. OBS.	3.	1.	3.	7.	0.	22.	49.	2.	0.	0.	0.	0.	89.
<b>PERIOD (SEC)</b>													
MEAN	12.07	11.50	12.80	11.83	9.96	0.00	9.87	10.51	7.85	0.00	0.00	0.00	10.32
STD DEV	2.19	0.00	0.00	1.29	2.09	0.00	1.53	2.08	1.06	0.00	0.00	0.00	2.02
NO. OBS.	3.	1.	1.	3.	7.	0.	22.	51.	2.	0.	0.	0.	90.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
NO. OCC.	1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	4.55	4.17	0.00	0.00	0.00	0.00	0.00
4	0	0	0	100	100	0	95.85	100.00	100.00	0.00	0.00	0.00	96.25
5	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	1.	7.	0.	22.	48.	2.	0.	0.	0.	80.
<b>COMPASS SECTOR</b>													
NO. OCC.	0	0	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	100	100	100	100	100	0	0	0	0	0	0	0	0
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	8.
<b>BREAKER TYPE</b>													
TOCC SPILL	100	0	0	100	0	0	18.18	0.00	0.00	0.00	0.00	0.00	16.10
SP/PL	0	0	0	0	0	0	81.82	100.00	100.00	0.00	0.00	0.00	80.43
PLUNGE	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BURGE	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	3.	2.	1.	3.	7.	0.	22.	52.	2.	0.	0.	0.	92.
<b>CURRENT OBS.</b>													
NET MEAN	.09	.17	.125	.17	-1.19	0.00	.20	.28	.33	0.00	0.00	0.00	.04
GROSS MEAN	.34	.17	1.25	.53	1.19	0.00	.50	.59	.33	0.00	0.00	0.00	.60
STD DEV	.49	.24	0.00	.51	1.24	0.00	.60	.57	0.00	0.00	0.00	0.00	.59
NO. OBS.	2.	2.	1.	3.	5.	0.	18.	25.	1.	0.	0.	0.	55.
<b>FOUR SHORE SLOPE</b>													
MEAN (OBS)	14.00	2.00	0.00	0.00	11.75	0.00	11.58	8.77	12.00	0.00	0.00	0.00	9.82
STD DEV	0.00	2.26	0.00	0.00	3.32	0.00	3.32	1.82	0.00	0.00	0.00	0.00	2.86
NO. OBS.	1.	1.	0.	0.	4.	0.	18.	2.	1.	0.	0.	0.	43.
<b>RIPS X OCC</b>													
MEAN SPAC	66.67	100.00	100.00	100.00	28.57	0.00	77.27	90.36	50.00	0.00	0.00	0.00	81.52
NO. OBS.	3.	2.	1.	3.	4.	0.	22.	52.	2.	0.	0.	0.	92.
<b>CUSPS X OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00	0.00	0.00	1.10
NO. OBS.	3.	2.	1.	3.	7.	0.	21.	52.	2.	0.	0.	0.	91.

# CALIFORNIA

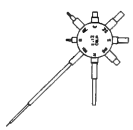
## WIND ROSES 05003 FRANCIS



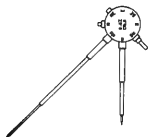
JANUARY



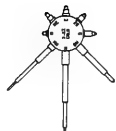
FEBRUARY



MARCH

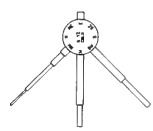


APRIL

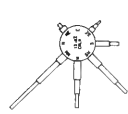


ANNUAL AVERAGE

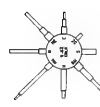
WIND SPEED MEASURED IN MILES PER HOUR  
 WIND DIRECTION MEASURED IN DEGREES  
 FROM 0 TO 360



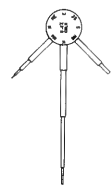
SEPTEMBER



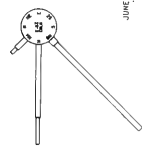
OCTOBER



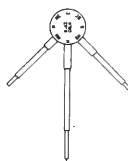
NOVEMBER



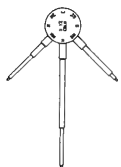
MAY



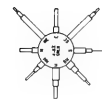
JUNE



JULY



AUGUST



DECEMBER

DATA BASED ON OBSERVATIONS  
 FROM 0000 TO 2300 HOURS  
 ON APR 69 TO 14 SEP 70



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	2.99	2.80	3.16	3.14	2.98	2.69	2.99	2.94	2.86	3.01	2.93	3.33	2.96
STD DEV	1.80	1.87	1.56	2.95	2.18	1.68	1.63	1.63	1.23	1.24	1.39	1.45	1.76
NO. OBS.	121.	96.	113.	150.	173.	169.	179.	176.	171.	176.	117.	112.	1763.
<b>PERIOD (SEC)</b>													
MEAN	11.74	11.94	13.92	13.71	13.43	14.27	14.13	14.27	13.51	13.47	14.10	11.65	13.38
STD DEV	2.04	1.99	4.45	3.65	2.62	4.17	3.99	4.17	2.94	3.42	3.82	3.07	3.66
NO. OBS.	121.	96.	113.	160.	173.	169.	179.	176.	173.	176.	120.	112.	1770.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC. 1	0.00	0.00	0.00	11.54	0.00	0.00	0.00	0.00	1.75	1.72	5.68	0.00	1.54
2	0.00	0.00	0.00	89.00	21.67	27.82	27.82	21.67	19.30	25.86	58.82	0.00	25.38
3	0.00	0.00	0.00	0.00	71.67	70.81	70.81	71.67	78.85	72.41	35.29	0.00	71.28
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	86.	50.	60.	62.	60.	57.	56.	117.	0.	390.
<b>COMPASS SECTOR</b>													
OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	100.00	91.42	72.68	71.87	80.07	80.07	80.07	81.42	86.26	91.17	17.82	90	15.73
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	120.	96.	112.	134.	111.	108.	107.	107.	110.	120.	101.	111.	1329.
<b>BREAKER TYPE</b>													
XOCC SPILL	76.67	78.13	83.22	73.17	71.51	80.12	82.04	73.99	68.86	62.92	66.39	70.18	73.60
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	120.	96.	112.	104.	172.	164.	173.	173.	172.	176.	122.	114.	1755.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.11	0.17	0.04	0.11	0.02	0.05	0.01	0.09	0.05	0.01	0.02	0.03	0.04
GROSS MEAN	0.33	0.22	0.21	0.22	0.18	0.18	0.16	0.15	0.13	0.10	0.17	0.23	0.17
STD DEV	0.20	0.22	0.16	0.23	0.20	0.20	0.20	0.21	0.24	0.21	0.17	0.22	0.21
NO. OBS.	61.	46.	52.	76.	84.	85.	87.	86.	86.	90.	80.	58.	860.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	3.86	2.30	3.25	1.75	2.20	2.58	2.55	2.60	3.52	2.54	2.74	2.51	2.65
STD DEV	1.04	1.07	2.20	0.77	1.29	1.02	1.19	1.46	1.72	1.12	1.16	1.26	1.39
NO. OBS.	61.	46.	55.	76.	84.	85.	83.	87.	85.	89.	62.	59.	872.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	121.	97.	113.	165.	172.	171.	179.	177.	173.	160.	135.	117.	1792.
<b>CUSP8 X OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	121.	97.	115.	185.	174.	171.	179.	177.	173.	161.	99.	123.	1792.

5000 NATURAL BRIDGES CALIFORNIA SUMMARY FOR PERIOD STARTING 4-3-68 AND ENDING 12-31-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	2.71	2.54	2.20	2.38	3.02	2.02	2.92	3.29	3.06	2.67
STD DEV	0.00	0.00	0.00	1.14	1.01	.94	.85	1.00	.89	1.41	1.38	1.16	1.16
NO. OBS.	0.	0.	0.	51.	59.	51.	55.	52.	55.	61.	45.	52.	481.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	13.07	13.29	13.96	14.50	14.09	13.16	13.76	13.22	10.06	13.24
STD DEV	0.00	0.00	0.00	2.36	2.33	3.46	3.57	2.61	1.49	3.01	1.96	2.68	2.92
NO. OBS.	0.	0.	0.	53.	49.	51.	55.	53.	57.	61.	47.	54.	490.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	96.20	96.43	94.00	97.67	93.48	100.00	98.33	100.00	94.64	94.13
SW	0.00	0.00	0.00	0.00	3.57	6.00	0.00	0.00	0.00	0.00	0.00	3.57	2.57
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	51.	56.	50.	47.	46.	55.	60.	46.	56.	467.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	37.74	37.29	46.00	63.46	58.62	60.70	58.06	40.82	61.62	54.10
SP/PI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	32.08	35.59	34.00	30.77	32.22	37.54	41.94	59.18	30.91	35.45
SURGE	0.00	0.00	0.00	36.19	37.12	20.00	50.77	1.96	1.75	0.00	0.00	7.87	10.45
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	53.	59.	50.	52.	51.	57.	62.	49.	55.	488.
<b>CURRENT OBS (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.04	0.10	0.09	0.09	0.10	0.02	0.00	0.02	0.03	0.01
GROSS MEAN	0.00	0.00	0.00	0.0	0.23	0.17	0.24	0.14	0.11	0.21	0.21	0.31	0.31
STD DEV	0.00	0.00	0.00	0.32	0.32	0.17	0.29	0.17	0.21	0.22	0.18	0.21	0.25
NO. OBS.	0.	0.	0.	25.	30.	25.	25.	25.	26.	31.	24.	24.	242.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	1.64	1.96	2.00	2.74	3.92	4.57	2.60	1.96	2.21	2.63
STD DEV	0.00	0.00	0.00	0.57	0.43	0.69	1.29	0.91	2.25	0.97	0.20	1.18	1.45
NO. OBS.	0.	0.	0.	25.	28.	26.	23.	25.	28.	30.	24.	24.	238.
<b>RIPS x OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	51.	59.	51.	55.	53.	57.	62.	49.	57.	496.
<b>CUSPS x OCC</b>													
MEAN SPAC	0.00	0.00	0.00	36.19	16.95	1.96	5.45	0.00	12.28	32.26	20.41	5.26	14.11
NO. OBS.	0.	0.	0.	57.43	68.20	60.00	78.33	0.00	61.86	86.55	97.50	116.67	70.00
NO. OBS.	0.	0.	0.	53.	59.	51.	55.	53.	57.	62.	49.	57.	496.

5000 NATURAL ANTICLES CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-69 AND ENDING 12-31-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MRS.
SUMF. ORS.													
HEIGHT - MEAN (FT)	2.90	3.53	3.56	4.69	3.51	3.10	3.13	2.90	3.36	2.87	2.78	3.57	3.31
STD DEV	1.49	1.24	1.07	4.19	1.02	1.08	1.61	1.17	1.33	0.96	1.16	1.89	1.86
NO. ORS.	72.	45.	61.	54.	59.	60.	62.	62.	58.	60.	55.	60.	69.
PERIOD (SEC)													
MEAN	10.92	15.48	16.25	14.33	17.11	16.33	14.95	14.95	14.20	14.75	14.68	13.13	14.57
STD DEV	2.10	5.46	4.16	2.01	4.93	4.61	5.47	4.78	4.75	4.75	4.67	4.60	4.60
NO. ORS.	62.	44.	61.	52.	59.	60.	62.	61.	58.	59.	56.	58.	69.
DIRECTION													
COMPASS SECTOR													
W OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	6.62	5.00	44.44	60.00	44.83	50.00	67.21	32.73	18.33	32.73	0.00	0.00
S	100.00	66.36	51.85	48.28	36.36	48.28	40.00	32.73	65.45	81.67	65.45	96.36	62.60
SW	0.00	6.62	30.00	1.85	0.00	6.90	6.67	0.00	1.62	0.00	1.82	0.00	4.76
W	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	1.15
NW	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	3.64	4.05
CALM	0.00	0.00	6.67	1.85	3.64	5.88	6.00	0.00	0.00	0.00	0.00	1.64	1.64
NO. ORS.	55.	44.	60.	54.	55.	58.	60.	61.	58.	60.	55.	55.	67.
BREAKER TYPE													
KIDCC SPL	70.09	51.33	80.33	94.55	79.66	95.00	93.33	96.77	76.14	77.97	91.07	77.97	82.59
SP/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	29.95	46.67	19.69	54.05	29.95	29.95	0.00	3.23	29.95	29.95	29.95	15.78	15.92
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	15.25	2.66
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. ORS.	61.	45.	61.	55.	59.	60.	60.	62.	58.	59.	56.	59.	69.
CURRENT ORS.													
(FT/SEC)													
NET MEAN	0.27	0.32	0.07	0.29	0.02	0.05	0.05	0.04	0.09	0.04	0.02	0.03	0.09
GROSS MEAN	0.28	0.39	0.31	0.29	0.15	0.22	0.21	0.21	0.20	0.26	0.17	0.15	0.23
STD DEV	0.25	0.26	0.14	0.19	0.13	0.27	0.27	0.29	0.35	0.29	0.20	0.20	0.23
NO. ORS.	31.	22.	26.	25.	30.	30.	31.	31.	28.	31.	29.	29.	34.
FORESHORE SLOPF													
MEAN (DEG)	3.68	1.77	2.23	2.46	2.97	3.76	3.38	3.03	3.03	3.03	3.60	2.80	3.07
STD DEV	0.99	1.02	1.70	0.72	1.88	0.98	0.98	1.22	0.76	1.50	1.13	1.30	1.34
NO. ORS.	31.	22.	30.	29.	29.	29.	29.	30.	28.	30.	30.	30.	34.
RIPS % OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. ORS.	62.	45.	61.	55.	59.	60.	62.	62.	58.	60.	57.	60.	70.
CUSPS % OCC.	0.00	0.00	0.00	3.64	0.00	0.00	1.61	15.48	1.72	5.00	1.75	3.33	4.56
MEAN SPAC.	0.00	0.00	0.00	57.50	0.00	0.00	90.00	72.14	98.00	61.67	120.00	105.00	53.85
NO. ORS.	62.	45.	61.	55.	59.	60.	62.	62.	58.	60.	57.	60.	70.

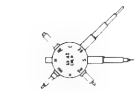
5004 NATURAL RHIZELS CALIFORNIA SUMMARY FOR PERIOD STARTING 1= 1-70 AND ENDING 11=24=70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SUNF. OBS. (151)</b>													
HEIGHT	3.08	2.12	2.66	1.94	2.75	2.68	3.10	2.92	3.16	3.25	2.47	0.00	2.78
MEAN	1.42	1.86	2.77	1.01	5.77	5.38	6.27	7.93	5.87	1.50	1.01	0.00	1.96
STD DEV	59	89	53	51	56	60	62	62	58	57	17	0	584
NO. OBS.	59	89	53	51	56	60	62	62	58	57	17	0	584
<b>PERIOD (SEC)</b>													
MEAN	11.45	12.44	12.10	11.93	12.63	11.60	11.63	12.04	12.41	12.42	13.94	0.00	12.11
STD DEV	1.86	1.35	1.41	2.78	3.19	1.56	1.63	1.89	2.39	2.33	3.95	0.00	2.23
NO. OBS.	59	52	52	55	55	58	62	62	58	58	17	0	588
<b>DIRECTION</b>													
<b>CIRCLE SECTOR</b>													
D OCC.	0.00	0.00	0.00	11.54	0.00	0.00	0.00	0.00	1.75	1.72	5.88	0.00	1.54
Z	0.00	0.00	0.00	21.92	0.00	0.00	0.00	0.00	18.70	25.86	58.92	0.00	25.38
3	0.00	0.00	0.00	53.85	79.00	71.67	71.97	71.31	78.90	76.01	35.20	0.00	71.28
4	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	26	50	60	62	60	57	56	17	0	390
<b>COMPASS SECTOR</b>													
D OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	59	50	52	29	0	0	0	0	0	0	0	0	190
<b>BREAKER TYPE</b>													
RCC SPILL	83.05	100.00	90.74	83.71	100.00	94.64	86.89	63.33	95.61	52.63	58.62	0.00	79.21
PLUNGE	10.17	0.00	9.22	13.77	0.00	1.37	13.11	28.33	26.32	14.04	35.29	0.00	9.79
BURGE	6.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.53	5.88	0.00	10.31
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	59	51	54	56	54	56	61	60	57	57	17	0	582
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.6	0.04	0.01	0.02	0.03	0.02	0.00	0.10	0.07	0.03	0.01	0.00	0.02
GROSS MEAN	0.19	0.11	0.08	0.04	0.04	0.06	0.04	0.10	0.08	0.06	0.01	0.00	0.08
STD DEV	1.17	1.16	1.00	0.77	0.70	1.07	1.16	1.11	1.09	1.11	0.92	0.00	1.11
NO. OBS.	30	26	26	27	27	30	31	32	29	26	7	0	294
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	3.17	2.79	2.44	1.22	1.63	1.93	1.65	1.16	2.14	1.97	1.88	0.00	2.16
STD DEV	1.05	0.88	2.14	0.42	0.49	0.37	0.49	0.37	0.52	0.52	0.35	0.00	0.54
NO. OBS.	30	24	25	27	27	30	31	32	28	29	8	0	211
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	59	52	54	57	56	60	62	62	58	58	17	0	585
<b>CUSPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	59	52	54	57	56	60	62	62	58	58	17	0	585

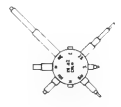
CALIFORNIA

5004 NATURAL BRIDGES

WIND ROSES



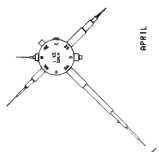
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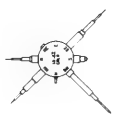
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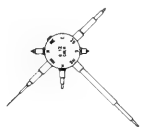
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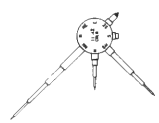
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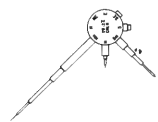
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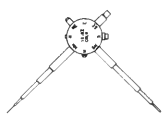
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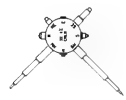
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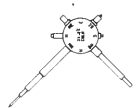
AUGUST



SEPTEMBER



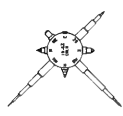
OCTOBER



NOVEMBER



DECEMBER



ANNUAL AVERAGE

WIND SPEEDS IN MPH  
 0 10 20 30 40 50 60 70 80 90 100  
 0 10 20 30 40 50 60 70 80 90 100  
 0 10 20 30 40 50 60 70 80 90 100

DATA BASED ON OBSERVATIONS  
 AT NATURAL BRIDGES  
 00 APR 00 TO 24 NOV 70

536Y CAPITOLA BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 11- 5-70 AND ENDING 6- 9-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	1.37	1.59	1.58	1.64	1.34	1.38	1.05	1.52	1.90	1.22	1.92	2.12	1.60
STD DEV	.65	.70	.90	.71	.61	.59	.22	.75	.45	.43	1.56	1.00	.91
NO. OBS.	35.	34.	40.	42.	36.	21.	20.	21.	20.	16.	36.	43.	366.
<b>PERIOD (SEC)</b>													
MEAN	9.63	11.22	11.02	12.49	13.08	13.17	11.71	11.53	12.20	11.31	10.63	9.45	11.31
STD DEV	2.80	1.83	1.96	3.16	3.10	3.44	1.02	2.77	.80	.57	2.32	2.11	1.53
NO. OBS.	39.	37.	39.	43.	31.	21.	19.	20.	20.	16.	36.	43.	372.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	11.43	0.00	1.45
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	92.11	100.00	97.37	96.67	87.88	89.47	100.00	100.00	100.00	100.00	87.80	91.33	91.33
4	7.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.57	12.20	3.77
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	12.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	39.	37.	38.	30.	33.	19.	16.	30.	20.	16.	35.	41.	343.
<b>BREAKER TYPE</b>													
XOCC SPILL	23.08	6.06	5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.28	5.41
SP/PL	76.92	87.88	92.11	86.05	89.74	89.71	100.00	100.00	100.00	100.00	72.22	83.72	87.37
PLUNGE	0.00	0.06	2.63	13.95	5.13	1.89	0.00	0.00	0.00	0.00	0.00	0.00	4.05
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	2.97
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	39.	33.	38.	43.	39.	21.	20.	21.	20.	17.	36.	43.	370.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-.04.	-.09	-.07	-.04	-.12	-.03	-.02	0.00	-.08	-.00	-.01	-.04	-.05
GROSS MEAN	.04	.11	.08	.10	.18	.03	.02	.03	.08	.00	.03	.04	.06
STD DEV	.15	.20	.22	.16	.30	.07	.06	.07	.18	.02	.12	.11	.17
NO. OBS.	39.	36.	40.	43.	39.	20.	20.	21.	20.	17.	35.	43.	373.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	3.65	4.37	3.45	2.77	3.44	4.29	4.85	4.57	5.00	5.11	4.34	5.14	4.10
STD DEV	.69	1.35	1.48	1.09	1.52	1.46	.89	.68	.65	.32	1.45	.92	1.55
NO. OBS.	37.	35.	40.	43.	39.	21.	20.	21.	20.	16.	35.	43.	373.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	39.	37.	40.	43.	40.	21.	20.	21.	20.	16.	36.	43.	370.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
NO. OBS.	39.	37.	40.	43.	40.	21.	20.	21.	20.	16.	36.	43.	373.

5367 CAPITOLA BEACH CALIFORNIA

SUMMARY FOR PERIOD STARTING 11- 5-70 AND ENDING 12-31-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF DHS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	2.19	1.95
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	.87	1.10
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.30	8.19	9.10
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	1.85	2.63
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
9 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.87	0.00	11.43
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.33	75.00	65.71
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	22.86
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00	0.00	0.00
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	18.92
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.50	66.67	54.05
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	2.70
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.25	0.00	24.32
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.02	.07	.03
<b>GROSS MEAN</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.06	.07	.07
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.12	.16	.13
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.	21.	36.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.06	5.33	5.22
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.77	.86	.71
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.
<b>CUSPS X OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	21.	37.

5507 CAPTIVA HEACH SUMMARY FOR PERIOD STARTING 1-4-71 AND ENDING 12-31-71.

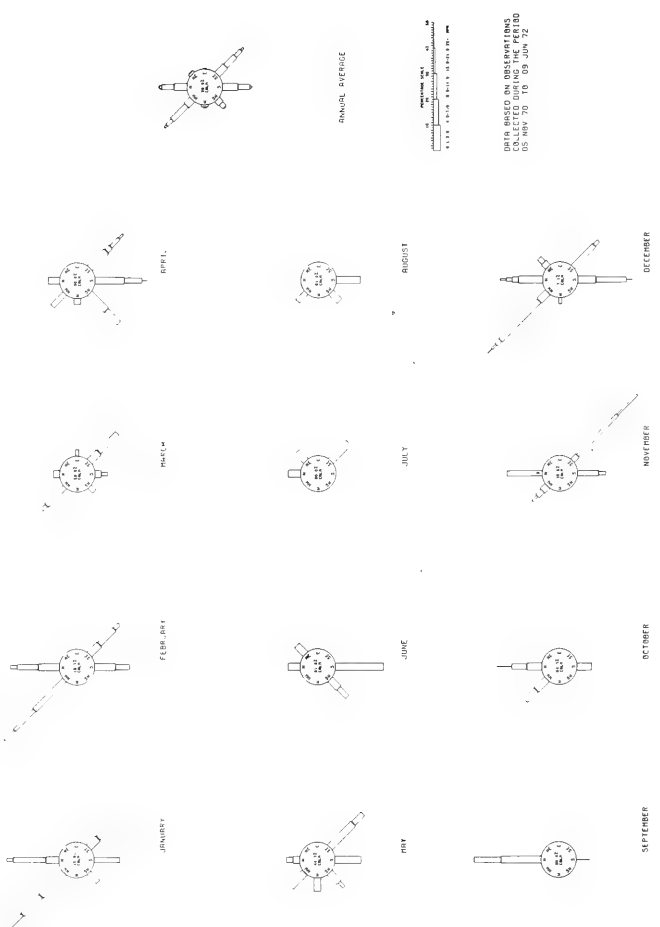
MONTH	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SOFT OBS.</b>													
MEAN (FT)	1.47	1.21	1.25	1.41	1.36	1.20	1.05	1.57	1.40	1.22	2.15	2.05	1.50
STDEV	.80	.43	.72	.50	.80	.41	.22	.75	.45	.43	1.73	1.13	.87
NO. OBS.	17.	19.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	229.
<b>PERIODS (OBS.)</b>													
MEAN (OBS.)	7.79	10.05	10.99	12.50	12.16	11.33	11.71	11.53	12.20	11.31	10.90	10.66	11.16
STDEV	2.17	2.80	1.66	1.59	1.57	1.87	1.02	1.17	.80	.57	1.56	1.96	1.96
NO. OBS.	20.	17.	19.	22.	19.	15.	19.	20.	20.	16.	20.	22.	231.
<b>DIRECTION</b>													
<b>COASTAL SECTION</b>													
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN (FT)	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV	0.00	0.00	0.00	84.89	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	91.57
NO. OBS.	1	65.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.	17.	18.	9.	14.	13.	16.	20.	20.	18.	20.	21.	206.
<b>BEACH TYPE</b>													
NO. OBS.	45.00	14.29	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68
MEAN (OBS.)	55.00	71.43	83.33	72.73	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	90.39
STDEV	0.00	14.29	5.56	27.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.	17.	18.	22.	20.	15.	20.	21.	20.	17.	20.	22.	229.
<b>COFFER DAMS</b>													
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN (OBS.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.	17.	20.	22.	20.	15.	20.	21.	20.	17.	20.	22.	234.
<b>FRESHWATER SURF</b>													
NO. OBS.	4.29	4.00	2.20	3.91	3.20	4.33	4.45	4.57	5.00	5.11	5.74	4.95	4.05
MEAN (OBS.)	1.84	1.84	1.49	1.91	1.83	1.69	1.59	1.68	1.65	1.32	1.63	1.21	1.26
STDEV	1.19	1.17	1.20	1.22	1.20	1.15	1.20	1.21	1.20	1.18	1.19	1.22	1.33
NO. OBS.	19.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	233.
<b>RIPS &amp; TIE</b>													
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN (OBS.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	235.
<b>CUSHES &amp; TIE</b>													
NO. OBS.	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN (OBS.)	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STDEV	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	235.



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	1.28	1.85	1.90	1.90	1.39	1.83	0.00	3.00	0.00	0.00	0.00	0.00	1.69
STD DEV	.46	.75	.87	1.17	.85	.75	0.00	0.00	0.00	0.00	0.00	0.00	.89
NO. OBS.	18.	20.	20.	20.	18.	6.	0.	0.	0.	0.	0.	0.	102.
<b>PERIOD (SEC)</b>													
MEAN	11.61	11.05	11.05	12.48	19.06	17.75	0.00	0.00	0.00	0.00	0.00	0.00	12.42
STD DEV	1.10	.56	2.25	4.59	3.98	2.07	0.00	0.00	0.00	0.00	0.00	0.00	3.30
NO. OBS.	19.	20.	20.	21.	18.	6.	0.	0.	0.	0.	0.	0.	104.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	78.95	66.67	0.00	0.00	0.00	0.00	0.00	0.00	94.23
4	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	1.92
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	21.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	18.	20.	20.	21.	19.	6.	0.	0.	0.	0.	0.	0.	104.
<b>BREAKER TYPE</b>													
%OCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	100.00	100.00	100.00	100.00	78.95	50.00	0.00	0.00	0.00	0.00	0.00	0.00	93.27
PLUNGE	0.00	0.00	0.00	0.00	10.53	50.00	0.00	0.00	0.00	0.00	0.00	0.00	4.81
SLUDGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	19.	19.	20.	21.	19.	6.	0.	0.	0.	0.	0.	0.	104.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.06	-0.01	0.00	-0.01	-0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
GROSS MEAN	.06	.01	0.00	.01	.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05
STD DEV	.20	.03	0.00	.04	.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.19
NO. OBS.	19.	19.	20.	21.	19.	5.	0.	0.	0.	0.	0.	0.	103.
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	4.06	4.72	4.70	2.10	3.68	4.17	0.00	0.00	0.00	0.00	0.00	0.00	3.63
STD DEV	.80	.46	.47	.83	.75	.41	0.00	0.00	0.00	0.00	0.00	0.00	1.17
NO. OBS.	18.	18.	20.	21.	19.	6.	0.	0.	0.	0.	0.	0.	102.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	19.	20.	20.	21.	20.	6.	0.	0.	0.	0.	0.	0.	106.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	19.	20.	20.	21.	20.	6.	0.	0.	0.	0.	0.	0.	106.

CALIFORNIA

WIND ROSES 5367 CAPITOLA



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	3.19	3.02	3.09	2.79	2.67	2.47	2.93	3.14	2.76	3.10	3.32	3.41	3.05
STD DEV	1.46	1.30	1.19	1.12	1.16	1.21	1.18	1.53	1.55	1.43	1.44	1.38	1.38
NO. OBS.	58.	61.	66.	56.	52.	52.	14.	21.	131.	91.	91.	41.	786.
<b>PERIOD (SEC)</b>													
MEAN	12.18	13.55	13.74	13.69	14.03	13.68	15.11	16.58	14.73	13.60	12.88	12.26	13.64
STD DEV	2.65	3.01	2.22	2.39	3.13	2.83	1.73	3.36	2.76	2.23	2.48	2.31	2.78
NO. OBS.	56.	60.	70.	61.	54.	51.	13.	22.	131.	41.	64.	84.	764.
<b>DIRECTION</b>													
<b>COSINUS SECTOR</b>													
D OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	4.00	0.00	11.11	0.00	7.69	9.09	0.00	5.68	6.69	8.82	0.00	4.68	5.49
S	46.00	80.95	66.67	92.91	92.31	90.91	100.00	86.24	80.00	79.41	94.29	95.12	86.81
W	4.00	19.05	22.22	4.99	0.00	0.00	0.00	1.48	8.69	11.76	5.71	0.00	7.33
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.52	0.00	0.00	0.00	3.37
NO. OBS.	25.	21.	18.	11.	13.	11.	2.	17.	45.	34.	15.	41.	273.
<b>COMPASS SECTOR</b>													
D OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00	0.00	2.1
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	2.08	0.00	0.00	0.00	0.00	0.00	14.59	0.00	0.00	0.00	2.28
S	17.24	0.00	0.00	2.13	0.00	0.00	0.00	0.00	4.59	7.84	3.37	8.16	3.94
SW	75.86	100.00	85.83	95.74	100.00	100.00	100.00	100.00	80.00	86.24	96.83	89.80	92.12
W	0.00	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.1
NW	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21
CALM	3.45	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
NO. OBS.	29.	37.	48.	47.	41.	34.	19.	3.	79.	31.	56.	44.	484.
<b>BREAKER TYPE</b>													
ROCK SPILL	28.07	23.33	15.34	23.21	15.34	16.00	57.14	27.27	10.00	2.15	5.56	21.74	15.75
SP/PL	21.05	18.33	6.14	5.36	7.69	20.00	0.00	22.73	6.23	12.90	15.56	26.09	14.21
PLUNGE	49.12	51.67	75.85	47.66	76.92	64.00	33.71	50.00	80.77	82.80	77.78	51.09	68.12
SURGE	1.75	6.67	4.67	3.57	0.00	0.00	7.14	0.00	0.00	1.08	1.11	1.09	1.79
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08	0.00	0.00	1.13
NO. OBS.	37.	40.	65.	56.	52.	50.	14.	22.	130.	43.	40.	42.	761.
<b>CURRENT OBS.</b>													
(FI/SEC)													
NET MEAN	.33	.01	.07	-.06	.06	-.03	-.01	-.08	-.01	-.17	-.12	-.03	-.00
<b>GROSS MEAN</b>	.39	.34	.22	.17	.18	.32	.07	.51	.34	.34	.33	.43	.32
STD DEV	.38	.24	.21	.23	.31	.36	.15	.44	.44	.37	.47	.46	.36
NO. OBS.	42.	39.	56.	40.	38.	43.	6.	16.	64.	57.	51.	54.	526.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	5.67	5.78	6.94	3.11	3.48	3.70	4.30	4.13	4.64	7.76	6.05	6.93	5.00
STD DEV	2.29	2.06	2.33	1.56	2.02	1.62	1.16	1.09	2.32	3.39	2.42	2.32	2.81
NO. OBS.	47.	41.	40.	46.	34.	44.	10.	16.	87.	54.	51.	54.	524.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	6.95	9.84	1.59	7.41	11.11	14.29	4.55	6.82	19.15	20.13	4.17	7.11
NO. OBS.	60.	62.	71.	61.	54.	54.	14.	22.	152.	44.	44.	46.	816.
<b>CUSPS X OCC</b>													
MEAN SPAC.	6.67	15.87	21.13	39.68	61.11	70.37	64.29	77.27	44.70	26.60	3.19	7.29	20.99
STD DEV	1.11	75.60	87.73	100.40	85.64	94.28	108.33	62.06	95.97	132.28	120.00	94.00	100.96
NO. OBS.	60.	63.	71.	63.	54.	54.	14.	22.	132.	44.	44.	46.	817.

5005 TWIN LAKES CALIFORNIA SUMMARY FOR PERIOD STARTING 9- 1-68 AND ENDING 12-31-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	2.96	2.74	2.92	2.66
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41	1.20	1.14	1.52	1.36
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.51	0.57	0.50	0.51
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	51.	57.	50.	215.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.45	13.59	12.33	12.35	12.93
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	1.79	1.60	1.52	1.81
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	46.	57.	46.	208.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 UCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0 UCC. NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	7.84	1.57	8.11	6.10
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.74	86.24	96.31	89.49	92.49
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	51.	56.	49.	213.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.93	1.96	5.26	32.69	12.04
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.07	96.08	92.98	65.38	86.57
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	.93
CALH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	.46
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	56.	51.	57.	52.	216.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.02	=.19	-.14	.00	=.08
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.25	.24	.24	.20	.23
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.23	.29	.14	.26	.22
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	26.	27.	30.	26.	111.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	10.73	9.49	8.35	8.94
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23	1.99	1.79	1.55	2.61
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	27.	26.	29.	26.	106.
<b>RIPS % UCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.00	3.64	1.82
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	112.50	45.51
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	51.	57.	55.	220.
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.79	0.00	0.00	7.27	5.91
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.33	0.00	0.00	105.75	43.88
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	51.	57.	55.	220.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURE OBS.</b>													
HEIGHT (FT)													
MEAN	2.93	2.75	3.43	2.93	2.92	2.13	3.00	3.00	3.92	0.00	0.00	0.00	3.94
STD DEV	1.57	.50	1.40	1.44	1.16	.81	1.21	1.58	1.06	0.00	0.00	0.00	1.36
NO. OBS.	30.	4.	14.	15.	12.	8.	12.	5.	12.	0.	0.	0.	116.
<b>PERIOD (SEC)</b>													
MEAN	11.81	10.13	13.38	14.05	15.63	16.60	14.95	15.90	17.87	0.00	0.00	0.00	4.17
STD DEV	2.06	2.10	1.51	1.68	1.71	1.73	1.83	1.79	4.15	0.00	0.00	0.00	2.95
NO. OBS.	28.	4.	18.	17.	12.	8.	11.	5.	12.	0.	0.	0.	115.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
O BEC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	17.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.92	0.00	0.00	0.00	9.01
SW	75.86	100.00	100.00	100.00	100.00	100.00	100.00	100.00	15.36	0.00	0.00	0.00	4.50
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.78
NW	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
NO. OBS.	28.	4.	15.	15.	12.	8.	10.	5.	13.	0.	0.	0.	111.
<b>ROFAKER TYPE</b>													
XOCC SPILL	23.33	25.00	33.33	53.33	50.00	75.00	66.67	40.00	25.00	0.00	0.00	0.00	40.71
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	71.33	75.00	46.67	33.33	50.00	25.00	25.00	60.00	75.00	0.00	0.00	0.00	53.00
SURGE	3.33	0.00	20.00	13.33	0.00	0.00	6.33	0.00	0.00	0.00	0.00	0.00	1.19
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	30.	4.	15.	15.	12.	8.	12.	5.	12.	0.	0.	0.	113.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	.09	.21	-.10	-.03	.04	-.22	-.02	0.00	-.19	0.00	0.00	0.00	-.05
GROSS MEAN	.09	.21	.16	.13	.19	.22	.11	0.00	.85	0.00	0.00	0.00	.16
STD DEV	.15	.30	.17	.20	.22	.22	.16	0.00	.04	0.00	0.00	0.00	.13
NO. OBS.	14.	2.	14.	7.	9.	8.	4.	0.	8.	0.	0.	0.	66.
<b>FORESHORE SLOPE</b>													
ME (DEG)	6.95	8.50	6.21	4.91	6.50	6.00	4.75	0.00	4.55	0.00	0.00	0.00	5.98
STD DEV	1.05	2.38	1.53	.70	1.41	.76	.71	0.00	.32	0.00	0.00	0.00	1.52
NO. OBS.	20.	4.	14.	11.	8.	8.	8.	0.	11.	0.	0.	0.	84.
<b>RIPS X UCC</b>													
MEAN SPAC.	0.00	0.00	11.11	0.00	16.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00	4.96
STD DEV	0.00	0.00	75.00	0.00	200.00	0.00	160.00	0.00	0.00	0.00	0.00	0.00	46.86
NO. OBS.	32.	4.	18.	17.	12.	8.	12.	5.	13.	0.	0.	0.	121.
<b>CUSPS X OCC.</b>													
MEAN SPAC.	3.15	0.00	16.67	35.29	58.33	50.00	58.33	20.00	38.46	0.00	0.00	0.00	26.10
STD DEV	87.00	0.00	20.00	58.33	60.00	50.00	104.29	100.00	62.00	0.00	0.00	0.00	64.57
NO. OBS.	32.	4.	18.	17.	12.	8.	12.	5.	13.	0.	0.	0.	121.

SOCS TIDE LOGS CALIFORNIA SUMMARY FOR PERIOD STARTING 2- 1-70 AND ENDING 12-30-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	3.00	3.15	2.85	3.03	3.19	2.50	2.50	2.91	3.18	4.46	3.76	3.21
MEAN	0.00	1.94	1.93	1.82	1.80	1.72	.71	.71	1.92	1.88	1.24	1.38	1.27
STD DEV	0.00	3.2	3.3	3.1	3.2	3.1	2.8	2.8	4.3	2.8	2.6	2.6	2.84
NO. OBS.	0.	32.	33.	31.	32.	31.	2.	2.	43.	28.	26.	26.	284.
<b>PERIOD (SEC)</b>													
MEAN	0.00	13.02	13.03	13.43	13.10	13.46	16.00	15.10	14.26	13.40	13.21	12.57	13.36
STD DEV	0.00	1.45	1.35	2.31	1.38	1.65	.71	.65	1.11	2.26	1.66	2.61	1.81
NO. OBS.	0.	32.	33.	32.	33.	31.	2.	2.	43.	29.	24.	26.	287.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
C. OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	14.07	85.00	92.54	3.55	86.54
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.41	0.00	7.41	0.00	3.66
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	4.	0.	2.	2.	3.70	0.00	0.00	0.00	4.90
									27.	20.	27.	29.	111.
<b>COMPASS SECTOR</b>													
C. OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	100.00	93.94	33.13	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	97.47
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.63
NK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	33.	33.	32.	29.	31.	0.	0.	0.	0.	0.	0.	156.
<b>BREAKER TYPE</b>													
ROCKPILL	0.00	26.13	9.38	6.90	0.00	7.14	0.00	0.00	2.33	0.00	0.00	3.57	6.43
SPURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	53.87	10.74
PLUNGE	0.00	65.63	90.63	93.10	100.00	92.86	100.00	100.00	95.35	82.174	60.00	42.87	81.79
SURGE	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	1.07	1.07
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	32.	32.	29.	31.	28.	2.	2.	43.	28.	25.	26.	286.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.00	*.05	*.07	*.04	*.11	.15	0.00	*.02	.10	*.09	.04	.24	.06
GROSS MEAN	0.00	.13	.18	.11	.15	.29	0.00	.16	.19	.16	.28	.47	.21
STD DEV	0.00	.19	.25	.23	.23	.40	0.00	.26	.32	.23	.41	.38	.29
NO. OBS.	0.	15.	23.	22.	22.	22.	2.	2.	29.	16.	13.	16.	182.
<b>FORESHORE SLOPE</b>													
PERIOD (SEC)	0.00	4.77	3.38	2.38	2.67	2.78	2.50	2.00	3.07	5.20	6.21	5.38	3.72
STD DEV	0.00	1.07	1.46	1.27	2.1	1.17	.71	0.00	1.83	1.86	1.85	1.84	1.61
NO. OBS.	0.	22.	16.	26.	21.	23.	2.	1.	30.	15.	14.	16.	186.
<b>RIPS % OCC</b>													
MEAN, SPAC.	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	4.65	10.34	0.00	3.45	2.33
NO. OBS.	0.	34.	34.	34.	33.	32.	2.	2.	35.00	110.00	0.00	50.00	43.01
									43.	29.	29.	29.	301.
<b>CUSPS % OCC</b>													
MEAN, SPAC.	0.00	5.88	2.94	35.29	51.52	62.50	100.00	100.00	65.12	37.93	0.00	10.34	32.56
NO. OBS.	0.	34.	34.	34.	33.	32.	2.	2.	100.14	120.45	0.00	78.33	88.17
									43.	29.	29.	29.	301.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	3.06	2.85	2.74	3.00	2.13	2.54	0.00	3.29	3.68	3.50	3.75	4.58	3.18
STD DEV	1.11	1.31	1.24	.95	1.55	1.13	0.00	1.64	1.06	1.88	1.75	2.31	1.51
NO. OBS.	18.	20.	19.	12.	8.	13.	0.	14.	19.	12.	8.	12.	155.
PERIOD (SEC)													
MEAN	12.59	15.58	15.32	13.87	15.30	12.50	0.00	17.01	17.66	15.36	15.75	11.25	14.82
STD DEV	3.19	4.91	3.13	3.41	6.64	3.64	0.00	3.91	2.95	2.92	5.97	3.73	4.30
NO. OBS.	18.	19.	19.	12.	9.	14.	0.	15.	19.	14.	8.	12.	159.
DIRECTION													
COASTAL SECTOR													
OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	11.11	0.00	11.11	9.09	0.00	6.67	0.00	0.00	0.00	8.33	4.08
3	100.00	75.00	66.67	90.91	88.89	90.91	0.00	86.67	88.89	71.43	100.00	91.67	85.03
4	0.00	0.00	22.22	0.00	0.00	0.00	0.00	6.67	11.11	28.57	0.00	0.00	10.88
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	15.	16.	18.	11.	9.	11.	0.	15.	18.	14.	8.	12.	147.
BREAKER TYPE													
XCC SPILL	41.18	20.00	11.11	25.00	22.22	0.00	0.00	26.67	21.05	7.14	25.00	16.67	19.62
SP/PL	41.18	35.00	22.22	25.00	44.44	71.43	0.00	33.33	57.89	57.14	50.00	75.00	45.57
PLUNGE	17.65	35.00	66.67	50.00	33.33	28.57	0.00	40.00	21.05	33.71	25.00	8.33	33.54
SURGE	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	17.	20.	18.	12.	9.	14.	0.	15.	19.	14.	8.	12.	158.
CURRENT OBS.													
(F/T/SEC)													
NET MEAN	.17	-.13	.20	-.11	-.07	-.22	0.00	-.09	-.13	-.23	-.30	-.22	-.08
GROSS MEAN	.34	.41	.32	.32	.24	.42	0.00	.56	.76	.73	.76	.88	.52
STD DEV	.23	.24	.24	.24	.26	.50	0.00	.51	.44	.74	.58	.45	.67
NO. OBS.	18.	17.	19.	11.	7.	13.	0.	14.	19.	14.	8.	12.	152.
FRESHORE SLOPE													
MEAN (DEG)	4.18	6.60	5.80	3.00	1.80	3.92	0.00	4.27	3.64	4.77	5.38	5.50	4.50
STD DEV	2.74	2.67	2.44	1.50	.84	1.19	0.00	.96	.90	1.17	.92	2.28	2.03
NO. OBS.	17.	10.	10.	9.	5.	13.	0.	15.	19.	13.	8.	12.	131.
RIPS X OCC	0.00	5.26	26.32	8.33	22.22	42.86	0.00	6.67	36.84	92.86	25.00	8.33	24.53
MEAN SPAC	0.00	60.00	245.00	100.00	155.00	133.33	0.00	100.00	132.00	144.77	70.00	30.00	112.46
NO. OBS.	18.	19.	19.	12.	9.	14.	0.	15.	19.	14.	8.	12.	159.
CUSPS X OCC	16.67	30.00	57.89	58.33	100.00	100.00	0.00	93.33	89.47	100.00	37.50	0.00	61.25
MEAN SPAC	120.00	67.00	107.82	98.29	98.33	103.57	0.00	51.07	99.41	141.57	120.00	0.00	91.70
NO. OBS.	18.	20.	19.	12.	9.	14.	0.	15.	19.	14.	8.	12.	160.

## 5005 TWIN LAKES

## CALIFORNIA

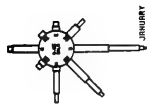
SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 2-16-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF HRS.													
HEIGHT (FT)													
MEAN	4.20	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.13
STD DEV	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
PERIOD (SEC)													
MEAN	12.45	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.57
STD DEV	3.19	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.85
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
DIRECTION													
COASTAL SECTOR													
OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	9.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.33
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
BREAKER TYPE													
OCC SPILL	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29
SP/PL	50.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.29
PLUNGE	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.43
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	10.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
CURRENT OBS.													
(LT/SEC)													
NET MEAN	.89	.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.82
GROSS MEAN													
STD DEV	.89	.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.85
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
FURF-SHORE SLOPE													
MEAN (DEG)	4.70	6.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.27
STD DEV	1.49	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
RIPS % OCC													
MEAN SPAC.	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	37.33
CUSPS % OCC													
MEAN SPAC.	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	37.33

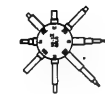


WIND ROSES 05005 TWIN LAKES

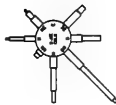
CALIFORNIA



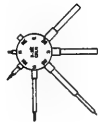
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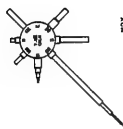
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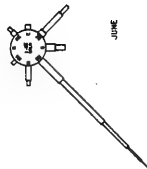
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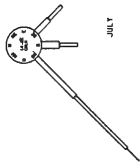
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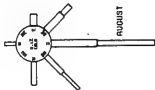
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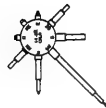
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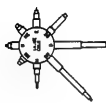
JULY



AUGUST



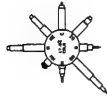
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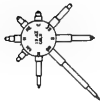
OCTOBER



NOVEMBER



DECEMBER



ANNUAL AVERAGE

WIND ROSE DATA  
 COLLECTED FROM 05005 TWIN LAKES  
 CALIFORNIA  
 PERIOD FROM 01 SEP 68 TO 15 FEB 72

WIND ROSE DATA  
 COLLECTED FROM 05005 TWIN LAKES  
 CALIFORNIA  
 PERIOD FROM 01 SEP 68 TO 15 FEB 72

9001 NEW BRIGANTON CALIFORNIA SUMMARY FOR PERIOD STARTING 0- 6-66 AND ENDING 10- 4-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS. HEIGHT (FT)</b>													
MEAN	2.95	1.62	2.27	2.75	2.63	1.92	1.37	1.44	2.15	2.22	1.42	2.39	2.13
STD DEV	1.56	1.40	1.53	2.53	1.27	.90	.64	.75	1.18	1.53	.79	1.27	1.44
NO. OBS.	37	11	37	69	62	50	49	34	33	27	30	36	483
<b>PERIOD (SEC)</b>													
MEAN	10.32	11.01	13.48	11.95	12.16	11.07	11.07	10.62	12.06	12.16	12.31	13.80	11.86
STD DEV	3.50	3.87	1.92	2.75	2.69	3.08	2.89	2.39	4.06	1.94	3.33	2.99	3.05
NO. OBS.	38	9	16	66	61	50	49	34	33	27	33	33	475
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
0 OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0	0	0	0	0	0	0	0	0	1	0	0	1
<b>COMPASS SECTOR</b>													
0 OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.21
S	83.00	22.96	22.86	23.59	50.52	9.64	67.25	61.90	45.00	35.00	35.00	45.00	82.51
SW	13.80	32.96	23.59	23.59	50.52	9.64	67.25	21.21	97.56	57.86	56.46	62.86	40.93
W	13.80	0.00	23.86	0.00	1.59	0.00	0.00	0.00	0.00	7.69	2.70	2.86	30.90
NW	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.21
CALM	3.60	0.00	0.00	1.44	0.00	0.00	2.04	9.09	0.00	0.00	5.41	5.71	1.90
NO. OBS.	36	11	35	67	63	49	49	33	33	26	37	35	474
<b>BREAKER TYPE</b>													
ROCK SPILL	92.63	100.00	46.65	31.62	32.26	10.70	2.04	0.00	0.00	42.66	52.63	36.11	29.38
BP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	47.37	0.00	1.35	68.18	44.52	87.76	93.47	67.65	100.00	46.43	36.84	61.11	63.54
SURF	0.00	0.00	0.00	0.00	3.23	2.04	2.49	32.35	0.00	10.71	5.28	6.43	6.43
NO. OBS.	38	11	37	66	62	49	49	34	32	26	36	36	486
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	-.50	-.15	-.22	-.18	-.11	-.06	-.03	-.01	-.02	-.06	-.10	-.20	-.12
GROSS MEAN	.55	.28	.26	.21	.12	.12	.07	.05	.08	.24	.19	.50	.20
STD DEV	.45	.27	.22	.21	.14	.15	.13	.05	.08	.38	.43	.46	.30
NO. OBS.	24	9	26	39	37	29	33	29	31	23	23	21	320
<b>FORESHORE SLOPE</b>													
MEAN (DEC)	6.33	4.05	4.05	3.97	3.65	5.62	6.50	5.90	6.61	7.20	7.15	6.41	5.66
STD DEV	2.31	1.00	1.62	2.23	2.56	2.23	2.16	3.57	5.31	4.35	2.92	2.28	3.16
NO. OBS.	24	9	22	16	43	29	36	29	31	20	26	22	327
<b>RIPES</b>													
1 OCC	0.00	16.18	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.78	.82
2 OCC	0.00	30.60	0.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	30.60	16.91
NO. OBS.	38	11	38	69	63	50	49	34	33	26	36	36	486
<b>CURBS % OCC.</b>													
MEAN BRAC.	10.53	18.18	42.11	49.26	44.44	90.00	6.16	0.00	0.00	0.00	10.26	2.78	64.18
NO. OBS.	38	11	38	69	63	50	49	34	33	26	36	36	486

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	2.13	2.20	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.15
MEAN	0.00	0.00	0.00	.76	.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.69
STD DEV	0.00	0.00	0.00	2.30	1.50	3.00	0.00	0.00	0.00	0.00	0.00	0.00	4.10
NO. OBS.	0.	0.	0.	23.	15.	3.	0.	0.	0.	0.	0.	0.	41.
<b>PERIOD (SECS)</b>													
MEAN	0.00	0.00	0.00	10.98	9.94	10.63	0.00	0.00	0.00	0.00	0.00	0.00	10.56
STD DEV	0.00	0.00	0.00	1.41	2.59	1.76	0.00	0.00	0.00	0.00	0.00	0.00	1.99
NO. OBS.	0.	0.	0.	22.	16.	3.	0.	0.	0.	0.	0.	0.	41.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	63.64	48.75	100.00	0.00	0.00	0.00	0.00	0.00	0.00	67.50
SW	0.00	0.00	0.00	36.36	11.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.50
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	22.	16.	2.	0.	0.	0.	0.	0.	0.	40.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	100.00	86.67	100.00	0.00	0.00	0.00	0.00	0.00	0.00	94.59
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.41
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	20.	15.	2.	0.	0.	0.	0.	0.	0.	37.
<b>CURRENT OBS.</b>													
(FT/SECT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROSS MEAN	0.00	0.00	0.00	.14	.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.11
STD DEV	0.00	0.00	0.00	.19	.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.13
NO. OBS.	0.	0.	0.	13.	7.	2.	0.	0.	0.	0.	0.	0.	22.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	6.50	6.50	6.00	0.00	0.00	0.00	0.00	0.00	0.00	6.63
STD DEV	0.00	0.00	0.00	1.24	1.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.95
NO. OBS.	0.	0.	0.	12.	10.	2.	0.	0.	0.	0.	0.	0.	24.
<b>RIPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	23.	16.	3.	0.	0.	0.	0.	0.	0.	42.
<b>CUSPS % OCC</b>													
MEAN SPAC	0.00	0.00	0.00	52.17	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.95
NO. OBS.	0.	0.	0.	10.47	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.70
NO. OBS.	0.	0.	0.	23.	16.	3.	0.	0.	0.	0.	0.	0.	42.

5001 NEW BRIGHTON CALIFORNIA SUMMARY FOR PERIOD STARTING 3-9-69 AND ENDING 12-26-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SUMME OHS.													
HEIGHT (FT)													
MEAN	0.00	0.00	2.19	3.07	2.77	1.91	1.37	1.44	2.15	2.27	1.42	2.39	2.11
STD DEV	0.00	0.00	1.18	2.76	1.59	.93	.64	.75	1.18	1.54	.79	1.27	1.49
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	33.	26.	38.	36.	368.
PERIOD (SEC)													
MEAN	0.00	0.00	13.56	12.42	12.92	11.08	11.07	10.82	12.06	11.94	12.31	13.80	12.14
STD DEV	0.00	0.00	1.41	1.11	2.30	3.15	2.89	2.39	4.06	1.59	3.33	2.99	2.98
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	33.	26.	33.	33.	380.
DIRECTION													
COMPASS SECTION													
D OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BREAKER TYPE													
XUCC SPILL	0.00	0.00	40.83	2.17	14.89	6.38	2.04	0.00	0.00	44.44	52.63	36.11	18.04
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	59.38	97.83	80.85	91.49	73.07	67.65	100.00	44.44	36.84	61.11	73.20
SURGE	0.00	0.00	0.00	0.00	4.26	2.13	20.49	32.35	0.00	11.11	5.24	0.00	7.99
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	32.	21.	36.	36.	388.
CURRENT OHS.													
(FT/SEC)													
NET MEAN	0.00	0.00	.27	.22	.12	.06	.03	.01	.02	.07	.10	.20	.09
GROSS MEAN	0.00	0.00	.31	.25	.13	.13	.13	.05	.08	.25	.19	.50	.18
STD DEV	0.00	0.00	.24	.23	.16	.16	.17	.08	.11	.38	.23	.48	.27
NO. OHS.	0.	0.	21.	26.	30.	27.	33.	29.	31.	24.	23.	23.	267.
FORESHORE SLOPE													
MEAN (DEG)	0.00	0.00	3.89	2.65	2.79	5.44	6.50	5.90	8.81	7.05	7.15	6.41	5.67
STD DEV	0.00	0.00	1.45	.56	2.10	2.21	2.36	3.57	5.31	4.42	2.92	2.28	3.57
NO. OHS.	0.	0.	19.	26.	33.	27.	34.	29.	31.	19.	26.	22.	266.
RIPS X UCC													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	2.78	.51
STD DEV	0.00	0.00	0.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	30.00	18.44
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	33.	27.	39.	36.	390.
CUSPS X UCC.													
MEAN SPAC	0.00	0.00	46.84	47.83	57.45	53.19	8.16	0.00	0.00	0.00	10.26	2.78	25.13
STD DEV	0.00	0.00	125.71	111.45	112.67	106.28	32.35	0.00	0.00	0.00	36.00	15.00	58.15
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	33.	27.	39.	36.	390.

5001 NEW BRIGHTON CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 2-70 AND ENDING 3-23-70.

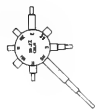
	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF. OBS.</b>													
HEIGHT (FT)	2.35	1.82	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.28
MEAN	1.58	1.40	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46
STO DEV	37.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	53.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	10.32	11.01	13.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.75
STO DEV	3.50	3.87	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
NO. OBS.	38.	9.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	53.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D UCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	25.00	63.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.00
SW	61.11	36.36	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.00
W	13.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	36.	11.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	50.
<b>BREAKER TYPE</b>													
XOCC SPILL	52.63	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.67
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	47.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	38.	11.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	54.
<b>CURRENT OBS.</b>													
<b>(FT/SFC)</b>													
NET MEAN	-0.50	-0.15	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.35
GROSS MEAN	.55	.28	.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.43
STO DEV	.45	.27	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.40
NO. OBS.	24.	9.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	36.
<b>FUR/SLOPE SLOPE</b>													
MEAN (DEG)	6.96	6.33	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
STO DEV	2.31	1.00	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11
NO. OBS.	24.	9.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	36.
<b>RIPS X OCC</b>													
MEAN SPAC.	0.00	18.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64
NO. OBS.	38.	11.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6.00
<b>CUSHES X OCC.</b>													
MEAN SPAC.	10.53	18.18	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.73
NO. OBS.	38.	11.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6.00

5001 NEW IRRIGATION CALIFORNIA SUMMARY FOR PERIOD STARTING 10- 4-71 AND ENDING 10- 4-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MHS.
<b>SURF (MHS.)</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>INJECTION</b>													
<b>CASTAL SECTOR</b>													
NO. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/APL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>CURRENT OBS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05	0.00	0.00	-0.05
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>FURN SHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>RIPS X OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
<b>CUSPS X OCC</b>													
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.

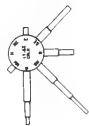
CALIFORNIA

WIND ROSES 5001 NEW BRICHTON

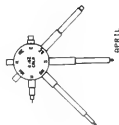


JANUARY

INSUFFICIENT DATA

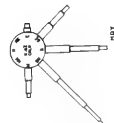


FEBRUARY

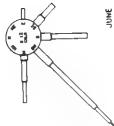


MARCH

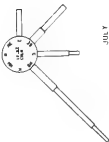
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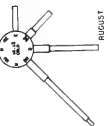
APRIL



MAY

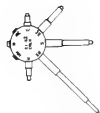


JUNE



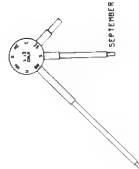
JULY

ANNUAL AVERAGE

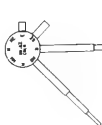


WIND SPEED SCALE  
 0 10 20 30 40 50 60 70 80 90 100  
 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

WIND SPEEDS ON PASSENGER ROSES  
 COLLECTED DURING THE PERIOD  
 05 APR 58 TO 04 OCT 71



AUGUST



SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

5006 SEA CLIFF CALIFORNIA SUMMARY FOR PERIOD STARTING 48 6-68 AND ENDING 12-13-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT.	OCT	NOV	DEC	ALL OBS.
<b>BURF OBS.</b>													
HEIGHT (FT)													
MEAN	2.82	3.15	2.56	2.66	2.66	2.46	2.05	1.72	1.72	2.10	3.05	3.56	2.51
STD DEV	1.46	1.30	1.30	1.05	1.09	.85	.69	1.00	.81	.98	1.40	1.51	1.30
NO. OBS.	56	37	55	61	61	63	63	60	60	47	40	60	661
<b>PERIOD (SEC)</b>													
MEAN	10.44	11.20	12.72	10.85	11.70	12.13	12.33	12.87	16.25	10.90	11.01	11.15	11.88
STD DEV	2.75	3.49	3.81	2.62	3.36	2.69	3.03	4.81	4.86	3.44	3.16	3.68	3.56
NO. OBS.	56	38	55	60	60	63	62	66	67	46	40	68	693
<b>COASTAL SECTOR</b>													
DIRECTION													
O OCC. 1													
	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	3.33	0.00	0.00	0.00	.81
2	0.00	3.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	3.25
3	90.00	75.00	100.00	83.33	80.00	82.50	95.83	90.83	86.67	70.83	38.89	50.00	78.86
4	20.00	0.00	0.00	0.00	0.00	12.50	0.00	7.14	6.67	12.50	61.11	33.00	14.23
5	0.00	8.33	0.00	16.67	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	2.03
CALM													
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	4.17	0.00	0.00	.81
NO. OBS.	20	12	25	12	3	18	22	42	30	24	18	20	246
<b>COMPASS SECTOR</b>													
O OCC. N													
	0.00	3.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	.71
NE	0.00	0.00	0.00	0.00	0.00	0.00	5.00	4.35	0.00	0.00	0.00	0.00	2.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	5.71	8.00	3.33	3.92	3.70	0.00	0.00	4.35	0.00	0.00	0.00	0.00	3.09
S	34.29	24.00	30.00	47.00	27.78	30.95	15.00	17.39	46.68	50.00	20.00	69.39	36.10
SW	60.00	60.00	60.00	46.67	45.10	46.52	69.50	73.91	53.13	50.00	80.00	28.49	59.38
W	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM													
	0.00	0.00	0.00	3.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.48
NO. OBS.	10	10	10	10	10	10	10	10	10	10	10	10	10
	35	43	38	51	54	42	48	23	32	20	20	49	421
<b>BREAKER TYPE</b>													
KOC SPILL													
3P/PL	33.33	13.31	24.07	47.69	27.87	21.34	27.02	28.36	28.89	8.51	7.50	27.94	26.12
PLUNGE	14.96	13.81	18.52	12.51	1.64	7.69	19.35	34.33	15.94	4.26	15.00	4.35	31.64
SURGE													
	28.63	25.73	29.43	23.08	40.98	40.00	30.65	25.37	10.14	34.04	52.50	48.53	31.93
CALM	0.00	0.00	0.00	0.00	0.00	30.77	22.58	11.94	48.93	51.06	25.00	18.18	28.16
NO. OBS.	52	37	54	65	61	63	62	67	60	47	40	68	689
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN													
	.27	.29	.26	.17	.27	.24	.15	.04	.09	.15	.17	.21	.20
<b>GROSS MEAN</b>													
STD DEV	.40	.37	.31	.41	.33	.31	.22	.17	.16	.24	.18	.32	.28
NO. OBS.	38	26	51	46	46	60	59	63	67	46	33	61	607
<b>FORESHORE SLOPE</b>													
MEAN (OBS)													
STD DEV	0.15	0.08	0.08	0.12	0.17	0.08	0.08	0.00	0.07	0.74	0.56	0.62	0.44
NO. OBS.	35	27	32	31	23	29	34	31	22	22	48	63	339
<b>RIPS % OCC</b>													
MEAN SPAC	3.51	3.03	16.29	9.09	7.81	7.58	11.59	2.99	2.90	8.33	0.00	2.82	5.39
NO. OBS.	160.00	805.63	366.67	172.00	360.00	170.00	55.00	230.00	303.78	0.00	250.00	209.61	705
<b>CUSPS % OCC</b>													
MEAN SPAC	17.50	93.33	47.24	71.73	62.11	66.33	59.17	0.32	2.90	8.33	22.50	19.72	16.58
NO. OBS.	57	36	66	66	64	66	63	67	69	48	40	71	705



	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>WIND (KTS)</b>													
MEAN	0.00	0.00	0.00	2.17	2.53	2.76	2.19	2.80	2.38	2.75	3.52	3.76	2.82
STD. DEV.	0.00	0.00	0.00	1.76	1.75	2.52	1.66	1.56	1.87	1.71	1.96	1.02	1.97
NO. OBS.	0.	0.	0.	20	34	25	23	13	13	8	21	34	202
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	9.78	11.16	11.51	12.03	11.85	11.86	12.44	11.40	11.64	11.34
STD. DEV.	0.00	0.00	0.00	2.20	3.31	2.04	2.15	1.84	2.33	1.84	2.05	1.86	2.44
NO. OBS.	0.	0.	0.	31	35	27	23	15	13	7	21	34	202
<b>DIRECTION COMPASS SECTION</b>													
D. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	7.14	6.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	60.71	36.36	44.94	13.04	0.00	8.33	0.00	8.62	3.50	3.50
W	0.00	0.00	0.00	25.00	57.58	55.56	100.00	91.67	100.00	20.00	55.88	34.00	34.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	28	33	27	23	15	12	6	20	34	200
<b>BREAKER TYPE</b>													
X OCC. SPILL	0.00	0.00	0.00	70.00	24.24	18.52	13.64	6.67	23.08	0.00	9.52	29.41	26.11
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUME	0.00	0.00	0.00	10.00	3.39	52.25	50.00	23.08	75.00	0.00	80.95	67.65	49.75
SURGE	0.00	0.00	0.00	20.00	36.36	22.22	33.33	53.85	25.00	9.52	24.94	24.14	24.14
WALL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	37	33	22	22	15	13	8	21	34	203
<b>CURRENT ORS. (FT/SEC)</b>													
NET MEAN	0.00	0.00	0.00	0.31	0.21	0.19	0.11	0.05	0.09	0.03	0.24	0.13	0.16
GROSS MEAN	0.00	0.00	0.00	0.36	0.29	0.25	0.12	0.14	0.12	0.06	0.24	0.17	0.21
STD. DEV.	0.00	0.00	0.00	0.17	0.13	0.25	0.11	0.16	0.18	0.08	0.19	0.15	0.21
NO. OBS.	0.	0.	0.	20	23	22	19	15	13	7	18	30	167
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	7.45	6.26	9.71	11.26	13.50	12.88	10.00	12.53	6.47	9.60
STD. DEV.	0.00	0.00	0.00	1.99	1.94	3.76	2.56	1.91	3.23	1.60	4.36	3.55	3.75
NO. OBS.	0.	0.	0.	20	23	21	19	14	13	8	15	30	163
<b>RIPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	3.23	5.71	14.29	0.00	0.00	0.00	0.00	0.00	2.86	3.83
STD. DEV.	0.00	0.00	0.00	50.00	75.00	400.00	0.00	0.00	0.00	0.00	0.00	200.00	107.06
NO. OBS.	0.	0.	0.	31	35	28	23	17	13	8	21	33	202
<b>CUSPS % OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	41.94	14.29	3.57	0.00	0.00	0.00	12.50	38.10	6.57	14.83
STD. DEV.	0.00	0.00	0.00	87.31	112.00	150.00	0.00	0.00	0.00	50.00	76.25	30.00	66.40
NO. OBS.	0.	0.	0.	31	35	24	23	15	13	8	21	35	202

500A SEA CLIFF

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 1-69 AND ENDING 12-30-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	2.71	3.02	2.84	3.05	2.95	2.15	2.07	2.00	1.95	3.08	0.00	4.91	2.85
MEAN	1.58	1.47	1.49	1.24	1.53	1.67	1.87	1.62	1.63	1.64	0.00	2.02	1.36
STD DEV	2.4	2.1	2.5	2.1	2.2	2.0	1.7	1.7	2.0	2.0	0.0	1.1	2.05
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	10.55	11.03	12.37	11.35	12.55	12.21	10.53	12.44	15.92	12.04	0.00	10.55	11.95
STD DEV	1.96	3.61	2.76	2.98	3.31	1.64	3.20	1.32	3.17	3.11	0.00	3.15	3.17
NO. OBS.	28	21	25	22	24	20	16	18	20	13	0	15	212
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
D	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	.449
U	0.00	0.00	0.00	0.00	0.00	0.00	11.76	12.50	0.00	0.00	0.00	0.00	1.47
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	17.86	9.52	4.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	2.94
SE	17.86	9.52	4.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	2.94
SW	75.00	60.95	80.00	72.73	45.71	93.33	68.71	25.00	70.00	83.33	0.00	100.00	32.84
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	28	21	25	22	21	13	17	18	20	13	0	15	204
<b>BREAKER TYPE</b>													
XOCC	23.08	15.00	12.50	31.82	30.43	15.00	47.06	67.50	45.00	30.77	0.00	20.57	29.47
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	18.46	60.00	50.00	31.82	32.17	35.00	33.29	12.50	15.00	61.54	0.00	64.29	42.03
SURGE	18.46	25.00	37.50	36.36	17.39	50.00	17.65	0.00	40.00	7.69	0.00	7.14	26.50
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	26	20	24	22	23	20	17	18	20	13	0	14	207
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	0.0	0.13	0.26	0.34	0.35	0.18	0.15	0.03	0.05	0.30	0.00	0.43	0.20
GROSS MEAN	0.16	0.23	0.29	0.38	0.40	0.31	0.19	0.15	0.05	0.42	0.00	0.74	0.29
STD DEV	0.15	0.20	0.22	0.43	0.48	0.28	0.11	0.13	0.11	0.27	0.00	0.62	0.32
NO. OBS.	21	21	22	19	18	20	17	18	20	13	0	16	195
<b>FOR SHORE SLOPE</b>													
MEAN (DEG)	8.76	5.33	4.09	5.47	8.74	7.21	0.88	10.13	10.94	10.42	0.00	5.13	7.45
STD DEV	3.74	2.27	2.75	1.81	2.26	1.47	1.96	2.42	1.43	4.23	0.00	2.73	3.64
NO. OBS.	21	21	22	19	19	18	17	18	18	12	0	16	192
<b>RIPPS</b>													
X OCC	0.00	4.76	32.00	22.73	12.50	0.00	0.00	12.50	0.00	30.77	0.00	4.25	10.70
MEAN SPAC	0.00	100.00	205.00	450.00	236.27	0.00	0.00	40.00	0.00	343.75	0.00	300.00	188.69
NO. OBS.	29	21	25	22	20	20	17	18	20	13	0	16	215
<b>CUSPS X OCC.</b>													
MEAN SPAC	165.00	23.81	72.00	54.55	58.33	45.00	17.65	0.00	0.00	23.08	0.00	62.50	34.68
NO. OBS.	29	21	25	22	22	20	17	18	20	13	0	16	215

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL YRS.
<b>SURVEY DATA</b>													
MEGHT (FT)	4.43	0.50	0.66	2.00	2.25	2.02	1.50	1.62	1.36	2.25	2.50	1.67	2.40
STD DEV	1.72	0.89	0.60	0.00	0.50	1.25	0.85	0.77	0.50	1.26	0.71	0.58	1.48
NO. OBS.	7	4	5	3	4	11	16	11	11	6	7	3	81
<b>PERIOD (SECT)</b>													
1-25	11.00	12.11	11.24	10.03	12.33	12.15	15.44	15.72	20.00	13.63	14.80	15.07	14.28
26-31	0.00	0.00	0.00	2.03	0.62	2.71	2.12	3.06	3.08	6.18	5.11	1.69	4.34
NO. OBS.	7	4	5	3	4	11	14	13	9	4	2	1	79
<b>TEMPERATURE</b>													
<b>COASTAL SURF</b>													
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	1.00	0.00	0.00	10.00	0.00	0.00	33.33	0.00	0.00	10.17
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7	4	5	3	4	10	15	13	9	3	2	3	59
<b>COMPASS SURF</b>													
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7	4	5	3	4	0	0	0	0	0	0	0	17
<b>WEATHER TYPE</b>													
XCFC SPFL	71.43	25.00	40.00	100.00	50.00	45.45	7.14	7.14	18.18	0.00	0.00	0.00	26.83
SPFL	0.00	0.00	0.00	0.00	0.00	36.36	71.43	71.43	81.82	50.00	100.00	100.00	91.78
PLURIC	14.29	25.00	20.00	0.00	0.00	0.00	14.29	14.29	0.00	25.00	0.00	0.00	9.76
SHUC	14.29	50.00	40.00	0.00	0.00	0.00	7.14	7.14	0.00	0.00	0.00	0.00	14.63
CALL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7	4	5	3	4	11	16	16	11	4	2	3	82
<b>CURRENT (0.5)</b>													
(7) SEC	-0.70	-1.25	-0.12	-0.93	-0.24	-0.44	-0.22	-0.19	-0.14	-0.22	-0.56	-0.43	-0.36
4 FT	0.94	1.25	0.2	0.3	0.41	0.40	0.37	0.21	0.16	0.48	0.36	0.43	0.45
STD DEV	1.15	0.31	0.97	0.3	0.47	0.42	0.37	0.24	0.20	0.61	0.59	0.34	0.5
NO. OBS.	7	4	5	3	4	11	14	14	11	4	2	3	82
<b>FURBINDER SURVEY</b>													
MEAN (FEET)	3.29	4.74	3.60	7.67	6.75	7.64	7.71	9.00	9.64	8.50	9.50	1.00	7.34
STD DEV	1.60	2.47	0.5	5.03	0.6	2.62	2.76	1.44	1.34	1.73	3.54	1.00	2.44
NO. OBS.	7	4	5	3	4	11	14	14	11	4	2	3	82
<b>RIPS &amp; IFC</b>													
MEAN SPAC.	140.00	0.00	0.00	0.00	0.00	0.00	70.00	70.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7	4	5	3	4	11	14	14	11	4	2	3	82
<b>CUSPS &amp; IFC</b>													
MEAN SPAC.	20.57	25.00	80.00	33.33	0.00	9.09	7.14	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7	4	5	3	4	11	14	14	11	4	2	3	82
<b>CUSPS &amp; IFC</b>													
MEAN SPAC.	147.50	100.00	100.00	85.00	0.00	500.00	70.00	0.00	0.00	0.00	0.00	0.00	12.60
NO. OBS.	7	4	5	3	4	11	14	14	11	4	2	3	82

500A SEA (LIFE) CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 3-71 AND ENDING 12-25-71.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AIR OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)													
MEAN	2.11	2.50	2.12	1.83	2.00	1.00	1.00	1.15	1.33	1.68	2.53	2.67	1.79
STD DEV	.78	2.12	1.11	.41	0.00	0.00	0.00	.83	.92	.78	1.70	1.11	1.14
NO. OBS.	9.	2.	17.	6.	1.	3.	5.	26.	24.	22.	17.	15.	147.
<b>PERIOD (SEC)</b>													
MEAN	10.47	14.25	13.60	14.38	7.40	16.33	11.54	11.76	12.08	9.24	10.09	9.93	11.39
STD DEV	4.00	2.47	3.60	3.35	0.00	8.06	2.20	3.49	3.04	2.75	3.51	4.65	4.49
NO. OBS.	9.	2.	17.	6.	1.	3.	5.	27.	25.	22.	17.	16.	150.
<b>DIRECTION</b>													
<b>DIRLFT</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	4.76	0.00	0.00	0.00	1.41
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.70
NO. OBS.	8.	0.	10.	6.	1.	1.	1.	1.	1.	1.	1.	1.	1.
<b>DIRRGT</b>													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
<b>BREAKER TYPE</b>													
XOC SPILL	35.33	0.00	41.18	0.00	0.00	33.33	100.00	37.04	24.00	0.00	5.88	25.00	24.67
SP/PI	55.56	50.00	52.90	100.00	100.00	33.33	0.00	40.74	8.00	0.00	23.43	12.50	28.00
PLUNGE	11.11	0.00	5.88	0.00	0.00	0.00	0.00	18.52	4.00	4.55	23.43	6.25	10.00
SURGE	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	64.00	90.91	47.06	56.25	30.67
CAP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	0.67
NO. OBS.	9.	2.	17.	6.	1.	3.	5.	27.	25.	22.	17.	16.	150.
<b>COMBINED OBS.</b>													
(FT/SEC)													
MEAN	-4.53	-4.10	-4.31	-4.33	-4.17	-4.11	-4.08	-4.03	-4.09	-4.08	-4.06	-4.09	-4.13
STD DEV	.50	.09	.33	.41	.17	.16	.22	.17	.28	.16	.08	.11	.24
NO. OBS.	9.	2.	17.	6.	1.	3.	5.	26.	23.	22.	13.	12.	139.
<b>FUNDSOURCE SURF</b>													
MEAN (FT)	4.33	9.50	0.41	0.33	1.00	6.00	5.20	6.56	8.32	7.68	4.94	4.83	6.08
STD DEV	1.50	3.50	1.37	.62	0.00	0.00	1.10	.56	1.63	1.65	1.60	1.04	2.69
NO. OBS.	9.	2.	17.	6.	1.	3.	5.	25.	23.	21.	17.	16.	149.
<b>RIPS &amp; DEL</b>													
MEAN SPAT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	9.	2.	18.	6.	1.	3.	5.	27.	25.	23.	17.	16.	152.
<b>CURBS &amp; DEL.</b>													
MEAN SPAT	11.11	0.00	5.56	0.00	0.00	33.33	26.00	7.00	9.00	0.00	5.88	6.25	5.26
NO. OBS.	9.	2.	18.	6.	1.	3.	5.	27.	25.	23.	17.	16.	152.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURE ORS.													
HEIGHT * (FT)													
MEAN	2.67	2.50	1.50	3.00	0.00	2.25	1.50	1.00	0.00	0.00	0.00	1.00	2.17
STD DEV	1.50	1.51	1.20	1.41	0.00	1.50	.58	0.00	0.00	0.00	0.00	0.00	1.39
NO. OBS.	12.	10.	8.	4.	0.	4.	4.	3.	0.	0.	0.	1.	46.
PERIOD (SEC)													
MEAN	11.73	10.62	12.80	11.38	0.00	12.43	11.25	10.10	0.00	0.00	0.00	0.00	11.53
STD DEV	3.62	3.14	3.61	.45	0.00	1.43	1.71	2.01	0.00	0.00	0.00	0.00	2.95
NO. OBS.	12.	11.	8.	4.	0.	4.	4.	3.	0.	0.	0.	0.	46.
DIRECTION													
COASTAL SECTOR													
D OCC. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	66.67	80.00	100.00	100.00	0.00	100.00	100.00	100.00	0.00	0.00	0.00	100.00	21.22
5	33.33	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.78
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
NO. OBS.	12.	10.	8.	4.	0.	3.	4.	3.	0.	0.	0.	1.	43.
BREAKER TYPE													
X OCC SPILL	33.33	9.09	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	14.89
SP/PL	16.67	27.27	12.50	50.00	0.00	0.00	0.00	66.67	0.00	0.00	0.00	0.00	23.53
PLUNGE	8.33	27.27	12.50	25.00	0.00	50.00	25.00	0.00	0.00	0.00	0.00	0.00	19.13
SURGE	41.67	38.36	62.50	25.00	0.00	50.00	25.00	33.33	0.00	0.00	0.00	0.00	40.43
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	11.	8.	4.	0.	4.	4.	3.	0.	0.	0.	1.	47.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	-0.09	-0.26	-0.40	0.00	-0.46	-0.13	.06	0.00	0.00	0.00	0.00	-0.24
GROSS MEAN													
STD DEV	0.00	.42	.26	.40	0.00	.06	.34	.21	0.00	0.00	0.00	0.00	.33
NO. OBS.	1.	2.	7.	4.	0.	4.	4.	.31	0.00	0.00	0.00	0.00	.23
FORFSHORE SLOPE													
MEAN (DEG)	4.45	3.50	3.00	3.33	0.00	5.25	5.00	5.33	0.00	0.00	0.00	0.00	4.07
STD DEV	1.44	.97	.53	.58	0.00	.50	0.00	.58	0.00	0.00	0.00	0.00	1.22
NO. OBS.	11.	10.	8.	3.	0.	4.	4.	3.	0.	0.	0.	0.	43.
RIPS % OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	12.	11.	8.	4.	0.	4.	4.	3.	0.	0.	0.	1.	41.
CUSPS % OCC													
MEAN SPAC.	0.00	27.27	0.00	0.00	0.00	75.00.	25.00	0.00	0.00	0.00	0.00	0.00	14.89
NO. OBS.	12.	11.	8.	4.	0.	95.00	65.00	0.00	0.00	0.00	0.00	0.00	37.57

WIND ROSES FOR 05006--SEA CLIFF  
(not available)

SOOY SUNSET BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 5-10-68 AND ENDING 3-8-73.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OMS.
<b>SURF OBS.</b>													
HEIGHT (FT)	3.35	2.50	3.00	2.62	2.91	2.90	3.58	3.40	3.35	4.35	4.38	6.02	3.49
MEAN	1.28	.89	.75	.76	1.00	.87	1.02	1.11	1.04	1.35	1.41	2.04	1.33
STD DEV	1.28	.89	.75	.76	1.00	.87	1.02	1.11	1.04	1.35	1.41	2.04	1.33
NO. OMS.	63.	42.	19.	29.	61.	69.	67.	56.	72.	77.	77.	61.	715.
<b>PERIOD (SEC)</b>													
MEAN	11.27	10.83	11.83	10.81	11.29	10.25	12.83	13.30	13.12	12.62	11.68	11.93	11.88
STD DEV	1.54	2.08	1.63	1.70	2.69	2.18	3.62	3.16	2.61	2.47	2.23	2.43	2.66
NO. OMS.	63.	40.	16.	27.	81.	68.	66.	56.	75.	76.	79.	59.	709.
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
DIR.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OMS.	42.	33.	12.	11.	30.	3.	0.	1.	12.	20.	19.	46.	229.
<b>COMPASS SECTOR</b>													
DIR.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OMS.	15.	7.	1.	15.	49.	62.	67.	57.	59.	57.	60.	13.	471.
<b>BREAKER TYPE</b>													
SOLE SPILL	35.48	28.19	40.00	72.41	75.12	95.31	98.46	98.28	86.67	66.23	55.70	8.47	66.05
PLUNGE	18.13	19.05	10.00	6.90	5.19	0.00	1.58	0.00	9.33	27.27	26.58	64.41	16.12
NO. OMS.	62.	42.	20.	29.	77.	69.	85.	56.	75.	77.	79.	59.	707.
<b>CURRENT OMS.</b>													
MEAN	0.30	0.10	0.19	0.32	0.48	0.55	0.69	0.88	0.42	0.50	1.08	0.47	0.51
STD DEV	0.62	0.72	0.48	0.76	0.78	0.95	1.04	1.10	0.84	0.94	1.08	0.67	0.83
NO. OMS.	59.	38.	21.	28.	60.	43.	36.	30.	46.	53.	48.	58.	520.
<b>FORF-SHORE SLOPE</b>													
MEAN (DEC)	2.01	2.90	2.55	2.61	3.18	3.30	4.32	4.23	4.90	6.43	4.31	3.16	3.78
STD DEV	1.29	1.41	0.90	0.83	1.15	0.91	1.63	0.66	1.26	2.67	1.65	1.44	1.65
NO. OMS.	52.	42.	20.	28.	61.	40.	38.	30.	49.	49.	49.	55.	519.
<b>RIPS</b>													
MEAN SPAC.	16.95	11.90	9.58	28.57	1.25	0.00	2.00	0.00	1.50	15.19	2.53	10.71	6.71
NO. OMS.	59.	42.	21.	28.	60.	69.	67.	58.	77.	76.	74.	56.	715.
<b>CUSPS</b>													
MEAN SPAC.	20.31	337.50	0.00	0.00	2.74	2.99	0.00	0.00	1.50	7.59	10.13	11.24	6.15
NO. OMS.	68.	41.	17.	37.	73.	67.	67.	58.	77.	79.	79.	62.	701.

5007 SUNSPOT BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 5-10-68 AND ENDING 11-30-68.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF DRS.</b>													
HEIGHT (FT)	0.00	0.00	0.00	0.00	3.62	2.87	3.62	3.43	3.53	4.93	4.70	0.00	3.79
MEAN	0.00	0.00	0.00	0.00	1.06	.67	1.01	1.14	.68	.91	1.34	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.41	0.55	0.60	0.53	0.55	0.54	0.60	0.00	1.24
NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	55.	54.	60.	0.	378.
<b>PERIOD (SEC)</b>													
MEAN	0.00	0.00	0.00	0.00	10.90	9.98	12.83	13.61	13.49	13.49	12.27	0.00	12.39
STD DEV	0.00	0.00	0.00	0.00	2.16	1.92	3.67	3.10	2.71	1.70	1.56	0.00	2.82
NO. OBS.	0.	0.	0.	0.	41.	52.	60.	53.	57.	54.	60.	0.	377.
<b>DIRECTION</b>													
<b>COMPASS SECTOR</b>													
0 UCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.27
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	7.50	26.92	1.67	0.00	0.00	0.00	0.00	0.00	4.86
SW	0.00	0.00	0.00	0.00	21.15	1.67	0.00	0.00	0.00	0.00	1.67	0.00	5.41
W	0.00	0.00	0.00	0.00	75.00	36.94	30.00	35.45	15.69	0.00	0.00	0.00	25.41
NW	0.00	0.00	0.00	0.00	7.50	3.85	61.67	78.43	98.15	98.33	0.00	0.00	61.62
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
NO. OBS.	0.	0.	0.	0.	40.	52.	60.	53.	51.	54.	60.	0.	370.
<b>BREAKER TYPE</b>													
BOCC SPILL	0.00	0.00	0.00	0.00	92.31	100.00	98.28	100.00	100.00	71.15	73.33	0.00	90.51
BP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.00	0.00	28.85	26.67	0.00	8.67
SURGE	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	39.	50.	58.	53.	57.	52.	60.	0.	369.
<b>CURRENT DRS.</b>													
(FT/SEC)	0.00	0.00	0.00	0.00	-0.77	-0.73	-0.62	-0.76	-0.43	-0.50	-1.12	0.00	-0.71
NET MEAN	0.00	0.00	0.00	0.00	0.96	0.87	0.91	1.02	0.76	0.98	1.11	0.00	0.95
GROSS MEAN	0.00	0.00	0.00	0.00	0.94	0.89	0.89	0.89	0.36	0.39	0.62	0.00	0.60
STD DEV	0.00	0.00	0.00	0.00	0.21	0.29	0.29	0.29	0.27	0.28	0.31	0.00	0.194.
NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	360.
<b>FURLESHORE SLOPE</b>													
MEAN (DEG)	0.00	0.00	0.00	0.00	3.04	3.12	4.07	4.12	5.07	8.36	4.67	0.00	4.65
STD DEV	0.00	0.00	0.00	0.00	0.82	0.71	1.24	1.73	1.11	2.00	1.99	0.00	2.10
NO. OBS.	0.	0.	0.	0.	23.	26.	27.	25.	30.	25.	30.	0.	186.
<b>RIPS &amp; OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.53
NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	31.58
<b>CUSPS &amp; OCC.</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	1.58
NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	25.00
NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	380.



5007 SUNSET HFACH CALIFORNIA SUMMARY FOR PERIOD STARTING 4<sup>th</sup> 8-69 AND ENDING 12-30-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	0.00	0.00	0.00	2.94	3.60	2.91	2.86	3.25	3.63	5.00	0.00	6.27	3.66
MEAN	0.00	0.00	0.00	.85	1.17	.70	.90	.50	1.41	3.00	0.00	2.89	2.05
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	16.	10.	11.	7.	4.	8.	3.	0.	15.	74.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	10.68	12.02	11.81	11.42	9.33	12.41	10.90	0.00	14.09	12.92
STD DEV	0.00	0.00	0.00	1.81	1.68	2.71	3.13	.95	3.82	2.33	0.00	2.68	2.74
NO. OBS.	0.	0.	0.	16.	10.	11.	6.	4.	8.	3.	0.	14.	76.
DIRECTION													
COMPASS SECTOR													
0 OCC. N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	22.22	30.00	42.86	100.00	75.00	66.67	0.00	69.23	47.14
W	0.00	0.00	0.00	0.00	77.78	70.00	42.86	0.00	12.50	33.33	0.00	15.38	41.43
NW	0.00	0.00	0.00	25.00	0.00	0.00	14.29	0.00	12.50	0.00	0.00	15.38	11.43
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	16.	9.	10.	7.	4.	8.	3.	0.	13.	70.
HIFAKER TYPE													
XDCC SPILL	0.00	0.00	0.00	87.50	90.00	100.00	100.00	100.00	100.00	66.67	0.00	26.67	79.73
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	12.50	10.00	0.00	0.00	0.00	0.00	33.33	0.00	73.33	20.27
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	16.	10.	11.	7.	4.	8.	3.	0.	15.	74.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	-0.43	.23	.02	-0.94	-1.93	0.96	-1.06	0.00	-0.64	-0.51
GROSS MEAN	0.00	0.00	0.00	.97	.82	1.17	1.61	1.93	1.10	.75	0.00	.97	1.10
STD DEV	0.00	0.00	0.00	.66	.72	1.09	.77	1.56	.67	.71	0.00	1.08	.83
NO. OBS.	0.	0.	0.	16.	10.	11.	7.	4.	8.	3.	0.	15.	74.
FRESHORE SLOPE													
MEAN (DEG)	0.00	0.00	0.00	2.90	3.00	3.91	5.29	4.25	5.00	3.50	0.00	4.33	3.87
STD DEV	0.00	0.00	0.00	.83	1.12	1.14	2.56	.50	1.31	.71	0.00	.90	1.49
NO. OBS.	0.	0.	0.	14.	9.	11.	7.	4.	8.	2.	0.	15.	71.
RIPS X OCC	0.00	0.00	0.00	53.33	0.00	0.00	14.29	0.00	0.00	33.33	0.00	66.67	24.24
MEAN SPAC.	0.00	0.00	0.00	425.00	0.00	0.00	200.00	0.00	0.00	500.00	0.00	500.00	208.71
NO. OBS.	0.	0.	0.	15.	9.	11.	7.	4.	8.	3.	0.	9.	66.
CUSPS X OCC	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	33.33	0.00	60.00	14.81
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	50.00	0.00	100.00	47.62
NO. OBS.	0.	0.	0.	6.	2.	4.	7.	4.	8.	3.	0.	13.	54.

5007 SUNSET BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-6-74 AND ENDING 12-31-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SUNSET BEACH</b>													
<b>HEIGHT (FT)</b>													
MEAN	4.24	3.22	3.50	2.24	1.92	0.00	0.00	0.00	0.00	0.00	0.00	3.83	3.21
STD DEV	1.52	.80	.53	.46	.76	0.00	0.00	0.00	0.00	0.00	0.00	.81	1.21
NO. OBS.	17	9	8	6	13	0	0	0	0	0	0	21	76
<b>PERIOD (SEC)</b>													
MEAN	11.45	9.49	11.73	11.04	10.85	0.00	0.00	0.00	0.00	0.00	0.00	11.37	11.12
STD DEV	1.74	1.32	2.36	1.40	1.93	0.00	0.00	0.00	0.00	0.00	0.00	1.55	2.06
NO. OBS.	17	9	8	7	13	0	0	0	0	0	0	20	74
<b>DIRECTION</b>													
<b>COASTAL SECTOR</b>													
NO. OCC.	1	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	1	0	0	0	0	0	0	0	0	0	0	0	0
<b>COMPASS SECTOR</b>													
NO. OCC.	15	7	7	2	0	0	0	0	0	0	0	0	31
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	15	7	7	2	0	0	0	0	0	0	0	0	31
<b>WAKEUP TYPE</b>													
NO. OCC.	24	0	0	0	0	0	0	0	0	0	0	0	24
MEAN	11.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	14	0	0	0	0	0	0	0	0	0	0	0	14
<b>CURRENT OBS.</b>													
NET MEAN	-0.5	.17	-0.5	-0.7	-0.5	0.00	0.00	0.00	0.00	0.00	0.00	-0.20	-1.1
STD DEV	.74	.77	.32	.20	.50	0.00	0.00	0.00	0.00	0.00	0.00	.45	.53
NO. OBS.	14	9	8	6	13	0	0	0	0	0	0	18	73
<b>FRESHWATER SLUICE</b>													
MEAN (FEET)	5.72	4.89	3.13	2.25	3.46	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00
STD DEV	1.27	1.13	1.4	.89	1.94	0.00	0.00	0.00	0.00	0.00	0.00	1.28	1.45
NO. OBS.	18	9	8	6	13	0	0	0	0	0	0	16	72
<b>RIPS</b>													
MEAN SPACE	7.69	35.13	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
STD DEV	170.00	300.00	475.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.87
NO. OBS.	13	9	8	0	13	0	0	0	0	0	0	22	75
<b>CUSPS &amp; OCC.</b>													
MEAN SPACE	22.32	25.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.86
STD DEV	400.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.50	184.50
NO. OBS.	18	6	6	0	13	0	0	0	0	0	0	22	71

5007 SUNSET BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-3-71 AND ENDING 12-31-71.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF DRG. HEIGHT (FT.)	2.04	2.73	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	3.20	3.13	2.81
MEAN	.89	.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.51	.94	.74	.81
STD DEV	1.51	1.16	1.	0.	0.	0.	0.	0.	0.	15.	15.	15.	75.
NO. OBS.	16.	11.	1.	0.	0.	0.	0.	0.	0.	15.	15.	15.	75.
PERIOD (SEC)	11.25	10.70	10.00	0.00	0.00	0.00	0.00	0.00	0.00	10.17	9.64	10.97	10.52
MEAN	1.51	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	1.89	2.66	1.88
STD DEV	16.	9.	1.	0.	0.	0.	0.	0.	0.	15.	16.	15.	72.
NO. OBS.	16.	9.	1.	0.	0.	0.	0.	0.	0.	15.	16.	15.	72.
DIRECTION													
COASTAL SECTOR													
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	93.75	93.33	97.18
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	6.67	2.82
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	13.	11.	1.	0.	0.	0.	0.	0.	0.	15.	16.	15.	71.
BREAKER TYPE													
XNCC SPILL	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.59	0.00	0.00	17.57
SP/PL	75.00	72.73	100.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76	81.25	30.77	54.05
PLUNGE	18.75	27.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	18.75	69.23	27.03
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	1.55
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	16.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	13.	74.
CURRENT OBS. (FT/SEC)													
NET MEAN	-23	-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	1.13	0.74	0.65
GROSS MEAN	.44	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.86	1.13	.74	.75
STD DEV	.39	.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.87	.72	.46	.63
NO. OBS.	12.	7.	1.	0.	0.	0.	0.	0.	0.	17.	15.	15.	67.
FORF SHOKE SLOPE													
MEAN (DEG)	2.50	2.19	2.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	3.69	2.43	3.22
STD DEV	.94	.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.58	1.16	1.60
NO. OBS.	14.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	14.	73.
RIPS % OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.71	0.00	0.00	14.47
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	184.55	0.00	0.00	41.28
NO. OBS.	16.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	15.	76.
CUSPS % OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.01	0.00	0.00	6.58
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	147.00	0.00	0.00	32.68
NO. OBS.	16.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	15.	76.

## 5007 SHIPSET HEAD

## CALIFORNIA

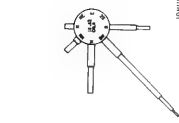
SUMMARY FOR PERIOD STARTING 1-2-72 AND ENDING 12-31-72.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS. HEIGHT (FT)													
MEAN	5.10	2.73	2.70	2.20	2.53	3.33	0.00	2.00	2.00	3.00	3.50	3.20	2.82
STD DEV	.59	.67	.67	.45	.62	.58	0.00	0.00	.50	0.00	2.12	1.03	1.03
NO. OBS.	23.	15.	10.	5.	17.	3.	0.	1.	9.	5.	2.	10.	100.
PERIOD (SEC)													
MEAN	11.27	11.51	11.48	9.88	11.00	9.33	0.00	12.70	11.58	11.38	15.90	11.47	11.51
STD DEV	1.06	1.64	.70	1.11	4.23	1.53	0.00	0.00	1.93	2.86	5.21	1.37	2.46
NO. OBS.	23.	15.	9.	4.	17.	3.	0.	1.	10.	4.	3.	10.	99.
DIRECTION													
COASTAL SECTOR													
D OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	83.33	20.00	0.00	0.00	1.94
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.33	80.00	100.00	100.00	97.09
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	8.00	0.00	0.00	.97
NO. OBS.	22.	15.	10.	5.	17.	3.	0.	1.	12.	5.	3.	10.	103.
BREAKER TYPE													
XOCC SPILL	26.09	20.00	10.00	0.00	18.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.67
SP/PL	47.63	60.00	60.00	100.00	65.50	100.00	0.00	100.00	30.00	40.00	33.33	60.00	58.42
PLUNGE	21.74	20.00	10.00	0.00	18.75	0.00	0.00	0.00	70.00	60.00	66.67	40.00	27.72
SURGE	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	23.	15.	10.	5.	16.	3.	0.	1.	10.	5.	3.	10.	101.
CURRENT OBS. (FT/SEC)													
NET MEAN	-.44	-.30	-.27	-.37	-.58	-.92	0.00	0.00	-.10	.57	-.21	-.31	-.32
GROSS MEAN	.58	.82	.53	1.03	.74	.92	0.00	0.00	.84	1.07	.21	.51	.70
STD DEV	.48	.41	.42	.52	.45	.79	0.00	0.00	1.06	.68	.62	.36	.62
NO. OBS.	23.	15.	11.	4.	16.	3.	0.	1.	11.	5.	2.	11.	101.
FORESHORE SLOPE													
MEAN (DEG)	2.39	2.33	2.20	3.20	3.25	2.67	0.00	7.00	4.36	3.60	4.00	2.60	2.93
STD DEV	1.57	.90	.63	.45	.66	.58	0.00	0.00	1.57	1.67	1.00	1.78	1.39
NO. OBS.	23.	15.	10.	5.	16.	3.	0.	1.	11.	5.	3.	10.	102.
RIPS % OCC													
MEAN	19.13	13.33	0.00	0.00	5.88	0.00	0.00	0.00	8.33	0.00	0.00	0.00	12.38
STD DEV	300.00	500.00	0.00	0.00	43.00	0.00	0.00	0.00	802.00	0.00	0.00	0.00	235.76
NO. OBS.	25.	14.	11.	5.	17.	3.	0.	1.	12.	5.	3.	10.	105.
CUSPS % OCC													
MEAN	39.13	13.33	0.00	0.00	11.76	33.33	0.00	0.00	8.33	0.00	66.67	0.00	16.19
STD DEV	159.44	200.00	0.00	0.00	50.00	20.00	0.00	0.00	200.00	0.00	150.00	0.00	99.31
NO. OBS.	23.	15.	11.	5.	17.	3.	0.	1.	12.	5.	3.	10.	105.

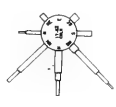
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
<b>SURF OBS.</b>													
HEIGHT (FT)	3.43	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.29
MEAN	1.27	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14
STD DEV	7.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
NO. OBS.													
<b>PERIOD (SEC)</b>													
MEAN	10.89	11.01	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.69
STD DEV	1.65	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
<b>DIRECTION</b>													
<b>COASTAL SECTUP</b>													
OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
<b>BREAKER TYPE</b>													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP/PL	100.00	85.71	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.86
PLUNGE	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	5.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
<b>CURRENT OBS.</b>													
(FT/SEC)													
NET MEAN	-0.58	0.00	-0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.32
GROSS MEAN	61	69	83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75
STD DEV	50	67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
<b>FORESHORE SLOPE</b>													
MEAN (DEG)	2.43	2.71	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53
STD DEV	1.13	1.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
<b>RIPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
<b>CUSPS % OCC</b>													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.

WIND ROSES 5007 SUNSET

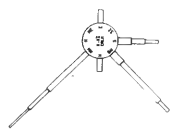
CALIFORNIA



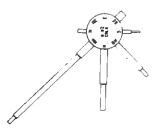
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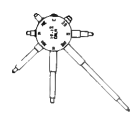
FEBRUARY



MARCH

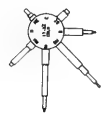


APRIL

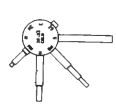


ANNUAL AVERAGE

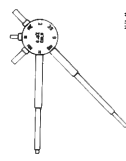
MAY



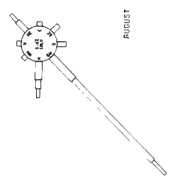
JUNE



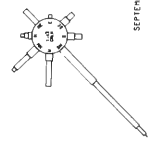
JULY



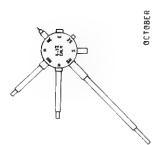
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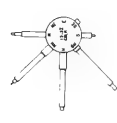
SEPTEMBER



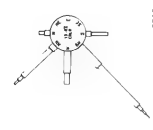
OCTOBER



NOVEMBER



DECEMBER



WIND SPEED IN MPH  
 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

DATA BASED ON OBSERVATIONS  
 21 MAY 68 TO 01 OCT 72

<p>Schneider, Christine Littoral environment observation (LEO) data summaries, northern California, 1968-78 / by Christine Schneider and Richard Weggel.-- Fort Belvoir, Va. : U.S. Army, Corps of Engineers, Coastal Engineering Research Center : Springfield, Va. : available from NTIS, 1982. [164] p. ill. : 28 cm.--(Miscellaneous report / Coastal Engineering Research Center; no. 82-6). Cover title.</p> <p>"August 1982." This report briefly describes the littoral environment observation (LEO) Program and its operation in northern California from 1968 to 1978. A summary of LEO data from 25 northern California sites is presented along with data on breaker height, period, direction, and type; wind speed and direction; longshore current velocity and direction; beach foreshore slope, beach cusps, and rip currents. 1. Littoral processes observation. 2. LEO. 3. Shorelines, United States. 4. Wave climate. 5. California. I. Title. II. Weggel, J. Richard. III. Series: Miscellaneous report (Coastal Engineering Research Center (U.S.)); no. 82-6. no. 82-6 -U58lmr TC203 627</p>	<p>Schneider, Christine Littoral environment observation (LEO) data summaries, northern California, 1968-78 / by Christine Schneider and Richard Weggel.-- Fort Belvoir, Va. : U.S. Army, Corps of Engineers, Coastal Engineering Research Center : Springfield, Va. : available from NTIS, 1982. [164] p. ill. : 28 cm.--(Miscellaneous report / Coastal Engineering Research Center; no. 82-6). Cover title.</p> <p>"August 1982." This report briefly describes the Littoral Environment Observation (LEO) Program and its operation in northern California from 1968 to 1978. A summary of LEO data from 25 northern California sites is presented along with data on breaker height, period, direction, and type; wind speed and direction; longshore current velocity and direction; beach foreshore slope, beach cusps, and rip currents. 1. Littoral processes observation. 2. LEO. 3. Shorelines, United States. 4. Wave climate. 5. California. I. Title. II. Weggel, J. Richard. III. Series: Miscellaneous report (Coastal Engineering Research Center (U.S.)); no. 82-6. no. 82-6 -U58lmr TC203 627</p>
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