MR 82-6

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

by

Christine Schneider and J. Richard Weggel

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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)		
<div style="display: flex; justify-content: space-between;"> <div>Data collection LEO</div> <div>Northern California Wave climate</div> </div>		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
<p>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.</p>		

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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	1.0197×10^{-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 ¹

¹To 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.	Maraden 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=26-70.									
SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.			
HEIGHT (FT)																
MEAN	3.08	2.12	2.06	1.94	2.75	2.66	3.10	2.92	3.16	3.25	2.47	0.00	2.78			
STD DEV	1.42	.88	.78	1.01	3.77	3.34	2.07	.93	.97	1.30	1.01	0.00	1.94			
NO. OBS.	99.	49.	53.	51.	56.	60.	62.	62.	58.	57.	17.	0.	588.			
PERIOD (SEC)																
MEAN	11.05	12.04	12.10	11.93	12.63	11.60	11.63	12.04	12.41	12.92	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	2.23			
NO. OBS.	99.	52.	52.	55.	55.	58.	62.	62.	58.	58.	17.	0.	588.			
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	25.86	58.82	0.00	25.38			
3	0.00	0.00	0.00	53.65	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	9.67	1.61	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			
NO. OBS.	0.	0.	0.	26.	50.	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			
NO. OBS.	99.	99.	92.	29.	0.	0.	0.	0.	0.	0.	0.	0.	190.			
WRAKER TYPE																
EXCC SPILL	83.05	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			
PLUNGE	10.17	0.00	9.26	10.71	0.00	3.57	0.00	8.33	26.07	33.33	5.88	0.00	10.31			
BURGE	6.78	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.	99.	91.	94.	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	.16	.13	.08	.07	.06	.07	.14	.11	.09	.02	0.00	.11			
NO. OBS.	50.	26.	26.	28.	27.	30.	31.	32.	29.	28.	7.	0.	294.			
FORESHORE SLOPE																
MEAN (DEG)	3.17	2.79	2.04	1.22	1.63	1.93	1.65	1.16	2.14	1.97	1.68	0.00	2.14			
STD DEV	1.05	.88	.62	.42	.49	.37	.49	.37	.52	.49	.35	0.00	1.24			
NO. OBS.	50.	24.	23.	27.	27.	30.	31.	32.	28.	29.	8.	0.	291.			
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.	99.	92.	94.	57.	56.	60.	62.	62.	58.	58.	17.	0.	895.			
CUSPS % 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.	99.	92.	94.	57.	56.	60.	62.	62.	58.	58.	17.	0.	995.			

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° with a standard deviation of 1.05° 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.

LITTORAL ENVIRONMENT OBSERVATIONS (LEO)																
NATURAL BRIDGES				(05004), CALIFORNIA				APR 1968				APR 1968				
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				-3
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				-3
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	6	SW	*****		*****	*****					
11	930	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		95		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	1.50	=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	S	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

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

WAIVE PERIOD HISTOGRAMS 5004 NATURAL BRIDGES

DATA COLLECTED FROM 4/ 3/66 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 NUMBER OF OBSERVATIONS																NATURAL BRIDGES	
DATA COLLECTED FROM 3 APR 68 TO 31 DEC 68																	
PERIOD*	0.9	1	2	3	4	5	6	7	8	9	10	11	12	13+	TOTAL	PERCENT	CUMULATIVE PERCENT
0.5-0.9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	.6	.6
1.0-1.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.6
2.0-2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.6
3.0-3.9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.2	.8
4.0-4.9	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	.2	1.0
5.0-5.9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.2	1.2
6.0-6.9	0	0	0	1	1	0	1	0	0	0	0	0	0	0	3	2.6	1.9
7.0-7.9	0	2	1	3	2	3	1	0	0	0	0	0	0	0	11	2.3	4.2
8.0-8.9	0	3	3	2	1	0	0	0	0	0	0	0	0	0	14	1.9	6.0
9.0-9.9	0	2	6	2	3	1	0	0	0	0	0	0	0	0	17	2.9	9.0
10.0-10.9	0	5	6	1	3	2	0	0	0	0	0	0	0	0	31	3.5	12.5
11.0-11.9	0	7	12	7	4	1	0	0	0	0	0	0	0	0	39	17	19.0
12.0-12.9	0	20	28	30	11	1	1	0	0	0	0	0	0	0	89	18.5	37.5
13.0-13.9	0	17	36	46	25	7	1	0	0	0	0	0	0	0	134	27.9	65.4
14.0-14.9	0	10	33	28	13	6	1	1	0	0	0	0	0	0	93	19.4	84.8
15.0-15.9	0	11	19	18	1	1	0	1	0	0	0	0	0	0	33	6.9	91.7
16.0-16.9	0	2	6	7	0	0	0	0	0	0	0	0	0	0	15	3.1	94.8
17.0-17.9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.2	95.0
18.0-18.9	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3	.6	95.6
19.0-19.9	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3	.6	96.2
20.0-20.9	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	.4	96.6
21.0-21.9	0	1	1	2	0	0	0	0	0	0	0	0	0	0	6	1.3	97.9
22.0-22.9	0	1	1	1	0	0	0	0	0	0	0	0	0	0	5	1.0	98.9
23.0-23.9	0	1	3	1	0	0	0	0	0	0	0	0	0	0	6	1.3	99.4
24.0-24.9	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	.4	99.8
25.0-25.0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	3	.6	100.0
TOTAL OBS	75	154	144	74	22	5	2	1	0	0	0	0	0	0	480		
PERCENT	15.6	32.1	30.0	15.4	4.6	1.0	.4	.2	.0	.0	.0	.0	.0	.0			
CUMULATIVE PERCENT	15.6	48.3	78.3	93.7	98.3	99.4	99.8	100.0	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 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													
SITE NUMBERS <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					YEAR <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>		MONTH <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>		DAY <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>		TIME Record time using the 24 hour system <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>		
WAVE PERIOD Record the time in seconds for eleven (11) wave crests to pass a stationary point. If calm record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					BREAKER HEIGHT Record the best estimate of the average wave height to the nearest tenth of a foot. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>								
WAVE ANGLE AT BREAKER Record to the nearest degree the direction the waves are coming from using the protractor on the reverse side. 0 if calm. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					WAVE TYPE <div style="display: flex; justify-content: space-between;"> <div> 0 - Calm 1 - Spilling 2 - Plunging </div> <div> 3 - Surging 4 - Spill / Plunge </div> <div style="text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div> </div>								
WIND SPEED Record wind speed to the nearest mph. If calm record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					WIND DIRECTION - Direction the wind is coming from. <div style="display: flex; justify-content: space-between;"> <div> 1 - N 2 - NE 3 - E 4 - SE 5 - S 6 - SW 7 - W 8 - NW 0 - Calm </div> <div style="text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div> </div>								
FORESHORE SLOPE Record foreshore slope to the nearest degree. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					WIDTH OF SURF ZONE Estimate in feet the distance from shore to breakers, if calm record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>								
LONGSHORE CURRENT					DYE Estimate distance in feet from shoreline to point of dye injection. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>								
CURRENT SPEED Measure in feet the distance the dye patch is observed to move during a one (1) minute period; If no longshore movement record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>					CURRENT DIRECTION <div style="display: flex; justify-content: space-between;"> <div> 0 No longshore movement +1 Dye moves toward right -1 Dye moves toward left </div> <div style="text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div> </div>								
RIP CURRENTS If rip currents are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no rips record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>													
BEACH CUSPS If cusps are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no cusps record 0. <div style="float: right; text-align: right;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> </div>													
PLEASE PRINT: <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: 10px;">Please Check The Form For Completeness</p> <p>REMARKS: _____</p> <p>_____</p> <p>_____</p>													
<div style="display: flex; justify-content: space-between; font-size: small;"> <div>CERC 113-72 8 Mar 72</div> <div>Make any additional remarks, computations or sketches on the reverse side of this form.</div> </div>													

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

ANNUAL REVERSE

DATA BASED ON OBSERVATIONS
 29 JUN 70 TO 09 DEC 70

INSUFFICIENT DATA

INSUFFICIENT DATA
 APRIL

AUGUST

INSUFFICIENT DATA

INSUFFICIENT DATA
 MARCH

JULY

INSUFFICIENT DATA

INSUFFICIENT DATA
 FEBRUARY

JUNE

INSUFFICIENT DATA

INSUFFICIENT DATA
 JANUARY

MAY

INSUFFICIENT DATA

NO DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

DECEMBER

NOVEMBER

OCTOBER

SEPTEMBER

SALE ENDENTS HEAD CALIFORNIA SUMMARY FOR PERIOD STARTING 2-10-70 AND ENDING 7- 9-72.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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.	226.
PERIOD (SEC)													
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	9.10	2.98	3.38	2.66	4.35	4.84	5.97	6.59	5.81	3.42	2.44	2.21	4.77
NO. OBS.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	226.
DIRECTION													
COSIAL SECTOR													
0.00	15.79	15.79	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79
1.00	36.84	36.84	3.85	19.05	19.05	20.00	36.48	12.90	0.00	0.00	0.00	0.00	15.63
2.00	18.19	18.19	5.85	8.90	8.90	50.00	61.53	74.19	81.53	95.24	92.31	100.00	84.89
3.00	42.11	42.11	19.19	19.05	19.05	30.00	0.00	12.90	16.67	4.76	0.00	0.00	17.86
4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	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	5.26	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.	226.
BREAKER TYPE													
KOCC SPILL	0.00	0.00	57.58	19.23	42.86	63.64	51.72	38.71	33.33	61.90	92.31	100.00	46.05
BP/PL	100.00	52.63	42.52	73.08	32.38	9.09	34.48	29.03	41.67	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.	226.
CURRENT OBS.													
(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
GROSS MEAN	0.29	1.27	1.00	0.83	0.77	0.69	0.71	0.76	0.91	0.73	0.78	0.58	0.84
STD DEV	0.41	0.75	0.63	0.56	0.63	0.79	0.64	0.89	0.84	0.26	0.37	0.38	0.59
NO. OBS.	2.	18.	33.	26.	21.	10.	29.	31.	12.	21.	13.	8.	224.
FORESHORE SLOPE													
MEAN (OCC)	4.67	5.88	3.76	3.27	3.24	2.82	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	1.78	0.67	2.26
NO. OBS.	3.	18.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	226.
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.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	226.
CUSPS % 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.	3.	19.	33.	26.	21.	11.	29.	31.	12.	21.	13.	9.	226.

5313 FADNETS 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.
SURF (IRS.)													
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	2.81	2.51	1.82	.67	.78	.83	1.10	.85	.73	.73
NO. OBS.	0.	29.	29.	26.	21.	9.	10.	16.	6.	14.	12.	9.	172.
PERIOD (SEC)													
MEAN	0.00	15.62	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	2.47	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.	18.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
DIRECTION													
COASTAL SECTOR													
0 OCC. 1	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
2	0.00	38.89	38.89	3.85	19.05	25.00	100.00	11.11	0.00	0.00	0.00	0.00	17.86
3	0.00	38.89	37.93	53.85	61.90	37.50	0.00	72.22	66.67	92.86	81.33	0.00	58.33
4	0.00	0.00	0.00	42.31	19.05	37.50	0.00	16.67	33.33	7.14	0.00	0.00	20.83
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.	18.	29.	26.	21.	8.	7.	18.	6.	14.	12.	9.	168.
BREAKER TYPE													
KNOCC SPILL	0.00	0.00	58.62	19.23	42.86	55.56	90.00	66.67	46.67	92.86	100.00	100.00	55.23
SPRPL	0.00	55.56	41.38	73.08	52.38	11.11	0.00	22.22	33.33	0.00	0.00	0.00	34.30
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.	18.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
CURRENT OBS.													
(FT/SEC.)													
NET MEAN	0.00	-0.08	-0.08	-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	.83	.77	.72	.52	.79	1.09	.77	.83	.58	.68
STD DEV	0.00	.69	.65	.56	.63	.75	.25	.64	.84	.35	.30	.38	.58
NO. OBS.	0.	17.	29.	26.	21.	8.	10.	18.	6.	14.	12.	8.	168.
FURTH SHORE SLOPE													
MEAN (DEG)	0.00	5.88	3.59	3.27	3.24	2.78	4.22	2.83	2.67	1.29	3.50	3.78	3.58
STD DEV	0.00	1.69	1.92	1.59	1.64	1.30	5.93	1.25	1.37	.61	.60	.67	2.08
NO. OBS.	0.	17.	29.	26.	21.	9.	9.	18.	6.	14.	12.	9.	170.
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.	18.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.
CUSPS & 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.	18.	29.	26.	21.	9.	10.	18.	6.	14.	12.	9.	172.

5313 ENDERBYS BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1-18-71 AND ENDING 11- 7-71.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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.
PERIOD (SEC)													
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.
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	21.43	15.38	0.00	0.00	0.00	0.00	11.36
3	33.33	0.00	0.00	0.00	0.00	0.00	78.57	76.92	100.00	100.00	0.00	0.00	81.82
4	66.67	0.00	0.00	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	6.82
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.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
BREAKER TYPE													
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	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.	3.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	44.
CURRENT OBS.													
(FT/SEC)													
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
GROSS MEAN	.29	0.00	0.00	0.00	0.00	0.00	1.09	.72	.33	.66	.08	0.00	.74
STD DEV	.41	0.00	0.00	0.00	0.00	0.00	.68	.77	.42	.40	0.00	0.00	.62
NO. OBS.	2.	0.	0.	0.	0.	0.	14.	13.	6.	7.	1.	0.	43.
FORESHORE SLOPE													
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

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT MEAN	0.00	4.00	4.75	0.00	0.00	3.00	1.80	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.
PERIOD (SEC)													
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.
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
DEC. 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	16.67
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.
BREAKER TYPE													
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	16.67
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	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.
CURRENT OBS.													
(FT/SEC)													
MEY 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	.83	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.00	.57
STD DEV	0.00	0.00	.50	0.00	0.00	.70	0.00	0.00	0.00	0.00	0.00	0.00	.63
NO. OBS.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
FINE SHORE SLOPE													
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.
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.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.
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.	0.	1.	4.	0.	0.	2.	5.	0.	0.	0.	0.	0.	12.

CALIFORNIA

WIND ROSES 5313 ENDERTS BEACH

INSUFFICIENT DATA

JANUARY

FEBRUARY

MARCH

APRIL

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

INSUFFICIENT DATA

ANNUAL AVERAGE

DATA BASED ON OBSERVATIONS
COLLECTED AT 5313 ENDERTS BEACH
11 FEB 70 TO 09 JUL 72

SUMMARY FOR PERIOD STARTING 4-24-66 AND ENDING 12-28-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ALL OBS.
SURF OBS. HEIGHT (FT)													
MEAN	4.38	5.19	4.92	4.18	3.58	2.79	2.71	2.63	3.31	3.03	4.22	5.03	3.65
STD DEV	2.11	2.14	2.76	1.97	1.95	.97	.79	.99	1.95	1.37	1.32	1.32	1.72
NO. OBS.	65.	42.	51.	56.	66.	66.	103.	66.	90.	77.	66.	56.	832.
PERIOD (SEC)													
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	10.64
STD DEV	2.46	2.06	1.96	2.18	2.66	2.01	2.85	2.49	2.34	2.47	2.31	2.71	2.64
NO. OBS.	65.	42.	51.	56.	66.	66.	102.	66.	90.	77.	66.	56.	837.
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	0.00	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	0.00	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.	50.	24.	20.	16.	126.
COMPASS SECTOR													
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	0.00	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	22.22	11.90	12.00	1.99	7.95	3.53	3.53	1.43	0.00	3.77	2.17	2.56	3.15
NW	71.11	60.93	68.00	91.97	87.50	96.81	95.29	90.00	90.00	92.45	95.65	79.49	66.66
CALM	6.67	7.14	10.00	7.18	4.55	0.00	1.16	5.71	10.00	3.77	2.17	17.95	5.57
NO. OBS.	45.	42.	50.	56.	66.	66.	85.	70.	60.	53.	46.	39.	716.
BREAKER TYPE													
SOCC SPILL	93.33	100.00	98.04	98.21	97.73	100.00	93.16	87.50	69.64	63.64	58.21	73.66	85.48
RIPPLE	0.00	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	2.22	0.00	0.00	1.99	2.27	0.00	1.96	5.48	21.35	29.87	39.65	24.56	10.15
BURGE	4.44	0.00	1.96	0.00	0.00	0.00	0.00	1.18	4.74	6.49	11.94	1.75	3.66
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.	65.	42.	51.	56.	66.	66.	102.	66.	69.	77.	67.	57.	837.
CURRENT OBS. (FT/SEC)													
NET MEAN	.16	.38	.15	.59	.15	.61	1.40	1.58	1.36	.53	.62	.33	.62
GROSS MEAN	1.16	.78	.97	.77	.91	1.11	1.90	1.43	1.42	1.09	1.55	.86	1.19
STD DEV	1.05	.81	.61	.81	1.07	1.05	1.31	1.19	1.30	.86	1.02	.95	1.06
NO. OBS.	36.	36.	46.	47.	66.	76.	82.	66.	83.	76.	63.	52.	787.
FORESHORE SLOPE													
MEAN (DEG)	6.14	5.18	5.75	6.75	6.74	7.00	5.35	7.28	6.43	5.09	4.77	5.19	6.05
STD DEV	2.42	1.66	1.60	2.35	3.33	4.02	2.10	2.68	4.16	2.52	1.74	2.24	2.59
NO. OBS.	36.	38.	51.	56.	66.	73.	77.	65.	83.	75.	65.	56.	752.
RIPS													
OCC	6.67	0.00	1.96	3.44	3.41	0.00	.97	0.00	0.00	2.60	11.76	6.90	2.82
MEAN SPAC	233.33	0.00	200.00	205.00	200.00	0.00	276.00	0.00	0.00	325.00	316.75	337.50	169.54
NO. OBS.	45.	42.	51.	56.	66.	66.	103.	66.	90.	77.	66.	56.	831.
CUSP													
OCC	15.56	26.19	37.29	36.49	43.18	33.26	36.89	19.32	7.32	25.97	0.00	0.00	23.46
MEAN SPAC	150.00	137.91	164.12	201.14	205.82	227.50	205.87	104.82	193.33	159.15	0.00	0.00	164.48
NO. OBS.	45.	42.	51.	56.	66.	66.	103.	66.	82.	77.	66.	56.	834.

5034 PPAIRIE CHECK BED/CDS CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 4-69 AND ENDING 12-31-69.

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	6.43	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.	25.	30.	30.	29.	28.	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	1.33	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													
% 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	0.00	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	12.39	4.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.97
W	78.57	80.00	71.91	80.00	100.00	100.00	100.00	92.59	94.43	93.10	94.43	100.00	89.40
NW	21.43	20.00	8.70	16.00	13.33	0.00	0.00	7.41	3.57	0.00	3.57	0.00	6.62
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.	14.	15.	23.	25.	30.	28.	29.	27.	28.	29.	28.	26.	302.
BREAKER TYPE													
% OCC 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	4.17	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.	14.	15.	24.	25.	30.	29.	29.	27.	28.	29.	28.	26.	304.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-455	-95	-33	-36	-28	-146	-277	-245	-142	-24	-155	-50	-81
GROSS MEAN	1.90	1.20	1.03	.66	.95	1.71	2.04	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.	15.	24.	25.	29.	29.	28.	26.	27.	28.	27.	26.	298.
RIPS % OCC	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
MEAN SPAC.	233.53	233.53	110.00	25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	52.51
NO. OBS.	14.	14.	24.	25.	30.	30.	29.	27.	28.	29.	28.	26.	305.
CUSPS % OCC	50.00	73.33	70.17	64.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.66
MEAN SPAC.	150.00	137.81	194.32	230.31	27.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.38
NO. OBS.	14.	14.	24.	25.	30.	30.	29.	27.	28.	29.	28.	26.	305.

5036 PRAIRIE CHIEF REMIUMS CALIFORNIA

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

SURF. OBS. HEIGHT (FT)	MONTHS												DEC	ALL OBS.
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV			
MEAN	3.45	4.15	3.78	2.40	3.17	3.31	3.13	2.88	2.80	3.04	3.80	4.49	3.40	
STD DEV	1.12	1.15	1.95	1.07	1.07	1.01	1.05	1.22	1.03	1.91	1.01	1.68	1.19	
NO. OBS.	31.	27.	27.	25.	29.	26.	26.	17.	30.	24.	20.	18.	298.	
PERIOD MEAN	13.44	10.76	13.12	12.15	10.23	9.45	9.14	9.16	9.51	9.02	10.74	14.69	10.99	
STD DEV	2.69	2.15	2.31	1.94	2.86	2.21	1.86	1.78	1.99	1.63	2.98	2.21	2.84	
NO. OBS.	31.	27.	27.	25.	29.	26.	24.	17.	30.	24.	20.	18.	298.	
DIRECTION														
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	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	41.19	52.88	66.67	70.63	95.00	94.44	70.63	
4	0.00	0.00	0.00	0.00	0.00	0.00	58.82	41.18	33.33	25.00	0.00	5.56	26.98	
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	
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.	17.	17.	30.	24.	20.	18.	126.	
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	32.26	18.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
W	81.46	81.46	81.46	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00	98.37	
NW	0.00	0.00	11.11	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	1.74	
NO. OBS.	11.	27.	27.	25.	29.	26.	24.	0.	0.	0.	0.	0.	172.	
BREAKER TYPE														
TOCC SPILL	96.77	100.00	100.00	100.00	100.00	100.00	75.00	58.82	23.13	0.00	0.00	22.22	68.12	
SP/LP	0.00	0.00	0.00	0.00	0.00	0.00	20.83	29.41	63.53	95.63	100.00	77.78	28.86	
PLUNGE	3.23	0.00	0.00	0.00	0.00	0.00	4.17	5.68	6.67	4.17	0.00	0.00	20.01	
BURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68	6.67	0.00	0.00	0.00	1.01	
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.	27.	27.	25.	29.	26.	24.	17.	30.	24.	20.	18.	298.	
CURRENT OBS. (FT/SEC)														
NET MEAN	.61	-.04	-.07	-.74	-.81	-.38	-.60	-.66	-.66	-.84	1.02	.60	-.36	
GROSS MEAN	.69	.52	.49	.80	.84	.48	.60	.66	1.72	1.62	1.56	1.08	.97	
STD DEV	1.70	1.76	.93	.54	.57	.61	.50	.66	1.80	1.21	.94	.37	.83	
NO. OBS.	26.	27.	28.	17.	24.	23.	23.	17.	28.	24.	20.	15.	259.	
FORESHORE SLOPE														
MEAN (DEC)	4.31	4.59	4.59	7.60	8.25	9.35	5.58	8.24	7.79	4.00	3.70	4.22	8.35	
STD DEV	2.86	.63	.93	2.82	4.80	4.52	2.41	2.66	4.87	1.06	.80	.65	3.44	
NO. OBS.	22.	15.	27.	25.	24.	26.	24.	17.	28.	24.	20.	18.	270.	
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.	11.	27.	27.	25.	29.	26.	24.	17.	30.	24.	20.	18.	298.	
CUSPS X OCC.														
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	66.67	5.68	3.33	4.17	0.00	0.00	6.38	
NO. OBS.	31.	27.	27.	25.	29.	26.	135.31	105.00	70.00	125.00	0.00	0.00	14.00	
							24.	17.	30.	24.	20.	18.	298.	

WIND ROSES 05036 PRAIRIE CREEK REDWOODS CALIFORNIA

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

JANUARY

FEBRUARY

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	10.00	4.47	6.32	6.00	6.33	6.13	5.63	4.39	6.64	9.63	8.67	13.50	6.18
MEAN													
STD DEV	0.00	0.92	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.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.
PERIOD (SEC)													
MEAN	16.01	16.39	16.39	14.85	12.71	19.00	18.71	14.69	15.35	12.22	10.50	12.00	15.51
STD DEV	0.00	0.23	0.27	0.24	1.70	5.07	4.19	5.01	3.11	2.31	0.00	0.00	0.00
NO. OBS.	1.	15.	22.	26.	12.	5.	32.	28.	11.	16.	3.	2.	165.
DIRECTION													
COASTAL SECTOR													
0 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	95.85	60.00	50.00	50.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	28.62
3	100.00	10.00	30.00	33.33	50.00	50.00	74.89	57.14	37.18	60.00	100.00	100.00	47.06
4	0.00	18.00	4.85	18.00	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	0.00	0.00	0.00	0.00	0.59
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.	15.	22.	26.	12.	8.	35.	28.	18.	15.	3.	2.	170.
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	0.00	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.	5.	22.	26.	12.	8.	35.	28.	18.	15.	3.	2.	5.
BREAKER TYPE													
SOCC SPILL	0.00	6.67	4.55	5.00	8.33	0.00	14.89	17.86	0.00	0.00	0.00	0.00	7.95
80/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	93.33	95.45	95.00	91.67	18.00	50.71	71.43	0.00	0.00	0.00	0.00	89.20
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	0.00
NO. OBS.	1.	15.	22.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	2.40	1.04	0.70	0.92	-1.81	0.92	0.86	0.76	-1.32	0.83	0.13	-2.45	0.73
GROSS MEAN													
STD DEV	2.90	1.33	1.03	1.27	1.87	1.12	1.79	1.78	1.32	1.89	0.76	2.45	1.26
NO. OBS.	1.	15.	22.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.
FORESHORE SLOPE													
MEAN (DEG)	7.00	7.13	6.91	5.83	7.50	9.00	8.39	8.19	8.87	7.86	6.00	10.00	7.40
STD DEV	0.00	0.42	1.82	1.14	1.45	3.07	1.66	2.17	4.68	1.97	0.00	0.00	2.27
NO. OBS.	1.	15.	22.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.
RIPPLE OCC													
MEAN 30%	0.00	0.00	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.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.
CUSPS % OCC													
MEAN 30%	0.00	0.00	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.	26.	12.	8.	35.	28.	18.	16.	3.	2.	176.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF ORS.													
HEIGHT													
MEAN	0.00	4.46	6.33	6.00	6.55	5.86	6.04	4.00	7.50	10.08	6.00	0.00	6.441
STD DEV	0.00	.97	1.74	1.70	1.57	1.46	1.31	.82	1.81	3.73	0.00	0.00	2.332
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	19.56	25.50	20.42	12.15	10.50	0.00	16.44
STD DEV	0.00	3.19	4.26	2.65	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													
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	1.72
2	100.00	100.00	63.16	94.55	28.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.24
3	0.00	0.00	0.00	31.58	57.14	76.00	100.00	100.00	25.00	66.67	100.00	0.00	41.58
4	0.00	0.00	0.00	16.36	9.09	24.00	24.00	0.00	62.50	10.00	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	.66
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00
NO. OBS.	0.	8.	21.	19.	11.	7.	25.	4.	8.	12.	1.	0.	116.
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	0.00	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.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
BREAKER TYPE													
100% 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	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
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.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
CURRENT ORS.													
(FT/SEC)													
MEAN	0.00	1.34	-1.03	-1.89	-1.88	-1.89	-1.81	-1.80	-1.67	-1.67	-1.45	0.00	-1.67
STD DEV	0.00	1.58	1.28	1.28	1.95	1.13	.67	.81	1.80	1.49	.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	8.29	8.00	9.75	9.50	7.92	6.00	0.00	7.94
STD DEV	0.00	.90	1.52	1.12	1.43	2.30	1.35	2.36	5.73	1.85	0.00	0.00	2.52
NO. OBS.	0.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.
RIPS													
% 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
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													
% DEC.	0.00	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.	13.	21.	19.	11.	7.	25.	4.	8.	13.	1.	0.	122.

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

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
WEIGHT (FT)													
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	1.64	1.64	2.52	0.00	2.12	2.77
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
PERIOD (SEC)													
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.
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	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	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	37.50	50.00	0.00	66.67	0.00	100.00	62.22
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	37.78
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	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
BREAKER TYPE													
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	62.50	79.17	100.00	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	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.
CURRENT OBS.													
(FT/SEC)													
NFT MEAN	0.00	0.00	0.00	0.00	0.00	0.00	-1.15	-3.78	-6.68	-1.52	.42	-2.45	-4.90
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	1.15	.78	.68	1.52	.92	2.45	.96
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	.63	.36	.28	.89	1.23	2.30	.56
NO. OBS.	0.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
FORESHORE SLOPE													
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.
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.	0.	0.	0.	0.	0.	8.	24.	6.	3.	2.	2.	45.
CUSPS % 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.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	10.00	4.50	6.00	6.00	4.00	8.00	7.00	0.00	0.00	0.00	0.00	0.00	6.43
STD DEV	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
NO. OBS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
PERIOD (SEC)													
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. OBS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
DIRECTION													
COASTAL SECTOR													
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	44.44
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. OBS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
BREAKER TYPE													
20CC 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	100.00	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.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
CURRENT OBS.													
(FT/SEC)													
NFT 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	-5.37
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	7.77	0.00	0.00	0.00	0.00	0.00	9.94
NO. OBS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
FURT SHORE SLOPE													
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. OBS.	1.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
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 SPLC	0.00	0.00	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.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.
CUSPS													
% 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.	2.	1.	1.	1.	1.	2.	0.	0.	0.	0.	0.	9.

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

5306 MAD RIVER

CALIFORNIA

SUMMARY FOR PERIOD STARTING 11- 7-69 AND ENDING 5-14-72.

SURF OBS.	MONTHS												DEC	ALL OBS.
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV			
HEIGHT (FT)	MEAN	4.57	4.66	4.20	3.60	4.00	2.00	2.50	2.00	0.00	3.67	6.27	8.52	5.52
	STD DEV	1.51	1.75	1.52	1.5	1.4	0.00	1.00	0.00	1.97	2.34	0.00	4.74	3.55
	NO. OBS.	7	7	5	5	4	2	4	3	0	6	15	21	74
PERIOD (SEC)	MEAN	14.60	11.13	10.67	12.26	12.73	13.15	10.00	11.50	0.00	10.70	10.50	9.20	11.54
	STD DEV	2.26	2.84	6.09	2.05	1.14	2.62	3.34	1.32	0.00	3.59	0.00	5.16	3.13
	NO. OBS.	4	3	3	4	4	2	4	3	0	6	1	4	36
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	0.00	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
CURRENT OBS.	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.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BREAKER TYPE	SOCC SPILL	42.84	21.43	80.00	100.00	80.00	100.00	100.00	100.00	0.00	33.33	86.67	66.67	71.25
	PLUNGE	14.29	26.57	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.75
	BURGE	42.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	13.33	19.05	15.00
	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
CURRENT OBS.	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	7	5	5	5	2	4	3	0	6	15	21	80
FORESHORE SLOPE	MEAN (COS)	4.17	1.66	1.20	3.73	6.00	0.00	0.00	0.00	0.00	0.00	1.33	2.48	2.68
	STD DEV	4.95	2.61	1.30	2.87	2.00	0.00	0.00	0.00	0.00	0.00	4.00	5.46	4.28
	NO. OBS.	0	7	5	4	3	0	0	0	0	0	4	21	57
RIPS	MEAN	42.84	0.00	25.00	20.00	0.00	0.00	0.00	0.00	0.00	16.67	750.00	57.10	26.16
	STD DEV	155.07	0.00	60.00	65.00	0.00	0.00	0.00	0.00	0.00	750.00	10.00	751.00	469.25
	NO. OBS.	7	7	4	5	5	2	4	3	0	6	14	21	78
CURBSP % OCC.	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	7	5	5	4	2	4	3	0	6	15	21	79

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	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
STD DEV	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
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
PERIOD (SEC)													
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.
DIRECTION													
COMPASS SECTOR													
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
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.
BREAKER TYPE													
SUCC 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.
CURRENT OBS.													
(F.T./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	.79	.64	.64
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	17.	31.
FURROWS SLOPE													
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.
RIPS % OCC	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
MEAN SPAC.	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.
CUSPS % 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.	0.	0.	0.	0.	14.	17.	31.

5304 3111 4141 42

CALT6040NTA

SUMMARY FOR PERIOD STARTING:

SINCE $N_A^{(n)} \approx J_V + W$ CALCULATIONS
SUMMARY FOR PERIOD STARTING 1-23-70 AND ENDING 12-21-70.

SUMMARY REPORT: QUARTERLY PERFORMANCE ANALYSIS												
SUMMARY		Q1 2024			Q2 2024			Q3 2024			Q4 2024	
UNIT	Q1	Q2	Q3	Q4	UNIT	Q1	Q2	Q3	Q4	UNIT	Q1	Q2
PROD. QTY.	1200	1500	1800	2000	PROD. QTY.	1500	1800	2000	2200	PROD. QTY.	1800	2000
SALES QTY.	1000	1200	1400	1600	SALES QTY.	1200	1400	1600	1800	SALES QTY.	1400	1600
STOCK QTY.	200	300	400	400	STOCK QTY.	300	400	400	400	STOCK QTY.	400	400
EXPENSE (\$K)	50	60	70	80	EXPENSE (\$K)	60	70	80	90	EXPENSE (\$K)	70	80
REVENUE (\$K)	100	120	140	160	REVENUE (\$K)	120	140	160	180	REVENUE (\$K)	140	160
PROFIT (\$K)	50	60	70	80	PROFIT (\$K)	60	70	80	90	PROFIT (\$K)	70	80
ROI (%)	50%	50%	50%	50%	ROI (%)	50%	50%	50%	50%	ROI (%)	50%	50%
MARKET SHARE (%)	10	12	14	16	MARKET SHARE (%)	12	14	16	18	MARKET SHARE (%)	14	16
NEW CUSTOMERS	50	60	70	80	NEW CUSTOMERS	60	70	80	90	NEW CUSTOMERS	70	80
CHURN RATE (%)	5	5	5	5	CHURN RATE (%)	5	5	5	5	CHURN RATE (%)	5	5
NET PROMOTER SCORE	7.5	7.5	7.5	7.5	NET PROMOTER SCORE	7.5	7.5	7.5	7.5	NET PROMOTER SCORE	7.5	7.5
OPERATIONAL EFFICIENCY (%)	85	85	85	85	OPERATIONAL EFFICIENCY (%)	85	85	85	85	OPERATIONAL EFFICIENCY (%)	85	85
COMPLIANCE SCORE	9.5	9.5	9.5	9.5	COMPLIANCE SCORE	9.5	9.5	9.5	9.5	COMPLIANCE SCORE	9.5	9.5
ENVIRONMENTAL IMPACT	Low	Low	Low	Low	ENVIRONMENTAL IMPACT	Low	Low	Low	Low	ENVIRONMENTAL IMPACT	Low	Low
SOCIAL RESPONSIBILITY	High	High	High	High	SOCIAL RESPONSIBILITY	High	High	High	High	SOCIAL RESPONSIBILITY	High	High
GOVERNANCE RATING	A	A	A	A	GOVERNANCE RATING	A	A	A	A	GOVERNANCE RATING	A	A
FINANCIAL STABILITY	Stable	Stable	Stable	Stable	FINANCIAL STABILITY	Stable	Stable	Stable	Stable	FINANCIAL STABILITY	Stable	Stable
REGULATORY COMPLIANCE	Full	Full	Full	Full	REGULATORY COMPLIANCE	Full	Full	Full	Full	REGULATORY COMPLIANCE	Full	Full
INNOVATION INDEX	8.0	8.0	8.0	8.0	INNOVATION INDEX	8.0	8.0	8.0	8.0	INNOVATION INDEX	8.0	8.0
TECHNOLOGY ADOPTION	High	High	High	High	TECHNOLOGY ADOPTION	High	High	High	High	TECHNOLOGY ADOPTION	High	High
WORKFORCE DIVERSITY	85%	85%	85%	85%	WORKFORCE DIVERSITY	85%	85%	85%	85%	WORKFORCE DIVERSITY	85%	85%
EMPLOYEE SATISFACTION	4.5	4.5	4.5	4.5	EMPLOYEE SATISFACTION	4.5	4.5	4.5	4.5	EMPLOYEE SATISFACTION	4.5	4.5
LEADERSHIP EFFECTIVENESS	9.0	9.0	9.0	9.0	LEADERSHIP EFFECTIVENESS	9.0	9.0	9.0	9.0	LEADERSHIP EFFECTIVENESS	9.0	9.0
COMMUNITY ENGAGEMENT	High	High	High	High	COMMUNITY ENGAGEMENT	High	High	High	High	COMMUNITY ENGAGEMENT	High	High
TRANSPARENCY INDEX	8.5	8.5	8.5	8.5	TRANSPARENCY INDEX	8.5	8.5	8.5	8.5	TRANSPARENCY INDEX	8.5	8.5
ETHICAL SOURCING	Full	Full	Full	Full	ETHICAL SOURCING	Full	Full	Full	Full	ETHICAL SOURCING	Full	Full
DATA SECURITY	High	High	High	High	DATA SECURITY	High	High	High	High	DATA SECURITY	High	High
INTEGRITY INDEX	9.5	9.5	9.5	9.5	INTEGRITY INDEX	9.5	9.5	9.5	9.5	INTEGRITY INDEX	9.5	9.5
REPUTATION SCORE	8.5	8.5	8.5	8.5	REPUTATION SCORE	8.5	8.5	8.5	8.5	REPUTATION SCORE	8.5	8.5
BRAND LOYALTY	High	High	High	High	BRAND LOYALTY	High	High	High	High	BRAND LOYALTY	High	High
CUSTOMER RETENTION	90%	90%	90%	90%	CUSTOMER RETENTION	90%	90%	90%	90%	CUSTOMER RETENTION	90%	90%
MARKETING ROI	150%	150%	150%	150%	MARKETING ROI	150%	150%	150%	150%	MARKETING ROI	150%	150%
SALES GROWTH (%)	10%	12%	14%	16%	SALES GROWTH (%)	12%	14%	16%	18%	SALES GROWTH (%)	14%	16%
PROFIT GROWTH (%)	15%	18%	20%	22%	PROFIT GROWTH (%)	18%	20%	22%	24%	PROFIT GROWTH (%)	20%	22%
STOCK PRICE (\$)	100	110	120	130	STOCK PRICE (\$)	110	120	130	140	STOCK PRICE (\$)	120	130
MARKET CAP (\$B)	10	11	12	13	MARKET CAP (\$B)	11	12	13	14	MARKET CAP (\$B)	12	13
DEBT TO EQUITY RATIO	0.5	0.5	0.5	0.5	DEBT TO EQUITY RATIO	0.5	0.5	0.5	0.5	DEBT TO EQUITY RATIO	0.5	0.5
RETURN ON EQUITY (%)	15	15	15	15	RETURN ON EQUITY (%)	15	15	15	15	RETURN ON EQUITY (%)	15	15

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.													
HEIGHT (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
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)													
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	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.
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	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
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	0.00	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.
WFAKTER 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
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	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	.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.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.
FURTHER 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													
% 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													
% 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 MAN RIVER

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 7-72 AND ENDING 5-14-72.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
WRIGHT (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
STU DEV	1.26	1.53	2.08	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.
PERIOD (SEC)													
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
STU 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.
DIRECTION													
COASTAL SECTOR													
N 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	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.
BREAKER TYPE													
XNCC 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
SPILL	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.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.03	-.94	-.43	-.85	-.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
STU DEV	.4.	.69	.71	.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.
FURF SHORT SLOPE													
MEAN (NEG)	4.33	4.33	2.00	4.50	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85
STU DEV	1.15	2.08	1.00	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.
RIPS X OCC													
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
NO. OBS.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	56.27
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.	4.	3.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	15.

5102 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 URS.													
HEIGHT (FT)													
MEAN	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
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.72	4.51	3.86
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.	4.	18.
PILING (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.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.	4.	18.
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	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	5.56
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	5.56
NW	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.	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/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	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.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.	4.	18.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.50	0.75
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.	0.	0.	0.	0.	0.	0.	0.	0.	0.	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	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.
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 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
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	4.	18.
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 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
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.	4.	18.

SUMMARY FOR PERIOD STARTING 1-15-70 AND ENDING 12-29-70.

714911

5302 CLEVELAND ACH

[illegible]

5302 CINTERVILLE ACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 5-71 AND ENDING 1-13-71.

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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													
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
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
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	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	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
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.
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	0.00	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.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
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.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.

WIND ROSES 5302 CENTERVILLE BEACH CALIFORNIA

INSUFFICIENT DATA

JANUARY

INSUFFICIENT DATA

INSUFFICIENT DATA

FEBRUARY

NO DATA

JUNE

INSUFFICIENT DATA

OCTOBER

INSUFFICIENT DATA

MARCH

NO DATA

JULY

INSUFFICIENT DATA

NOVEMBER

INSUFFICIENT DATA

APRIL

INSUFFICIENT DATA

AUGUST

INSUFFICIENT DATA

DECEMBER

ANNUAL AVERAGE

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
05 NOV 69 TO 13 JAN 71

SUMMARY FOR PERIOD STARTING 2-20-69 AND ENDING 7-15-71.

[illegible]

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	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
STD DEV	0.00	.95	.96	1.30	.80	.93	1.32	1.27	1.79	1.25	1.13	1.79	1.44
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.
PERIOD (SEC)													
MEAN	0.00	13.93	14.21	12.14	11.64	9.99	8.53	10.05	12.19	11.43	11.68	11.88	11.61
STD DEV	0.00	2.11	2.90	2.44	2.56	2.43	2.48	2.31	2.96	2.99	3.26	2.44	3.51
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.
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
000. 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	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.	0.	7.	23.	19.	21.	24.	24.	22.	20.	16.	19.	15.	210.
BREAKER TYPE													
XUCC STILL	0.00	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.													
(FT/SEC)													
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	.58	.44
NO. OBS.	0.	7.	23.	17.	21.	24.	24.	22.	21.	16.	19.	15.	209.
FORESHORE SLOPE													
MEAN (DEG)	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
STD DEV	0.00	2.58	2.10	2.83	1.08	.75	1.02	.89	1.75	3.12	1.80	1.16	2.15
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	95.39	94.16	74.50	67.82	90.43	95.79	91.75	143.56	101.63	111.06	94.38
NO. OBS.	0.	7.	23.	19.	21.	24.	24.	22.	21.	16.	19.	15.	211.

5101 SHELTER COVE

CALIFORNIA

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

SURF OBS.

HEIGHT (FT)

MEAN 3.45
STD DEV 2.60
NO. OBS. 16

PERIOD (SEC)

MEAN 9.87
STD DEV 2.80
NO. OBS. 15

DIRECTION

COASTAL SECTOR

0 OCC. 1 0.00
1 0.00
2 0.00
3 0.00
4 0.00
5 0.00
CALM 0.00
NO. OBS. 6

COMPASS SECTOR

0 OCC. 4 0.00
NE 0.00
N 0.00
NW 0.00
W 0.00
SW 0.00
S 0.00
SE 0.00
E 0.00
NE 0.00
N 0.00
NW 0.00
W 0.00
SW 0.00
S 0.00
SE 0.00
E 0.00
CALM 6.25
NO. OBS. 16

BREAKER TYPE

100% SPILL 0.00
30% SPILL 0.00
PLATE 43.75
PILE 0.00
SARGE 0.00
CALM 0.25
NO. OBS. 16

CURRENT OBS.

LEFT SECTOR

NET MEAN 0.06
GROSS MEAN 0.87
STD DEV 0.53
NO. OBS. 16

FORESHORE SLOPE

MEAN (DEG) 3.69
STD DEV 1.01
NO. OBS. 16

RIPS

0 OCC 0.00
MEAN SPAC. 0.00
NO. OBS. 16

CUSPS

1 OCC. 81.05
MEAN SPAC. 96.62
NO. OBS. 16

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	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	1.45	1.59	.50	.86	.48	.86	1.15	1.07	1.36	1.72	1.56	
NO. OBS.	16	20	19	19	20	22	20	19	22	6	6	216	
PERIOD (SEC)													
MEAN	9.87	12.16	12.10	12.04	13.81	9.58	13.43	12.75	11.30	10.62	11.07	11.60	
STD DEV	2.80	3.08	2.83	3.72	3.59	3.29	3.20	1.66	3.20	1.94	2.54	3.10	
NO. OBS.	15	20	19	19	19	22	20	19	22	13	6	216	
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	
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	
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	
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	
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	
NO. OBS.	6	19	19	19	20	22	20	19	22	13	6	168	
COMPASS SECTOR													
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
CALM	6.25	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	19	19	20	22	20	19	22	13	6	168	
BREAKER TYPE													
100% 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	
30% 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	
PLATE	43.75	13.68	13.68	8.47	35.00	40.81	49.00	47.37	31.82	0.00	0.00	0.00	
PILE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SARGE	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	
NO. OBS.	16	20	19	19	20	22	20	19	22	13	6	216	
CURRENT OBS.													
LEFT SECTOR													
NET MEAN	0.06	0.11	0.21	0.21	0.21	0.09	0.02	0.01	0.27	0.28	0.49	0.81	
GROSS MEAN	0.87	0.79	0.72	0.60	0.70	0.77	0.71	0.82	0.53	0.62	0.77	0.85	
STD DEV	0.53	0.57	0.50	0.49	0.52	0.55	0.51	0.52	0.43	0.55	0.61	0.74	
NO. OBS.	16	20	19	19	20	22	20	19	22	13	6	216	
FORESHORE SLOPE													
MEAN (DEG)	3.69	5.15	3.65	2.56	2.95	2.60	2.14	2.65	4.02	4.23	5.06	5.83	
STD DEV	1.01	1.42	2.87	1.12	1.61	1.05	0.71	1.18	1.61	1.54	1.55	3.06	
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	
RIPS													
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	
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	
NO. OBS.	16	20	19	19	20	22	20	19	22	13	6	216	
CUSPS													
1 OCC	81.05	80.00	55.00	36.84	47.17	30.00	50.00	55.00	31.88	0.00	76.92	100.00	
MEAN SPAC.	96.62	101.84	118.64	42.29	45.67	40.55	38.45	19.33	0.00	0.00	69.50	83.55	
NO. OBS.	16	20	20	19	19	20	22	20	19	22	13	6	

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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	1.80	1.86	1.70	.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.
PERIOD (SEC)													
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	2.60	1.76	2.45	.86	3.57	2.84	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.
DIRECTION													
COASTAL SECTOR													
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	5.26	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.
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
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.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-1.10	-0.37	-0.20	-0.12	-0.44	-0.33	-0.21	0.00	0.00	0.00	0.00	0.00	-0.37
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.
FORESHORE SLOPE													
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.
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.	8.	11.	10.	14.	19.	13.	8.	0.	0.	0.	0.	0.	83.
CUSPS % DEC.													
MEAN SPAC.	100.00	100.00	90.00	71.43	0.00	20.00	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 ROSES 05301 SHELTER COVE

CHITAN

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT	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	.90	1.02	1.46	1.62	2.01	2.28	1.94
STD DEV	2.9	24.	15.	24.	51.	24.	90.	88.	103.	113.	100.	69.	730.
NO. OBS.													
PERIOD (SEC)													
10.78	12.31	11.37	10.31	10.31	8.98	8.25	11.50	11.32	9.35	10.29	11.89	12.55	10.83
STD DEV	2.6	1.94	2.14	2.0	2.68	2.71	4.95	3.56	1.87	2.28	2.86	2.59	3.09
NO. OBS.	29.	23.	14.	24.	49.	23.	91.	84.	108.	102.	100.	72.	716.
DIRECTION													
COASTAL SECTOR													
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	.65
2	0.00	0.00	0.00	0.00	0.00	0.00	6.78	0.00	0.00	0.00	0.00	2.49	1.62
3	0.00	0.00	0.00	0.00	0.00	50.00	93.49	98.28	98.15	100.00	100.00	9.12	92.56
4	0.00	0.00	0.00	0.00	0.00	50.00	33.73	1.72	0.00	0.00	0.00	0.00	5.18
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.	2.	53.	39.	34.	43.	52.	41.	309.
COMPASS 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	0.00	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	0.00	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.	53.	39.	34.	43.	52.	41.	309.
BREAKER TYPE													
1	65.52	91.67	80.00	95.83	75.93	66.67	85.71	72.99	53.85	59.41	43.56	41.67	63.72
2	0.00	0.00	0.00	0.00	0.00	0.00	7.69	12.94	28.04	17.70	10.85	36.11	18.13
3	27.59	4.17	0.00	4.17	12.96	29.17	4.40	9.41	6.85	13.77	27.72	6.33	12.77
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	3.45	4.17	13.33	0.00	3.70	0.00	2.20	0.00	13.66	10.62	13.66	7.69	7.69
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.	29.	24.	15.	24.	54.	24.	91.	89.	108.	113.	101.	72.	736.
CURRENT OBS.													
1	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
2	.82	1.06	1.25	.62	2.07	1.23	1.67	1.55	1.65	1.64	1.33	1.59	1.50
3	26.	22.	15.	30.	33.	14.	46.	44.	69.	83.	71.	56.	506.
NO. OBS.													
FORESHORE SLOPE													
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	0.00	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.
RIPS													
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	0.00	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.
CUSPS													
1	89.66	83.33	93.33	87.50	62.96	56.00	81.45	52.27	68.57	68.14	72.26	80.56	67.70
2	124.02	155.43	142.52	142.52	142.56	135.57	135.85	97.23	99.54	121.57	121.57	135.26	114.15
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	0.00	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.

SURF OBS. (EST)

HEIGHT (FEET)
MEAN
STD DEV
NO. OBS.

PERIOD (SEC)
MEAN
STD DEV
NO. OBS.

DIRECTION
COSINE SECTION
S. OCC. 1
S. OCC. 2
S. OCC. 3
S. OCC. 4
S. OCC. 5

CALM
NO. OBS.

COMPASS SECTION
S. OCC. NE
S. OCC. E
S. OCC. SE
S. OCC. S
S. OCC. SW
S. OCC. W
S. OCC. NW
S. OCC. N

WAVE TYPE
ROCK SPILL
PLUNGE
SURGE
CALM
NO. OBS.

CURRENT OBS.
(FT/SEC)
NET MEAN

GROSS MEAN
STD DEV
NO. OBS.

FORESHORE SLOPE
MEAN (DEG)
STD DEV
NO. OBS.

RIPS
MEAN
STD DEV
NO. OBS.

CUSPS
MEAN
STD DEV
NO. OBS.

MEAN
STD DEV
NO. OBS.

MEAN
STD DEV
NO. OBS.

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STD DEV
NO. OBS.

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NO. OBS.

MEAN
 
NO. OBS.

5026 WACKENHICHER												SUMMARY FOR PERIOD STARTING 1 st 6-70 AND ENDING 12-28-70.											
CALIFORNIA																							
SURF OBS.																							
HEIGHT (FT)																							
MEAN																							
STD DEV																							
NO. OBS.																							
PERIOD (SEC)																							
MEAN																							
STD DEV																							
NO. OBS.																							
DIRECTION																							
COASTAL SECTOR																							
OCC.																							
1																							
2																							
3																							
4																							
5																							
CALM																							
NO. OBS.																							
0																							
COMPASS SECTOR																							
OCC.																							
N																							
NE																							
E																							
SE																							
S																							
SW																							
W																							
NW																							
CALM																							
NO. OBS.																							
0																							
ARAKEN TYPE																							
RUCC SPILL																							
OCC.																							
N																							
NE																							
E																							
SE																							
S																							
SW																							
W																							
NW																							
CALM																							
NO. OBS.																							
2																							
CURRENT OBS.																							
(FT/SEC)																							
NET MEAN																							
GRUSS MEAN																							
STD DEV																							
NO. OBS.																							
FRESHWATER SLIPE																							
MEAN (DEG)																							

WIND ROSES 05026 MACKERRICHER

CALIFORNIA

ANNUAL REFERENCE

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
25 APR 68 TO 28 DEC 70

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	0.00	0.00	0.00	1.18	2.06	.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.	151.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	9.95	9.90	10.18	10.28	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	2.27
NO. OBS.	0.	0.	0.	11.	33.	22.	16.	0.	8.	25.	24.	16.	155.
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	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	90.00	3.13	95.00	87.50	0.00	100.00	96.43	100.00	100.00	95.45
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	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.
BREAKER TYPE													
XCCC SPILL	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.	28.	24.	16.	153.
CURRENT OBS. (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	.16	.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.
FORESHORE SLOPE													
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.
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.	0.	0.	0.	11.	33.	22.	16.	0.	8.	28.	24.	16.	158.
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.	0.	0.	0.	11.	33.	22.	16.	0.	8.	28.	24.	16.	158.

SUN'S POSITION: GULCH			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	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.		
PERIOD (SEC)															
MEAN	9.84	9.01	10.77	10.20	10.63	11.20	0.00	0.00	0.00	10.89	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.		
DIRECTION															
COMPASS SECTION															
° 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	0.00	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	0.00	0.00	0.00	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		
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.		
BREAKER TYPE															
X OCC SPILL	100.00	83.33	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	18.67	5.00	3.70	8.33	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.	18.	153.		
CURRENT OBS.															
(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		
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.	7.	13.	13.	18.	10.	1.	0.	0.	0.	13.	13.	10.	98.		
FURF-SHORE SLOPE															
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.		
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.	12.	18.	21.	27.	12.	1.	0.	0.	0.	20.	24.	19.	154.		
CUSPS X OCC.	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		
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.50	20.00	15.00	8.26		
NO. OBS.	12.	18.	21.	27.	12.	1.	0.	0.	0.	20.	24.	19.	154.		

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF HEIGHTS.													
MEAN	1.40	1.89	0.00	0.00	0.00	0.00	1.08	1.00	0.00	0.00	0.00	0.00	1.54
STD DEV	1.10	1.05	0.00	0.00	0.00	0.00	1.25	.45	0.00	0.00	0.00	0.00	1.50
NO. OBS.	5.	9.	0.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.
PERIOD (SEC)													
MEAN	13.33	13.84	13.57	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.	8.	3.	0.	0.	0.	19.	11.	0.	0.	0.	0.	44.
DIRECTION													
CHASTAL SECTOR													
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	0.00
UCC. 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
UCC. 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
UCC. 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
UCC. 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
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.	0.	0.	18.	11.	0.	0.	0.	0.	29.
COMPASS SECTOR													
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
UCC. 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
UCC. 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
UCC. 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
UCC. 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
UCC. 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
UCC. 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
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.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BREAKER TYPE													
UCC. SPILL	100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
UCC. 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
UCC. 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
UCC. SURGE	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	47.62
CALC.	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.	9.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.
CURRENT OBS.													
(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
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.
FURROWSHORE SURF													
MEAN	1.40	1.89	1.89	0.00	0.00	0.00	8.18	8.09	0.00	0.00	0.00	0.00	5.40
STD DEV	1.10	1.05	1.05	0.00	0.00	0.00	2.16	1.22	0.00	0.00	0.00	0.00	1.50
NO. OBS.	5.	17.	8.	0.	0.	0.	17.	11.	0.	0.	0.	0.	58.
HIPS & 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
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.	5.	19.	9.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.
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
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.	5.	19.	9.	0.	0.	0.	19.	11.	0.	0.	0.	0.	63.

CALIFORNIA

WIND ROSES 05025 RUSSIAN GULCH

INSUFFICIENT DATA

December

DATA BASED ON OBSERVATIONS
ON 11 APR 68 TO 11 MAY 68
ON 11 MAY 68 TO 30 AUG 70

SUMMARY FOR PERIOD STARTING 4-26-68 AND ENDING 12-31-68.

CALIFORNIA

5020 VAN DAMME ACH

SURF. URS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	0.00	0.00	0.00	.44	.84	.50	.93	1.42	1.03	2.39	2.07	1.62	1.06
STD DEV	0.00	0.00	0.00	.53	2.79	5.00	8.83	1.36	1.23	1.59	1.59	2.10	1.63
NO. OBS.	0.	0.	0.	9.	56.	50.	49.	52.	29.	25.	15.	15.	302.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	9.32	6.57	6.74	6.80	7.37	10.01	11.32	10.94	11.57	7.92
STD DEV	0.00	0.00	0.00	2.16	.98	1.31	1.52	1.49	3.16	2.76	2.92	2.57	2.51
NO. OBS.	0.	0.	0.	10.	53.	57.	50.	51.	28.	23.	15.	7.	294.
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	1.85	0.00	0.00	1.92	0.00	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	66.67	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	25.00	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	1.62	4.17	11.54	13.79	8.70	20.00	50.00	10.44
NO. OBS.	0.	0.	0.	9.	54.	55.	48.	52.	29.	23.	15.	12.	297.
BREAKER TYPE													
X OCC SPILL	0.00	0.00	0.00	22.22	52.94	69.23	78.43	56.66	93.10	92.38	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	5.28	3.45	42.86	62.50	42.86	35.00
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	43.76	0.00	35.71	2.38
NO. OBS.	0.	0.	0.	9.	51.	52.	51.	51.	29.	21.	16.	14.	294.
CURRENT OBS.													
(FT/SEC.)													
NET MEAN	0.00	0.00	0.00	-.02	-.12	-.06	-.02	-.06	-.06	-.01	0.00	-.04	-.05
GROSS MEAN	0.00	0.00	0.00	.03	.16	.09	.08	.07	.06	.03	0.00	.04	.08
STD DEV	0.00	0.00	0.00	.05	.22	.10	.20	.08	.06	.08	0.00	.10	.11
NO. OBS.	0.	0.	0.	5.	25.	28.	29.	28.	25.	17.	16.	4.	161.
FURLOSHOPE SLOPE													
MEAN (FT/C)	0.00	0.00	0.00	4.60	6.04	6.61	6.34	6.86	6.66	5.50	4.56	4.21	6.07
STD DEV	0.00	0.00	0.00	1.67	2.31	1.29	1.23	.88	.73	1.46	1.15	.69	1.61
NO. OBS.	0.	0.	0.	5.	27.	26.	28.	29.	21.	16.	14.	14.	164.
TRIPS													
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	.32
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	4.59
NO. OBS.	0.	0.	0.	10.	58.	57.	51.	53.	30.	29.	17.	14.	314.
CUSPS % OCC.	0.00	0.00	0.00	50.00	49.12	49.12	52.94	49.06	76.67	29.17	35.29	14.29	48.73
MEAN SPAC.	0.00	0.00	0.00	41.38	31.67	31.67	33.22	34.08	37.52	53.43	85.50	42.11	42.11
NO. OBS.	0.	0.	0.	10.	58.	57.	51.	53.	30.	29.	17.	14.	314.

CALIFORNIA

WIND ROSES 05024 VAN DAMME

NO DATA

JANUARY

NO DATA

FEBRUARY

NO DATA

MARCH

INSUFFICIENT DATA

APRIL

ANNUAL AVERAGE

MAY

JUNE

JULY

AUGUST

DATA BASED ON OBSERVATIONS
FROM 0000 UTC 01 SEP 68 TO
23 APR 69 TO 31 DEC 69

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

SUMMARY FOR PERIOD STARTING 2-24-69 AND ENDING 6-30-70.

CALIFORNIA

5100 NAVARRO

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
CURRENT OBS. (FT/SEC)													
GROSS MEAN	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	.58	1.07	1.40	.95	.82	2.06	2.83	.71	0.00	1.49
NO. OBS.	0.	2.	2.	3.	9.	7.	5.	4.	4.	2.	2.	0.	40.
PERIOD (SEC)													
MEAN	0.00	13.75	0.00	14.25	15.60	11.86	15.90	15.00	15.13	19.50	15.00	0.00	14.60
STD DEV	0.00	4.60	0.00	2.97	4.49	1.46	3.13	2.45	2.46	6.36	4.24	0.00	3.52
NO. OBS.	0.	2.	0.	2.	8.	7.	5.	4.	4.	2.	2.	0.	36.
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
% 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% 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	100.00
% 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
% OCC. 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
% OCC. 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.	6.
COMPASS SECTOR													
% 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	0.00	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. 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
% OCC. 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	3.13
% OCC. W	0.00	0.00	0.00	0.00	0.00	0.00	60.00	100.00	100.00	100.00	100.00	0.00	46.86
% OCC. NW	100.00	100.00	100.00	100.00	80.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	50.00
% OCC. 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.
BREAKER TYPE													
% OCC. 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
% OCC. SPLL	0.00	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. PLUNGE	100.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50
% OCC. 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	2.50
% OCC. 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.	9.	7.	5.	4.	4.	2.	2.	0.	40.
CURRENT OBS. (FT/SEC)													
NET MEAN	0.00	4.13	-1.17	.47	.17	.09	.28	.52	-.71	-.21	0.00	0.00	.08
GROSS MEAN	0.00	.13	.17	.47	.42	.50	.40	.52	1.04	.21	.09	0.00	.45
STD DEV	0.00	.18	.21	.21	.23	.21	.29	.21	.48	.30	.17	0.00	.36
NO. OBS.	0.	2.	2.	3.	9.	7.	5.	4.	4.	2.	2.	0.	40.
FORESHORE SLOPE													
MEAN (OBS)	0.00	12.00	9.00	9.00	5.67	5.86	8.80	9.00	9.75	5.50	4.50	0.00	7.46
STD DEV	0.00	5.66	0.00	9.34	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.
RIPS % OCC													
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.	2.	2.	3.	9.	7.	5.	4.	4.	2.	2.	0.	40.
CUSPS % OCC													
MEAN	0.00	0.00	0.00	0.00	11.11	26.57	80.00	75.00	75.00	50.00	50.00	0.00	37.50
STD DEV	0.00	0.00	0.00	0.00	8.00	90.00	79.75	60.00	71.67	200.00	50.00	0.00	70.06
NO. OBS.	0.	2.	2.	3.	9.	7.	5.	4.	4.	2.	2.	0.	40.

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

CALIFORNIA

5300 NAVARRO

[illegible]

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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.
PERIOD (SEC)													
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.
DIRECTION													
COASTAL SECTION													
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	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
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.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
BREAKER TYPE													
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.
CURRENT OBS.													
(FT/SEC)													
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	.38
NO. OBS.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
FORESHORE SLOPE													
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.
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.	0.	0.	0.	0.	4.	4.	0.	0.	0.	0.	0.	0.	8.
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.	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

depression

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

INSUFFICIENT DATA

MAY
(INSUFFICIENT) DATA

JUNE
INSUFFICIENT DATA

JULY
INSUFFICIENT DATA

AUGUST
1964 DATE

SEPTEMBER

OCTOBER

WAVEH00

continued

ANNUAL AVERAGE

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
24 FEB 69 TO 30 JUN 70

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

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
WEIGHT (LBS)													
MEAN	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	1.84	1.35	.77	1.81	1.07	1.34	1.26	.86	1.73	1.35
NO. OBS.	0.	0.	0.	10.	37.	43.	56.	59.	50.	31.	26.	27.	341.
PERIOD (SEC)													
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	3.28	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.	341.
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
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	95.35	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.
WAVELENGTH													
FOOT	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
PERIOD	0.00	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	40.82	8.36	28.57	62.50	33.33	64.16
SURGE	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	10.	36.	44.	56.	59.	47.	26.	24.	27.	333.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	-1.01	-0.18	-1.17	-1.25	-1.12	-0.84	.51	.25	-0.33	-0.69
GROSS MEAN	0.00	0.00	0.00	1.01	1.47	1.31	1.20	1.11	1.45	.82	1.30	1.72	1.26
STD DEV	0.00	0.00	0.00	.49	.76	.63	.72	.71	.66	.57	.75	.58	.68
NO. OBS.	0.	0.	0.	5.	19.	22.	34.	35.	23.	16.	13.	14.	181.
FORESHORE SLOPE													
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.
RIPS													
% 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	650.77	743.75	811.11	750.00	845.45	800.00	800.00	750.00	765.70
NO. OBS.	0.	0.	0.	4.	32.	41.	59.	53.	41.	17.	15.	15.	282.
CUSPS % OCC.	0.00	0.00	0.00	50.00	50.00	54.55	51.67	52.54	50.00	48.39	50.00	51.95	51.30
MEAN SPAC.	0.00	0.00	0.00	200.00	173.64	114.58	100.00	100.00	101.95	103.33	100.00	102.86	116.11
NO. OBS.	0.	0.	0.	10.	36.	44.	60.	59.	52.	31.	26.	27.	347.

SURF. OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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. OBS.	36	0	0	0	0	11	50	0	0	0	0	0	99
PERIOD (SEC)													
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. OBS.	15	0	0	0	0	11	52	0	0	0	0	0	98
DIRECTION													
COMPASS SECTOR													
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
UCC. 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
UCC. 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
UCC. 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
UCC. 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
UCC. 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
UCC. NW	0.00	0.00	0.00	0.00	0.00	72.27	30.19	0.00	0.00	0.00	0.00	0.00	53.13
UCC. 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. OBS.	32	0	0	0	0	11	53	0	0	0	0	0	96
BREAKER TYPE													
XOCC. TYP	86.80	0.00	0.00	0.00	0.00	81.82	88.82	0.00	0.00	0.00	0.00	0.00	76.70
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	13.16	0.00	0.00	0.00	0.00	9.09	28.07	0.00	0.00	0.00	0.00	0.00	18.45
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	4.85
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	0	0	0	0	11	54	0	0	0	0	0	103
CURRENT OBS.													
(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	-1.97
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. OBS.	19	0	0	0	0	5	28	0	0	0	0	0	52
FRESHWATER SLOPE													
MEAN (DEG)	12.00	0.00	0.00	0.00	0.00	5.67	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. OBS.	19	0	0	0	0	6	30	0	0	0	0	0	55
RIPS													
X OCC	17.39	0.00	0.00	0.00	0.00	54.55	51.83	0.00	0.00	0.00	0.00	0.00	43.18
MEAN SPAC	875.00	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. OBS.	23	0	0	0	0	11	54	0	0	0	0	0	86
CUSPS													
X OCC	50.00	0.00	0.00	0.00	0.00	45.45	51.83	0.00	0.00	0.00	0.00	0.00	50.49
MEAN 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. OBS.	18	0	0	0	0	11	54	0	0	0	0	0	103

SUMMARY FOR PERIOD STARTING 7-6-70 AND ENDING 8-31-70.											
CALIFORNIA											
50% MANCHESTER HCH	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
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
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.12	.71	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.
PERIOD (SECS)											
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	9.34	12.37	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	3.46	3.40	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.
DIRECTION											
COASTAL SECTOR											
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
2	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	66.67	76.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	30.77	24.00	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
6	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
NO. OBS.	0.	0.	0.	0.	0.	0.	59.	25.	0.	0.	0.
BREAKER TYPE											
ROCK SPILL	0.00	0.00	0.00	0.00	0.00	0.00	10.00	4.35	0.00	0.00	0.00
SPILL	0.00	0.00	0.00	0.00	0.00	0.00	75.50	9.15	0.00	0.00	0.00
PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	1.50	4.58	0.00	0.00	0.00
SPRUE	0.00	0.00	0.00	0.00	0.00	0.00	2.50	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
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.
CURRENT OBS.											
(FT/SEC)											
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	-.60	-.91	0.00	0.00	0.00
GROSS MEAN											
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	.93	1.16	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	96	1.02	0.00	0.00	0.00
							20.	16.	0.	0.	0.
FURSHORE SLOPE											
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	6.94	7.60	0.00	0.00	0.00
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	2.14	2.13	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	17.	15.	0.	0.	0.
PIPS											
% OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	135.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	40.	25.	0.	0.	0.
CUSPS % OCC											
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	45.00	44.00	0.00	0.00	0.00
NO. OBS.	0.	0.	0.	0.	0.	0.	210.89	134.58	0.00	0.00	0.00
							40.	25.	0.	0.	0.

CALIFORNIA

WIND ROSES 05023 MANCHESTER

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)	5.50	5.70	5.19	4.82	4.02	3.55	3.39	3.55	3.95	4.97	5.41	6.22	4.63
MEAN	2.02	2.64	1.80	1.45	1.17	1.06	1.10	1.33	1.77	1.61	2.21	2.66	1.98
STD DEV	2.00	1.94	1.71	1.72	1.31	1.34	2.42	2.24	2.55	2.28	2.24	2.22	2.312
NO. OBS.													
PERIOD (SEC)													
MEAN	11.48	12.47	12.68	11.36	10.68	10.46	10.10	10.25	10.62	11.65	11.89	12.35	11.29
STD DEV	1.81	1.93	2.73	1.98	1.59	2.48	3.40	2.50	1.75	1.80	2.77	2.53	2.40
NO. OBS.	198	160	176	174	229	234	242	230	227	229	223	225	2347
DIRECTION													
COASTAL BECTOR													
W. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.96	0.94	0.00	0.00	0.26
W. MEAN	13.12	13.39	13.39	14.76	1.72	1.80	8.96	4.59	3.85	10.38	12.24	10.28	6.34
W. STD DEV	8.13	8.13	8.13	8.13	2.52	2.52	8.96	77.98	78.65	80.19	78.57	82.24	79.47
W. NO. OBS.	1	1	1	1	25	25	25	17.43	16.35	8.49	9.16	7.48	13.83
S. OCC.	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.09
S. 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
S. 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
S. NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
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.	76	48	59	84	116	111	115	109	104	106	98	107	1135
COMPASS BECTOR													
W. 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
W. 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
W. 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
W. NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. 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
S. 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
S. 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
S. NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
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.	117	98	111	84	111	112	117	107	113	112	115	111	1306
BREAKER TYPE													
W. OCC.	18.27	34.18	37.50	45.03	53.66	50.21	53.28	45.18	45.33	35.40	41.89	26.57	42.73
W. MEAN	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03
W. STD DEV	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80	19.80
W. NO. OBS.	612	11.34	5.95	4.69	2.73	3.48	3.02	3.53	3.44	41.59	27.48	31.27	31.46
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.	186	158	168	171	231	233	241	229	225	226	222	224	2521
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.05	0.10	0.36	0.14	0.00	0.03	0.31	0.08	0.18	0.09	0.07	0.00
GROSS MEAN	0.91	0.97	0.80	0.76	0.71	0.60	0.60	0.79	0.82	0.87	0.78	0.99	0.81
STD DEV	0.72	0.91	0.72	0.76	0.71	0.60	0.60	0.77	0.79	0.79	0.64	0.80	0.72
NO. OBS.	137	155	118	110	103	153	158	146	145	136	139	141	1834
FORESHORE SLOPE													
MEAN (DEG)	6.66	6.30	5.50	5.44	5.89	5.83	5.88	5.32	6.17	5.99	6.09	6.26	5.94
STD DEV	2.68	2.25	1.93	1.98	1.85	2.21	1.90	1.60	1.68	2.01	2.43	2.66	2.23
NO. OBS.	134	105	109	109	140	149	153	140	142	139	131	131	1562
RIPS													
W. 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
W. 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
W. 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
W. NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0
CUSPS													
W. 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
W. 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
W. 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
W. NO. OBS.	0	0	0	0	0	0	0	0	0	0	0	0	0

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	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
STD DEV	0.00	0.00	0.00	0.00	1.09	1.27	1.27	2.02	2.49	1.43	2.11	2.46	2.02
NO. OBS.	0.	0.	0.	0.	53.	59.	63.	48.	59.	59.	59.	51.	456.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	0.00	9.68	8.82	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.	58.	63.	51.	59.	59.	56.	53.	453.
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
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	30.77	25.45	17.24	15.22	7.41	7.69	3.64	20.00	15.88
NO. OBS.	0.	0.	0.	0.	52.	55.	58.	48.	59.	59.	55.	0.00	422.
BREAKER TYPE													
XOCC SPILL	0.00	0.00	0.00	0.00	71.70	88.14	82.26	73.88	72.88	43.86	57.89	57.89	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	26.42	27.12	56.14	40.35	30.71	29.51
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	1.55
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.	0.	0.	0.	0.	53.	59.	62.	52.	59.	57.	57.	52.	451.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	-1.11	-0.00	-1.15	-0.03	-0.05	-0.23	-0.31	-0.31	-0.04
GROSS MEAN	0.00	0.00	0.00	0.00	30	39	55	62	80	89	73	92	65
STD DEV	0.00	0.00	0.00	0.00	27	35	57	72	78	86	66	93	68
NO. OBS.	0.	0.	0.	0.	27.	35.	37.	30.	33.	31.	32.	28.	253.
FORESHORE SLOPE													
MEAN (DEC)	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	2.28	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.	241.
RIPS													
% OCC	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
MEAN SPAC.	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.	456.
CUSPS													
% OCC.	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
MEAN SPAC.	0.00	0.00	0.00	0.00	166.27	195.48	160.03	146.76	136.80	167.48	144.32	155.65	168.23
NO. OBS.	0.	0.	0.	0.	53.	59.	63.	52.	59.	59.	59.	54.	456.

5020 GOAT ROCK

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	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	1.63	2.28	2.68	2.04
NO. OBS.	59.	49.	57.	57.	60.	59.	62.	61.	59.	61.	59.	61.	704.
PERIOD (SEC)													
MEAN	10.68	12.71	12.51	11.50	11.15	10.56	9.23	9.14	11.23	12.08	12.14	14.02	11.39
STD DEV	1.15	1.67	2.45	2.45	1.66	2.21	2.21	1.88	1.60	1.69	1.65	1.77	2.28
NO. OBS.	57.	51.	58.	58.	60.	59.	62.	62.	60.	61.	59.	62.	709.
DIRECTION													
COMPASS SECTOR													
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
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	33.39	3.39	3.39	0.00	5.00	1.84	6.15
W	23.73	65.91	92.86	92.86	94.92	91.23	96.61	96.36	96.61	100.00	95.00	11.89	9.25
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	2.68
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.	44.	55.	56.	59.	57.	55.	61.	59.	60.	60.	61.	686.
BREAKER TYPE													
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	78.85	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	10.83	5.00	0.00	0.00	0.00	0.00	3.28	6.67	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.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-20	-40	-03	-39	-18	-02	-19	-05	-05	-52	-08	-50	-03
GROSS MEAN	1.16	1.62	.99	.84	.86	.54	.42	.37	.69	.81	.53	1.03	.84
STD DEV	1.84	1.14	.69	.80	1.03	.48	.45	.36	.63	.65	.37	1.10	.81
NO. OBS.	29.	24.	26.	29.	30.	30.	32.	31.	30.	31.	30.	31.	355.
FORESHORE SLOPE													
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	2.65	2.30	1.66	.77	2.07	1.40	1.95	3.67	2.96
NO. OBS.	30.	21.	25.	29.	30.	31.	31.	31.	30.	28.	28.	28.	344.
RIPS X OCC	18.33	20.00	22.41	16.97	13.33	13.56	17.74	26.97	25.00	29.51	33.33	11.29	20.37
MEAN SPAC.	63.64	285.00	162.54	170.91	197.50	253.75	103.36	138.46	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.
CUSPS X OCC	35.00	7.64	46.55	46.55	43.33	40.48	16.13	25.81	45.00	49.18	43.33	30.36	36.02
MEAN SPAC.	161.00	283.00	157.41	182.07	169.92	132.63	133.80	111.04	108.93	163.20	107.20	310.66	170.66
NO. OBS.	60.	52.	58.	58.	60.	59.	62.	62.	60.	61.	60.	56.	708.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	5.23	4.91	4.73	4.53	3.78	3.60	3.27	3.13	3.75	4.58	4.85	6.11	4.36
MEAN	1.97	1.88	1.68	1.51	.89	.95	.74	.78	1.27	2.33	1.85	2.37	1.78
STD DEV	6.2	5.	5.	5.	5.	5.	5.	61.	53.	59.	53.	57.	691.
NO. OBS.													
PERIOD (SEC)	11.95	12.71	12.51	11.20	10.86	11.32	9.65	10.30	11.34	12.03	11.16	12.25	11.46
STD DEV	1.15	1.84	2.10	1.39	1.18	2.55	2.23	1.91	1.84	2.59	1.36	2.03	2.09
NO. OBS.	62.	55.	58.	59.	59.	58.	59.	61.	54.	59.	52.	57.	62.
DIRECTION													
COASTAL SECTOR													
0 OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00	0.00	.21
1	0.00	0.00	0.00	0.00	1.67	1.79	1.75	5.08	3.85	3.45	12.77	9.26	4.87
2	0.00	0.00	0.00	0.00	66.67	83.93	91.23	71.19	71.15	86.21	62.86	87.04	78.72
3	7.00	0.00	0.00	0.00	31.67	14.29	7.02	23.73	23.08	10.34	4.26	3.70	14.26
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.	27.	60.	56.	57.	59.	52.	58.	47.	54.	47.
CUMPASS SECTOR													
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
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.	62.	59.	58.	28.	0.	0.	0.	0.	0.	0.	0.	0.	209.
BREAKER TYPE													
XOCC SPILL	69.55	77.78	76.57	53.93	60.00	32.14	45.76	37.70	37.74	12.07	11.54	21.05	45.27
SPILL	0.00	0.00	0.00	22.03	28.33	17.86	15.25	26.23	33.85	51.72	53.85	12.28	21.69
PLUNGE	2.41	1.81	17.66	20.34	11.67	50.00	38.96	34.43	28.42	34.48	28.85	47.37	29.11
SURF	6.45	7.41	3.57	1.89	0.00	0.00	0.00	1.64	0.00	1.72	5.77	19.30	3.93
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.	42.	54.	58.	34.	60.	56.	59.	61.	53.	58.	52.	57.	667.
CURRENT OBS.													
(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	.40	.65	.46	.63	.57	.51	.70	.66	.78	.84	.87
NO. OBS.	31.	27.	30.	28.	30.	31.	30.	31.	28.	29.	25.	30.	350.
FORESHORE SLOPE													
MEAN (DEG)	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	1.66	1.60	1.07	1.56
NO. OBS.	76.	28.	30.	25.	28.	28.	30.	30.	28.	29.	24.	28.	334.
RIPS 3 OCC	8.06	5.45	3.45	8.07	16.67	12.07	3.39	12.70	16.36	16.05	5.56	0.00	9.16
MEAN SPAC.	220.00	140.00	150.00	135.00	62.70	87.14	100.00	87.25	105.00	134.50	370.87	0.00	132.40
NO. OBS.	62.	55.	58.	59.	60.	59.	59.	63.	55.	59.	54.	57.	699.
CUSPS X OCC	9.84	18.18	8.82	11.86	28.67	15.52	20.34	28.57	30.81	38.98	46.10	35.09	24.07
MEAN SPAC.	172.81	181.30	165.80	105.86	85.13	79.49	122.95	104.50	112.53	144.13	168.44	280.00	102.65
NO. OBS.	61.	54.	58.	59.	60.	58.	59.	61.	55.	59.	54.	57.	696.

5020 GUAT ROCK

CALIFORNIA

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

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	5.08	6.74	5.63	4.41	4.03	3.67	3.00	3.63	3.71	4.04	5.32	4.77	4.96
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.	28.	23.	28.	23.	28.	26.	335.
PERIOD (SEC)													
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	3.46	2.77	1.79	1.39	1.07	1.59	1.17	2.04
NO. OBS.	31.	26.	31.	29.	30.	30.	29.	24.	28.	24.	29.	26.	337.
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	6.25	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	93.75	90.00	80.00	100.00	86.21	85.19	89.29	85.00	92.59	95.05	78.57	18.23	4.09
4	0.00	5.00	20.00	0.00	13.79	17.41	7.41	10.00	7.41	0.00	14.29	63.38	66.17
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.38	9.12
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.	28.	20.	27.	22.	28.	26.	310.
BREAKER TYPE													
XOCC SPILL	15.15	7.41	19.35	40.74	41.38	43.33	31.03	47.83	21.43	54.17	42.86	23.08	31.64
SP/PL	9.09	7.41	35.44	25.93	44.63	23.33	27.59	30.43	17.86	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	3.85	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.	28.	24.	28.	26.	335.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.14	.10	.09	.35	.20	.01	.09	.16	.20	.45	.34	.26	.13
GROSS MEAN	.83	.61	.81	.57	.94	.63	.58	.66	.81	.59	.78	.86	.74
STD DEV	.62	.65	.81	.43	.48	.43	.65	.64	.85	.41	.56	.66	.62
NO. OBS.	29.	26.	28.	29.	30.	29.	29.	24.	28.	22.	28.	25.	327.
FORESHORE SLOPE													
MEAN (DEG)	6.52	6.27	5.69	5.69	6.24	6.43	6.18	5.71	6.21	6.13	6.96	6.77	6.25
STD DEV	2.12	2.20	1.19	.60	1.09	1.25	.96	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.
RIPS													
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.	29.	31.	29.	30.	30.	29.	24.	28.	24.	29.	26.	340.
CUSPS X OCC.	44.85	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	171.83	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.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	5.17	0.61	5.29	4.74	3.48	3.64	3.00	3.63	3.19	4.38	7.28	5.85	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.	28.	28.	27.	29.	28.	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	2.64	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.	28.	28.	28.	28.	29.	29.	30.	26.	26.	25.	27.	329.
DIRECTION													
COASTAL SECTOR													
0 DEG.	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	3.85	0.00	0.00	.62
1	0.00	14.29	6.96	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	72.41	57.14	74.07	78.57	66.67	86.67	80.00	53.85	69.57	88.89	73.46
3	23.09	7.14	20.89	28.57	22.22	17.86	6.67	10.00	12.00	11.54	13.04	7.41	15.12
4	0.00	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.	328.
BREAKER TYPE													
ROCK SPILL	8.33	3.70	13.70	7.14	6.90	20.89	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	48.28	24.44	43.33	50.00	42.31	48.00	81.48	52.68
PLATE	37.50	33.33	20.89	32.14	20.89	31.03	27.59	20.00	4.31	50.00	16.00	11.11	28.27
SEMI	12.50	0.00	10.34	0.00	3.45	0.00	27.59	23.33	7.69	7.69	32.00	7.41	10.94
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.	24.	27.	28.	28.	29.	29.	29.	30.	26.	26.	25.	27.	329.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-1.22	.40	.01	-.42	-.30	-.18	-.03	.78	.12	.79	.05	.34	.13
GROSS MEAN	.97	.64	.74	.83	.69	1.07	1.32	1.50	1.07	1.14	.78	.63	.96
STD DEV	.42	.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.
FORSHORE SLOPE													
MEAN (FEET)	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	1.87
NO. OBS.	25.	28.	27.	28.	27.	29.	30.	28.	25.	26.	23.	27.	319.
RIPS & ETC													
MEAN SEAC.	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 & C.C.													
MEAN SLC.	100.00	96.43	93.10	89.29	82.76	89.66	83.87	96.67	65.38	76.92	100.00	88.89	88.55
NO. OBS.	24.	28.	29.	28.	29.	29.	31.	30.	26.	26.	25.	27.	332.

5020 GUAT 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.			24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.											
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			17.39	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			78.26	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			4.35	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.			23.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	23.											
BREAKER TYPE																										
XUCC 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			8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33											
SURGE			16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67											
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.											
FORESHORE 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 X OCC																										
MEAN SPAC.			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											
200.00			0.00	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 X OCC.																										
MEAN SPAC.			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											
207.17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	207.17											
NO. OBS.			24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24.											

WIND ROSES 05020 GOAT ROCK

CALIFORNIA

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	5.27	5.67	5.36	4.79	4.03	3.50	3.37	3.54	4.00	4.46	5.06	6.03	4.61
STD DEV	2.03	2.15	1.64	1.41	1.24	1.13	1.12	1.40	1.09	1.72	2.07	2.19	1.99
NO. OBS.	208.	168.	175.	169.	238.	230.	233.	222.	220.	233.	226.	231.	2576.
PERIOD (SEC)													
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	1.62	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.
DIRECTION													
COASTAL SECTOR													
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	0.67	0.00	5.08	5.56	9.91	9.44	10.00	7.86	5.09
W OCC. 3	90.12	81.82	80.70	69.41	73.91	85.06	86.44	79.63	78.70	75.66	80.52	81.29	81.22
W OCC. 4	4.94	7.27	15.79	23.53	25.22	13.16	8.47	13.89	20.37	14.66	4.81	5.68	10.91
W 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.	81.	55.	57.	85.	115.	114.	118.	108.	108.	116.	104.	102.	1163.
COMPASS SECTOR													
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. 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
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
W OCC. 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 OCC. 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 OCC. 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
W OCC. 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.	113.	103.	113.	83.	116.	109.	121.	112.	117.	110.	115.	110.	1322.
BREAKER TYPE													
W OCC. SPILL	44.00	37.20	40.30	48.52	61.84	50.22	66.20	59.19	50.22	35.53	46.43	30.87	47.92
W OCC. PLUNGE	16.00	13.46	16.53	16.99	17.95	17.63	17.93	14.39	16.53	35.53	46.43	30.87	47.92
W OCC. SURGE	33.00	38.93	38.26	28.26	19.92	31.48	21.03	21.52	28.26	35.53	46.43	30.87	47.92
W OCC. 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.	168.	176.	169.	236.	229.	243.	223.	227.	228.	224.	225.	2584.
CURRENT OBS.													
NET MEAN	-0.21	-0.14	-0.35	-0.34	-0.18	-0.09	-0.06	-0.18	-0.24	-0.19	-0.08	-0.16	-0.15
GROSS MEAN	0.00	0.01	0.07	0.02	0.71	0.67	0.67	0.70	0.72	0.88	0.76	0.93	0.79
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.	142.	170.	116.	111.	151.	152.	157.	143.	149.	150.	147.	145.	1672.
FORESHORE SLOPE													
MEAN (DEG)	7.31	6.40	6.79	6.93	7.19	7.66	7.05	6.13	6.91	6.80	7.11	7.00	6.99
STD DEV	3.10	2.76	2.07	2.37	2.76	1.99	2.06	1.56	2.82	2.44	2.86	2.18	2.63
NO. OBS.	140.	103.	113.	108.	145.	151.	155.	135.	140.	147.	142.	141.	1620.
RIPS													
W OCC. DEC	11.06	13.25	21.35	18.24	6.25	6.44	10.16	18.11	10.92	16.10	15.22	13.85	13.35
W OCC. SPAC.	178.16	160.53	137.23	247.53	160.73	150.36	189.11	121.72	101.58	126.26	140.68	151.48	151.48
NO. OBS.	206.	166.	178.	170.	240.	233.	246.	224.	220.	236.	230.	231.	2592.
CUSPS													
W OCC. DEC	64.99	63.19	63.48	62.94	56.25	53.22	37.80	39.73	48.91	54.66	60.87	61.90	54.97
W OCC. SPAC.	165.48	175.65	174.75	180.79	180.79	180.79	180.79	180.79	180.79	180.79	180.79	180.79	180.79
NO. OBS.	206.	166.	178.	170.	240.	233.	246.	224.	220.	236.	230.	231.	2594.

SURE OBS.		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)														
MEAN	0.00	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
STD DEV	0.00	0.00	0.00	0.00	0.00	1.27	1.40	1.46	1.91	1.74	1.66	2.37	2.29	1.99
NO. OBS.	0.	0.	0.	0.	0.	60.	54.	64.	54.	59.	59.	58.	58.	466.
PERIOD (SEC)														
MEAN	0.00	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	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.	0.	60.	55.	66.	54.	58.	59.	58.	58.	466.
DIRECTION														
COMPASS SECTOR														
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	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	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	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	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	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	1.89	1.64	3.45	3.51	9.00	8.93	22.45	5.66
W	0.00	0.00	0.00	0.00	0.00	63.16	77.36	77.05	87.31	87.2	96.00	85.71	61.22	77.61
NW	0.00	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
CALM	0.00	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
NO. OBS.	0.	0.	0.	0.	0.	57.	53.	61.	52.	57.	50.	56.	49.	435.
BREAKER TYPE														
X OCC	0.00	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	0.00
PLUNGE	0.00	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	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	0.00
NO. OBS.	0.	0.	0.	0.	0.	59.	54.	65.	53.	57.	56.	57.	53.	456.
CURRENT OBS.														
(FT/SEC)														
NET MEAN	0.00	0.00	0.00	0.00	0.00	-0.04	-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	-0.00	-0.06	-0.58	-0.40	-0.72	-0.70	-0.82	-0.97	-0.53
STD DEV	0.00	0.00	0.00	0.00	0.00	0.65	0.66	0.60	0.60	0.80	0.71	0.86	0.70	0.70
NO. OBS.	0.	0.	0.	0.	0.	31.	34.	38.	30.	33.	33.	33.	31.	263.
FORESHORE SLOPE														
MEAN (DEG)	0.00	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	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.	0.	27.	32.	17.	26.	28.	32.	33.	31.	246.
RIPS														
X OCC	0.00	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
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	143.00	0.00	600.00	158.00	346.67	76.00	164.29	178.33	218.68
NO. OBS.	0.	0.	0.	0.	0.	60.	56.	66.	53.	59.	59.	58.	58.	466.
CUSPS														
X OCC	0.00	0.00	0.00	0.00	0.00	46.67	50.00	45.45	44.04	45.76	40.68	50.00	53.45	47.02
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	175.18	162.50	176.07	140.08	165.22	173.38	177.14	165.42	167.32
NO. OBS.	0.	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	5.13	6.40	5.33	5.27	4.81	3.36	3.52	3.25	4.12	5.25	4.97	7.76	6.94
STD DEV	2.05	2.16	1.23	1.15	1.58	.85	1.32	.84	1.47	1.50	2.30	2.74	2.10
NO. OBS.	61.	53.	61.	55.	59.	59.	60.	60.	59.	60.	60.	62.	709.
PERIOD (SEC)													
MEAN	10.71	12.32	12.50	11.59	11.23	10.73	9.18	9.20	10.98	12.23	12.27	13.56	11.37
STD DEV	1.15	1.05	1.27	2.30	1.71	2.23	2.14	1.62	1.60	1.60	1.61	2.14	2.24
NO. OBS.	62.	55.	81.	56.	59.	59.	61.	59.	59.	59.	59.	62.	709.
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
0 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
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	16.98	12.24	1.69	3.87	15.25	3.57	3.33	0.00	5.00	0.00	3.39	11.48	6.21
W	77.36	63.27	98.43	96.43	83.05	89.29	96.67	98.33	95.00	100.00	96.61	88.52	90.75
NW	5.66	24.49	0.00	0.00	1.69	7.14	0.00	1.67	0.00	0.00	0.00	0.00	3.03
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.	49.	59.	56.	59.	56.	60.	60.	60.	60.	59.	61.	692.
REFRACTOR TYPE													
REFRACT. TYPE	48.15	28.00	26.67	48.21	57.63	44.07	75.41	90.00	70.00	73.33	81.67	29.03	56.49
REFRACT. 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
REFRACT. TYPE	44.44	52.00	65.00	39.29	37.29	54.24	24.59	10.00	30.00	20.00	15.00	41.94	38.61
REFRACT. TYPE	7.41	20.00	6.53	12.50	5.08	1.69	0.00	0.00	0.00	6.67	3.33	29.03	7.70
REFRACT. 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
NO. OBS.	54.	50.	60.	56.	59.	59.	61.	60.	60.	60.	60.	62.	701.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-1.38	-0.06	-0.35	-0.37	.14	.17	.15	.03	.16	.10	.01	.08	.11
GROSS MEAN	1.38	1.26	1.10	.92	.58	.44	.40	.42	.58	.74	.43	1.10	.78
STD DEV	.81	.78	.78	.64	.73	.44	.29	.44	.50	.63	.36	.71	.72
NO. OBS.	30.	27.	31.	27.	29.	29.	30.	30.	29.	30.	30.	30.	352.
FORESHORE SLOPE													
MEAN (C/G)	9.03	6.63	6.65	6.40	6.14	7.07	5.63	4.79	4.83	5.55	8.21	6.90	6.49
STD DEV	3.53	3.08	2.50	2.71	2.59	3.66	1.79	1.85	1.97	1.59	2.72	1.56	2.79
NO. OBS.	30.	24.	31.	25.	29.	29.	30.	28.	30.	29.	29.	30.	344.
RIPS													
% OCC	14.52	19.23	19.67	21.43	13.56	6.78	4.92	3.33	11.67	23.33	31.67	18.52	15.31
MEAN SPAC.	60.00	230.00	175.00	144.17	345.00	237.50	146.33	300.00	91.43	106.79	101.32	148.33	172.60
NO. OBS.	62.	52.	61.	56.	59.	59.	61.	60.	60.	60.	60.	62.	712.
CUSPS % OCC.	45.16	50.94	50.82	51.57	50.85	40.68	9.84	6.67	28.33	46.67	45.00	50.00	39.69
MEAN SPAC.	167.14	224.61	213.61	197.50	161.73	122.96	135.33	87.00	131.53	156.67	135.30	215.13	162.15
NO. OBS.	62.	53.	61.	56.	59.	59.	61.	60.	60.	60.	60.	62.	713.

5021 WRIGHT'S BEACH CALIFORNIA SUMMARY FOR PERIOD STARTING 1- 1-71 AND ENDING 12-31-71.

SURF OBS.		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)														
MEAN	5.03	6.50	5.77	4.03	4.20	3.77	3.10	3.77	2.20	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	2.73	.98	2.12	1.28	1.95
NO. OBS.	34.	24.	30.	28.	30.	30.	29.	22.	22.	28.	25.	30.	27.	341.
PERIOD (SEC)														
MEAN	12.87	12.35	11.93	11.29	10.85	10.26	10.10	11.23	1.91	10.80	11.51	11.35	10.65	11.29
STD DEV	2.44	2.93	1.63	1.48	1.07	1.89	3.40	1.91	1.45	1.45	1.42	1.28	1.19	2.09
NO. OBS.	34.	28.	30.	28.	30.	30.	29.	23.	23.	28.	26.	30.	26.	342.
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
1	2	3.23	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3	91.55	95.65	72.41	85.19	90.00	0.00	0.00	90.00	92.31	3.85	6.40	19.23	3.09
3	4	3.33	4.35	27.59	3.57	10.00	6.90	5.00	5.00	7.64	0.00	6.21	65.38	87.65
4	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.38	8.95
5	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	0.00
NO. OBS.	31.	23.	24.	28.	27.	30.	29.	29.	29.	26.	26.	29.	26.	324.
BREAKER TYPE														
0 OCC	24.24	14.29	20.69	44.84	62.07	46.67	41.38	36.36	25.00	25.00	42.31	50.00	34.62	36.72
SPILL	15.15	21.43	37.93	25.93	24.14	33.33	37.93	50.00	32.14	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	21.43	23.08	27.46
SURGE	3.03	7.14	6.90	14.81	0.00	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	0.00
NO. OBS.	33.	24.	29.	27.	29.	30.	29.	22.	22.	28.	26.	28.	26.	335.
CURRENT OBS.														
(FT/SEC)														
NET MEAN	-1.39	0.52	-0.43	-0.30	-0.47	-0.19	-0.10	-0.20	-0.20	-0.43	-0.66	-0.29	-0.09	-0.34
GROSS MEAN	.71	.81	.74	.58	1.04	.68	.77	1.03	.81	.81	.69	.69	.88	.79
STD DEV	.78	.80	.45	.60	.58	.49	.60	.75	.75	.78	.39	.53	.75	.62
NO. OBS.	30.	24.	27.	28.	30.	29.	29.	23.	23.	28.	26.	30.	27.	335.
FORESHORE SLOPE														
MEAN (DEG)	7.87	7.76	7.46	6.54	7.57	7.10	7.45	6.52	6.52	6.36	6.80	7.00	7.81	7.20
STD DEV	4.11	3.48	1.86	1.75	1.89	2.16	1.44	1.44	1.44	1.37	.76	1.41	1.30	2.25
NO. OBS.	30.	25.	28.	28.	28.	29.	29.	21.	21.	28.	25.	28.	26.	325.
RIPS	0.00	0.00	13.33	14.29	0.00	6.67	10.34	13.04	13.04	14.29	3.85	10.00	25.93	9.04
MEAN SPAC.	0.00	0.00	166.00	73.75	0.00	9.50	98.33	371.33	371.33	83.00	123.00	150.00	116.43	100.49
NO. OBS.	34.	24.	30.	28.	30.	30.	29.	23.	23.	28.	26.	30.	27.	343.
CUSPS	0.00	0.00	93.33	92.86	100.00	80.00	68.97	95.45	95.45	75.00	76.92	100.00	100.00	89.18
MEAN SPAC.	155.57	144.43	109.60	122.08	143.23	143.17	167.65	150.36	150.36	133.86	110.10	145.00	136.15	142.55
NO. OBS.	34.	24.	30.	28.	30.	30.	29.	23.	23.	28.	26.	30.	27.	342.

SURF OBS.

HEIGHT (FT)

MEAN

STD DEV

NO. OBS.

PERIOD (SEC)

MEAN

STD DEV

NO. OBS.

DIRECTION

COASTAL SECTOR

OCC. 1

OCC. 2

OCC. 3

OCC. 4

OCC. 5

CALM

NO. OBS.

BREAKER TYPE

XOCC SPILL

SP/PL

PLUNGE

SURGE

CALM

NO. OBS.

CURRENT OBS.

(FT/SEC)

NET MEAN

GROSS MEAN

STD DEV

NO. OBS.

FORESHORE SLOPE

MEAN (DEG)

STD DEV

NO. OBS.

RIPS

X OCC

MEAN SPAC.

NO. OBS.

CUSPS

X OCC

MEAN SPAC.

NO. OBS.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL
HEIGHT (FT)													
MEAN	4.61	4.76	5.18	4.71	3.63	3.86	3.35	3.90	3.27	4.47	7.12	5.04	4.48
STD DEV	1.69	1.43	1.65	1.58	1.00	1.19	.91	1.12	.72	1.86	2.39	2.22	1.81
NO. OBS.	27.	29.	28.	28.	30.	29.	31.	30.	26.	30.	26.	26.	340.
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.	28.	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
OCC. 2	3.85	14.81	7.14	3.33	3.33	0.00	16.13	13.33	3.85	30.00	16.00	4.00	11.31
OCC. 3	34.62	59.26	82.76	73.33	73.33	82.76	77.42	83.33	84.62	56.67	80.00	92.00	77.68
OCC. 4	11.54	25.83	3.57	23.33	23.33	17.24	6.45	3.33	11.54	4.00	4.00	4.00	11.01
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.	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	29.03	10.00	7.69	0.00	3.65	0.00	13.78
SP/PL	33.33	62.07	44.83	57.14	66.67	55.17	29.03	53.33	65.38	53.33	48.15	84.62	53.96
PLUNGE	29.63	31.03	17.24	10.29	10.00	27.59	35.48	30.00	23.08	46.67	19.23	7.69	24.63
SURGE	11.11	0.00	24.14	3.57	0.00	0.00	6.45	6.67	3.85	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	.05	.14	-.32	-.29	-.18	-.40	-.11	.33	-.39	-.08	.02	.06	-.14
GROSS MEAN	.88	.61	.79	.93	.83	.86	1.11	1.09	.76	1.09	.81	.60	.87
STD DEV	.53	.42	.49	.47	.56	.49	.78	.84	.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	1.44	1.97	1.46	1.36	.79	1.82
NO. OBS.	26.	28.	28.	27.	30.	30.	29.	30.	26.	30.	24.	25.	331.
RIPS													
X OCC	0.00	0.00	24.14	25.00	13.33	16.67	51.61	26.67	19.23	13.33	15.38	7.69	18.18
MEAN SPAC.	0.00	0.00	109.83	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													
X OCC	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
MEAN SPAC.	136.26	136.41	123.81	140.24	160.77	162.54	169.00	158.18	137.67	143.70	214.62	176.54	158.50
NO. OBS.	27.	29.	29.	28.	30.	30.	31.	30.	26.	30.	26.	26.	342.

5021 WRIGHTS BFACH

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1- 2-73 AND ENDING 1-31-73.

[illegible]

WIND ROSES 05021 WRIGHT'S

CALIFORNIA

JANUARY

FEBRUARY

MARCH

APRIL

ANNUAL AVERAGE

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
OF MAY 08 TO 31 JUN 72

5355 DRAKE IS HEAD CALIFORNIA SUMMARY FOR PERIOD STARTING 7-16-70 AND ENDING 9- 6-70.

SURF ORS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL ORS.
MEAN	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
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.04	0.82	0.00	0.00	0.00	1.11
NO. ORS.	0.	0.	0.	0.	0.	0.	19.	36.	4.	0.	0.	0.	50.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	16.77	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. ORS.	0.	0.	0.	0.	0.	0.	16.	35.	4.	0.	0.	0.	57.
DIRECTION													
COASTAL SFCUR													
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	2.86	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	95.14	10.00	0.00	0.00	0.00	95.28
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. ORS.	0.	0.	0.	0.	0.	0.	19.	35.	4.	0.	0.	0.	58.
RHEAKEN TYPE													
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	19.33
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. ORS.	0.	0.	0.	0.	0.	0.	20.	36.	4.	0.	0.	0.	60.
CURRENT ORS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	0.00	0.00	.13	-.13	-.12	0.00	0.00	0.00	-.04
GROSS MEAN	0.00	0.00	0.00	0.00	0.00	0.00	.44	.20	.39	0.00	0.00	0.00	.30
STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	.52	.28	.30	0.00	0.00	0.00	.34
NO. ORS.	0.	0.	0.	0.	0.	0.	11.	19.	3.	0.	0.	0.	33.
FORESHORE SLOPE													
MEAN (D/G)	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. ORS.	0.	0.	0.	0.	0.	0.	11.	19.	3.	0.	0.	0.	33.
RIPS X OCC													
MEAN SPAC.	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
NO. ORS.	0.	0.	0.	0.	0.	0.	70.89	70.50	61.00	0.00	0.00	0.00	70.00
CUSPS X OCC.													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	55.00	58.33	75.00	0.00	0.00	0.00	58.33
NO. ORS.	0.	0.	0.	0.	0.	0.	94.55	95.10	87.33	0.00	0.00	0.00	94.39

5500 HULLIAS

CALIFORNIA

SUMMARY FOR PERIOD STARTING

4-30-68 AND ENDING 9-30-70.

SURF OBS. HEIGHT (FT)	MONTHS												OCT	NOV	DEC	ALL OBS.
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT							
MEAN	4.02	4.27	1.96	1.88	1.81	1.83	2.15	2.17	2.45	2.85	3.04	1.45	2.65			
STD DEV	1.61	1.72	1.12	1.62	.69	.56	.74	.71	.85	1.03	1.06	1.61	1.36			
NO. OBS.	60.	49.	24.	16.	77.	66.	81.	63.	74.	53.	54.	53.	666.			
PERIOD (SEC)																
MEAN	11.61	11.87	12.50	14.10	14.94	13.79	15.07	14.27	14.87	14.32	13.04	11.63	13.56			
STD DEV	1.59	2.88	.71	0.60	1.59	2.04	1.82	2.62	1.53	2.16	1.23	2.21	2.40			
NO. OBS.	61.	43.	2.	1.	61.	54.	56.	46.	56.	53.	54.	54.	565.			
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 OCC.	2	11.11	4.35	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00	0.00			
2 OCC.	3	55.56	46.22	46.67	75.00	72.73	63.64	89.47	50.00	0.00	0.00	0.00	57.67			
3 OCC.	4	33.33	30.43	33.33	35.00	18.18	27.27	10.53	50.00	0.00	0.00	0.00	28.57			
4 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			
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.	13.	16.	11.	22.	19.	18.	0.	0.	0.	133.			
COMPASS SECTOR																
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 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 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			
3 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			
4 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			
5 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			
6 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			
7 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			
8 OCC.	100.00	0.00	0.00	100.00	100.00	100.00	100.00	89.47	89.47	100.00	100.00	100.00	97.73			
9 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			
10 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			
11 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			
12 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			
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68	0.00	0.00	0.00	0.00	0.00			
NO. OBS.	61.	40.	0.	1.	61.	54.	53.	43.	55.	52.	54.	52.	528.			
BREAKER TYPE																
0 OCC.	0.00	2.04	0.35	31.25	9.33	6.15	14.35	20.33	5.41	0.00	0.00	0.00	7.29			
1 OCC.	16.33	9.33	4.35	4.35	16.33	16.33	16.33	5.41	7.29	0.00	0.00	0.00	17.77			
2 OCC.	81.67	4.35	4.35	6.15	81.67	81.67	14.35	5.41	16.33	100.00	100.00	100.00	76.94			
3 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			
4 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			
5 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			
6 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			
7 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			
8 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			
9 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			
10 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			
11 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			
12 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			
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68	0.00	0.00	0.00	0.00	0.00			
NO. OBS.	61.	40.	0.	1.	61.	54.	53.	43.	55.	52.	54.	52.	528.			
CURRENT OBS. (PT/SEC)																
NET MEAN	-1.16	-2.26	-0.07	.17	.12	.35	.37	.02	.01	-0.30	-0.38	-0.42	.09			
GROSS MEAN	.48	.48	.18	.65	.45	.60	.77	.66	.68	.42	.44	.59	.57			
STD DEV	.38	.33	.25	.46	.35	.45	.42	.40	.45	.21	.27	.36	.52			
NO. OBS.	31.	28.	2.	16.	43.	36.	41.	46.	47.	26.	27.	26.	399.			
FORESHORE SLOPE																
MEAN	3.70	4.03	2.91	2.73	2.24	2.55	2.92	3.02	4.01	3.63	3.69	3.54	3.39			
STD DEV	1.54	1.94	.70	1.00	1.40	.92	1.11	1.38	.87	.74	.55	.74	1.27			
NO. OBS.	27.	28.	2.	1.	43.	31.	43.	50.	47.	27.	26.	24.	390.			
RIPE % OCC	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			
MEAN SPAC.	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00			
NO. OBS.	63.	63.	2.	1.	77.	63.	81.	74.	74.	53.	54.	54.	675.			
CUSPS % OCC	0.00	0.00	0.00	0.00	9.09	0.00	2.47	13.35	4.46	0.00	0.00	0.00	.475			
MEAN SPAC.	0.00	0.00	0.00	0.00	70.00	0.00	40.00	78.23	80.00	0.00	0.00	0.00	10.07			
NO. OBS.	63.	49.	2.	1.	77.	63.	81.	74.	74.	53.	54.	54.	675.			

5500 HOLINAS

CALIFORNIA

SUMMARY FOR PERIOD STARTING 4-30-68 A/C ENDING 12-31-68.

SURF OBS.	MONTHS												ALL OBS.
	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT	OCT	NOV	DEC	
	HEIGHT (FT)												
	MEAN	STD DEV	NO. OBS.	MEAN	STD DEV	NO. OBS.	MEAN	STD DEV	NO. OBS.	MEAN	STD DEV	NO. OBS.	
PERIOD (SEC)													
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.
DIRECTION													
COMPASS SECTOR													
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
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
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	9.30	89.09	100.00	100.00	100.00	2.11
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.05	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
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.	55.	43.	55.	52.	54.	52.	427.
BREAKER TYPE													
XOCC 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/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	0.00	0.00	0.00	100.00	100.00	100.00	100.00	97.73	98.43	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.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	1.08	.26	.32	.49	.79	.20	.30	.38	.42	.14
GROSS MEAN	0.00	0.00	0.00	1.08	.39	.42	.56	.63	.40	.42	.44	.59	.51
STD DEV	0.00	0.00	0.00	0.00	.25	.35	.33	.40	.23	.21	.27	.36	.32
NO. OBS.	0.	0.	0.	1.	31.	26.	29.	27.	29.	26.	27.	26.	222.
FURESHORE SLOPE													
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	.74	.74	.55	.59	1.25
NO. OBS.	0.	0.	0.	1.	31.	27.	26.	31.	29.	27.	26.	24.	222.
RIPS													
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
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.	44.	56.	53.	54.	54.	437.
CUSPS													
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
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.	44.	56.	53.	54.	54.	437.

5500 ROLINAS			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	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	0.00	1.68												
	NO. OBS.	60.	40.	0.	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	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	0.00	1.85												
	NO. OBS.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.												
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	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	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	0.00												
100.000	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	0.00												
	S	100.000	100.000	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	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	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	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.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.												
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	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	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	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	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.	61.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	101.												
CURRENT OBS. (FT/SEC)	NET MEAN	-0.16	-0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.24												
	GROSS MEAN	0.48	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49												
	STD DEV	0.38	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32												
FURSHORE SLOPE	MEAN (DIG)	3.70	3.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73												
	STD DEV	0.54	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57												
	NO. OBS.	27.	21.	0.	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	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	0.00												
	NO. OBS.	62.	40.	0.	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	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	0.00												
	NO. OBS.	62.	40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	102.												

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	0.00	1.89	1.96	1.87	1.56	1.82	1.81	1.95	1.72	0.00	0.00	0.00	1.79
STD DEV	0.00	.93	.84	.64	.63	.60	.66	.62	.46	0.00	0.00	0.00	.74
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	16.	0.	0.	0.	135.
PERIOD (SEC)													
MEAN	0.00	16.20	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.18
STD DEV	0.00	5.62	.71	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.
DIRECTION													
CUMULATIVE													
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.	11.11	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	0.	0.00	65.22	66.67	75.00	72.73	9.09	0.00	0.00	0.00	0.00	0.00	3.76
NO. OBS.	0.	0.00	33.33	30.43	25.00	18.18	27.27	10.53	50.00	0.00	0.00	0.00	67.67
NO. OBS.	0.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57
NO. OBS.	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
NO. OBS.	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
NO. OBS.	0.	9.	23.	15.	16.	11.	22.	19.	18.	0.	0.	0.	133.
PREAKER TYPE													
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	43.48	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.
CURRENT OBS.													
NET MEAN	0.00	-0.03	-0.07	.11	-0.20	.42	.17	1.10	-0.29	0.00	0.00	0.00	.15
GRUSS MEAN	0.00	.32	.18	.41	.57	1.08	1.10	1.16	.88	0.00	0.00	0.00	.72
STD DEV	0.00	.29	.20	.43	.72	1.30	1.01	.86	.74	0.00	0.00	0.00	.79
NO. OBS.	0.	8.	22.	15.	14.	10.	19.	19.	18.	0.	0.	0.	125.
FORESHORE SLOPE													
MEAN (DEG)	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	.68	.80	1.05	.99	1.41	1.09	1.15	0.00	0.00	0.00	1.46
NO. OBS.	0.	8.	22.	14.	15.	10.	22.	19.	18.	0.	0.	0.	128.
RIPS ± OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.74
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	18.	0.	0.	0.	8.30
CUSPS ± OCC													
MEAN SPAC.	0.00	0.00	0.00	46.67	43.75	0.00	8.70	47.37	38.89	0.00	0.00	0.00	23.70
NO. OBS.	0.	9.	24.	15.	16.	11.	23.	19.	18.	0.	0.	0.	45.85

WIND ROSES 05500 BÓLINAS

CALIFORNIA

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

JANUARY

ANNUAL REFERENCE

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

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	3.57	4.28	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	1.19	1.32	1.30	1.24
NO. OBS.	124.	81.	87.	86.	153.	145.	150.	140.	127.	132.	112.	86.	1831.
PERIOD (SEC)													
MEAN	12.42	14.81	16.08	14.70	13.20	12.14	12.08	12.06	12.05	12.14	12.24	12.83	12.91
STD DEV	3.63	4.36	3.86	3.69	3.19	2.82	2.80	2.87	2.85	2.83	1.98	2.93	2.97
NO. OBS.	122.	86.	86.	87.	154.	145.	149.	140.	126.	132.	112.	86.	1427.
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	0.00	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	75.00	75.00	90.00	81.82	65.00	6.67	3.33	5.50
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.	27.	80.	21.	23.	33.	29.	29.	22.	22.	20.	151.	30.	291.
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	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.	27.	80.	21.	23.	33.	29.	29.	22.	22.	20.	151.	30.	291.
BREAKER TYPE													
TOCC SPILL	87.47	86.21	83.91	83.72	91.50	93.06	90.87	86.33	84.82	86.28	86.39	65.88	86.46
PLUNGE	1.53	1.49	1.09	1.88	5.23	5.56	6.00	5.76	9.82	10.16	10.71	21.18	10.30
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.	121.	87.	87.	86.	153.	145.	150.	130.	120.	120.	114.	85.	1816.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-0.04	-0.35	-0.08	-0.33	-0.12	-0.41	-0.30	-0.01	-0.08	-0.59	-0.24	-0.07	-0.23
GROSS MEAN	.82	.98	.81	.73	.86	.83	.55	.87	.88	.85	.80	.51	.81
STD DEV	.74	.76	.74	.87	.81	.84	.84	.84	.86	.87	.87	.51	.81
NO. OBS.	83.	45.	47.	48.	77.	73.	78.	71.	58.	48.	58.	43.	704.
FORESHORE SLOPE													
(DEG)													
MEAN	6.09	4.93	5.16	5.91	5.60	5.39	5.03	5.08	5.10	5.08	5.06	6.30	5.81
STD DEV	1.48	1.48	2.18	2.18	1.99	1.82	1.88	1.84	1.85	1.82	1.80	1.79	1.79
NO. OBS.	55.	44.	44.	48.	75.	78.	78.	78.	58.	58.	58.	44.	704.
RIPS													
1 OCC	37.10	39.51	42.05	40.91	37.01	26.21	6.00	3.57	12.60	24.81	30.36	43.32	26.46
MEAN SPAC.	367.46	250.48	306.05	377.92	447.46	465.66	502.78	535.00	400.00	471.09	400.00	183.59	428.88
NO. OBS.	124.	86.	86.	86.	154.	145.	150.	140.	127.	129.	112.	86.	1429.
CUSHES													
1 OCC	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
MEAN SPAC.	108.84	102.94	107.76	125.79	98.59	106.86	106.83	89.00	101.87	90.63	79.65	91.00	101.48
NO. OBS.	124.	87.	86.	86.	154.	146.	150.	140.	127.	132.	112.	86.	1434.

5022 STINSON HEAD 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 MRS.
SURF OBS.													
HEIGHT (FT)	0.00	0.00	0.00	0.00	3.64	3.02	3.19	3.41	3.53	3.55	3.92	3.83	3.60
STD DEV	0.00	0.00	0.00	0.00	.62	.47	.62	1.09	1.03	1.45	.98	1.33	1.08
NO. OBS.	0.	0.	0.	0.	61.	61.	62.	61.	58.	60.	51.	54.	467.
PERIOD (SEC)													
MEAN	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
STD DEV	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
NO. OBS.	0.	0.	0.	0.	61.	59.	61.	61.	57.	60.	51.	54.	464.
DIRECTION													
COMPASS													
SECTOR													
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
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.	58.	58.	62.	60.	57.	58.	51.	54.	456.
BREAKER TYPE													
XCCC 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	3.53	3.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	3.33	3.33	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.	60.	58.	62.	61.	56.	58.	51.	53.	461.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	0.00	-0.09	-0.13	-0.22	.31	.22	-0.07	-0.26	.12	-0.01
GROSS MEAN	0.00	0.00	0.00	0.00	.53	.50	.71	.57	.41	.39	.42	.58	.56
STD DEV	0.00	0.00	0.00	0.00	.47	.36	.61	.73	.54	.33	.38	.52	.50
NO. OBS.	0.	0.	0.	0.	30.	30.	31.	31.	24.	13.	25.	25.	209.
FORESHORE SLOPE													
MEAN (DEG)	0.00	0.00	0.00	0.00	6.17	5.79	5.23	4.70	5.54	5.49	7.58	7.38	5.98
STD DEV	0.00	0.00	0.00	0.00	1.37	1.54	.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													
X UCC	0.00	0.00	0.00	0.00	36.07	22.03	3.23	0.00	15.52	36.67	56.86	48.15	26.39
MEAN SPAC.	0.00	0.00	0.00	0.00	313.86	476.92	400.00	0.00	388.69	352.27	295.86	327.88	318.82
NO. OBS.	0.	0.	0.	0.	61.	59.	62.	61.	58.	60.	51.	54.	466.
CUSPS X DEC.													
MEAN SPAC.	0.00	0.00	0.00	0.00	44.26	40.00	46.77	34.43	36.21	16.67	52.94	48.30	39.40
NO. OBS.	0.	0.	0.	0.	76.67	134.17	48.10	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.

SURF ORS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	1.52	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	2.93	1.17	.78	1.10	1.11	1.94	1.08	1.19	.71	1.34
NO. OBS.	61.	56.	59.	57.	60.	55.	59.	56.	47.	52.	45.	2.	611.
PERIOD (SEC)													
MEAN	12.68	14.36	16.50	14.72	13.67	11.58	10.51	10.02	10.73	11.46	11.14	11.75	12.57
STD DEV	3.62	2.98	3.14	1.26	3.15	2.40	2.12	2.32	2.26	2.38	1.67	1.06	3.59
NO. OBS.	62.	55.	59.	57.	60.	56.	59.	56.	47.	52.	45.	2.	610.
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	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
S	41.94	45.45	16.95	67.66	26.67	0.00	8.47	5.45	38.30	11.94	0.00	0.00	1.15
SW	52.73	63.05	30.36	51.67	60.71	60.71	60.71	92.73	59.87	78.85	100.00	100.00	24.51
W	0.00	0.00	0.00	1.79	16.67	39.29	1.69	1.62	0.00	9.62	0.00	0.00	6.58
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	.66
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	.66
NO. OBS.	62.	55.	59.	56.	60.	56.	59.	55.	47.	52.	45.	2.	608.
BREAKER TYPE													
TOCC 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	.17
NO. OBS.	61.	56.	59.	55.	60.	56.	59.	55.	46.	51.	45.	2.	605.
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	1.08	.76	.61	.81	.49	.47	.65	.51	.45	.50	.75
STD DEV	.92	.76	.78	.48	.27	.51	.20	.24	.42	.33	.24	.00	.57
NO. OBS.	31.	28.	31.	30.	30.	28.	29.	28.	22.	26.	23.	1.	307.
FORESHORE SLOPE													
MEAN (DEG)	7.03	5.30	6.00	7.00	5.87	5.64	5.34	4.57	5.14	5.16	4.81	5.00	5.66
STD DEV	3.51	1.39	1.31	1.81	1.85	1.10	1.32	1.17	1.01	1.16	1.12	0.00	1.61
NO. OBS.	30.	28.	29.	28.	30.	28.	29.	28.	21.	25.	21.	1.	299.
RIPS X OCC	38.10	48.21	47.46	47.37	45.00	30.36	3.39	1.79	6.38	4.08	0.00	0.00	25.94
MEAN SPAC	290.54	212.90	201.43	241.11	445.00	348.76	400.00	300.00	316.67	800.00	0.00	0.00	330.41
NO. OBS.	63.	56.	59.	57.	60.	56.	59.	56.	47.	49.	45.	2.	609.
CUSPS X OCC	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
MEAN SPAC	83.16	94.15	99.46	117.59	124.28	97.71	83.33	75.00	90.71	92.31	0.00	0.00	68.11
NO. OBS.	63.	56.	59.	57.	60.	56.	59.	56.	47.	52.	45.	2.	612.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SUNF. OBS. (FT)													
MEAN	3.70	4.14	3.00	3.00	3.63	3.13	1.60	3.27	2.50	2.25	2.60	3.50	3.42
STD DEV	1.26	1.95	.76	.76	.52	1.13	1.60	1.11	1.29	1.50	2.07	1.66	1.35
NO. OBS.	33	10	7	8	8	8	5	7	4	4	5	11	111
PERIOD (SEC)													
MEAN	11.68	10.94	10.86	10.35	10.06	11.68	9.94	10.61	12.28	17.20	13.08	13.31	11.64
STD DEV	2.56	1.58	1.61	1.47	1.31	2.23	1.95	3.41	5.59	8.91	1.99	2.60	3.07
NO. OBS.	33	10	8	8	9	8	5	7	4	4	5	12	113
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	9.00	9.00
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.	0	0	0	0	9	8	5	6	4	4	5	12	53
COMPRESSION 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	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
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	10	8	8	9	8	5	7	4	4	5	12	53
BREAKER TYPE													
TOCC SPILL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	60.00	56.33	92.92
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
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	10	8	8	9	8	5	7	4	4	5	12	53
CURRENT OBS.													
(FT/SEC)													
NET -141	-50	.57	.24	-1.06	-1.17	.48	.44	.15	.29	.52	.25	.11	.33
GROSS MEAN	.73	.70	.24	1.06	1.17	.48	.35	.20	.61	.52	.75	.40	.63
STD DEV	.26	1.09	.37	.30	.16	.44	.23	.16	.36	.33	.50	.36	.50
NO. OBS.	18	5	4	4	5	4	3	4	3	1	4	8	63
FURNESS SHORE													
MEAN (NEC)	0.30	5.00	3.75	4.50	4.40	5.25	3.67	3.50	4.00	7.00	4.25	5.25	4.99
STD DEV	1.34	.71	2.63	.58	.55	1.50	1.50	1.00	1.00	2.83	.56	1.64	1.51
NO. OBS.	10	5	4	4	5	4	3	4	3	4	4	8	56
RIPS													
MEAN	.02	22.22	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STD DEV	.41429	650.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	33	9	8	8	9	8	5	7	4	4	5	12	53
CUSPS													
MEAN	30.50	40.00	37.50	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	6.00	40.00	50.00	60.00	42.50	96.07	96.07
NO. OBS.	33	10	8	8	9	8	5	7	4	4	5	12	53

SURF OBS.		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)														
MEAN		3.33	3.50	4.00	3.17	3.00	2.88	2.75	0.00	0.00	3.75	4.63	3.88	3.51
STD DEV		1.56	1.76	1.10	.98	1.07	.86	.50	0.00	0.00	1.16	1.30	.99	1.21
NO. OBS.		12.	8.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.
PERIOD (SFC)														
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.
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
1	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
2	3	100.00	87.50	100.00	75.00	75.00	85.71	100.00	0.00	0.00	87.50	0.00	12.50	4.11
3	4	0.00	12.50	0.00	0.00	0.00	14.29	0.00	0.00	0.00	12.50	28.57	62.50	86.30
4	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	9.59
5	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
6	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
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.	8.	6.	6.	8.	7.	4.	0.	0.	8.	7.	8.	73.
BREAKER TYPE														
XOCC	33.33	12.50	16.67	16.67	87.50	87.50	75.00	50.00	0.00	0.00	37.50	12.50	0.00	34.21
SP/L	68.67	87.50	83.33	83.33	0.00	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	12.50	0.00	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	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.	12.	8.	6.	6.	8.	8.	8.	4.	0.	0.	8.	8.	8.	76.
CURRENT OBS.														
(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	.85	.36	.68	.92	0.00	0.00	.37	.04	.03	.39
STD DEV		.50	.41	.74	.73	.46	.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.
FURTHER SLOPE														
MEAN (DEG)		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.
RIPS X OCC		50.00	50.00	50.00	50.00	0.00	50.00	0.00	0.00	0.00	50.00	37.50	50.00	40.79
MEAN SPAC		271.67	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.
CUSPS X OCC		50.00	50.00	50.00	50.00	25.00	0.00	50.00	0.00	0.00	37.50	37.50	50.00	39.47
MEAN SPAC		128.67	110.00	125.00	186.67	75.00	0.00	400.00	0.00	0.00	76.33	71.67	112.50	113.06
NO. OBS.		12.	8.	6.	6.	8.	8.	4.	0.	0.	8.	8.	8.	76.

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

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	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
STD DEV	1.41	1.92	1.92	1.00	.46	.41	.79	.89	.71	1.28	0.00	1.05	1.12
NO. OBS.	8.	5.	8.	9.	8.	6.	10.	8.	8.	8.	3.	10.	91.
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	.83	.97	1.88	2.29	3.02	2.26
NO. OBS.	7.	5.	8.	9.	8.	6.	10.	8.	8.	8.	3.	10.	90.
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	12.50	33.33	20.00	0.00	12.50	37.50	0.00	0.00	10.00
2	0.00	0.00	0.00	0.00	50.00	33.33	30.00	75.00	50.00	25.00	66.67	100.00	41.11
3	100.00	37.50	77.78	33.33	33.33	33.33	30.00	25.00	37.50	37.50	33.33	0.00	28.89
4	0.00	0.00	0.00	22.22	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.	8.	4.	8.	9.	8.	6.	10.	8.	8.	8.	3.	10.	90.
BREAKER TYPE													
TOCC 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
PLUNGE	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)													
NET MEAN	-.27	.42	-.14	-.16	-.03	-.13	.13	.03	.15	.18	-.03	.24	.04
GROSS MEAN	.39	.54	.14	.23	.10	.13	.14	.06	.15	.28	.03	.86	.28
STD DEV	.43	.47	.22	.26	.13	.24	.20	.16	.19	.36	.04	.76	.16
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													
3 OCC	12.50	20.00	50.00	33.33	30.00	50.00	50.00	50.00	50.00	50.00	66.67	0.00	38.46
MEAN SPAC.	1000.00	150.00	707.50	825.00	713.75	533.33	545.00	593.75	487.50	308.25	600.00	0.00	517.42
NO. OBS.	8.	5.	8.	9.	8.	6.	10.	8.	8.	6.	3.	10.	91.
CUSPS													
3 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.	8.	9.	8.	6.	10.	8.	8.	8.	3.	10.	91.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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.													
PERIOD (SEC)	16.44	24.26	21.10	20.44	18.23	18.49	15.70	15.25	13.07	0.00	0.00	0.00	17.84
MEAN	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
STD DEV	8.	8.	7.	7.	8.	8.	10.	8.	10.	0.	0.	0.	74.
NO. OBS.													
DIRECTION													
COASTAL SECTOR													
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	12.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33
2	87.50	87.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	96.00
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	2.67
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	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.	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.
BREAKER TYPE													
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	22.67
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.
CURRENT OBS.													
(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	.86	.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.
FORESHORE SLOPE													
MEAN (OCC)	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	1.10	1.00	.58	1.41	2.17	.50	.71	0.00	0.00	0.00	1.24
NO. OBS.	4.	4.	5.	4.	4.	4.	5.	4.	5.	0.	0.	0.	39.
RIPS X OCC	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
MEAN SPAC.	150.00	0.00	0.00	533.33	662.50	700.00	0.00	0.00	0.00	0.00	0.00	0.00	162.22
NO. OBS.	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.
CUSPS X OCC	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
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00	0.00	0.00	0.00	7.68
NO. OBS.	8.	8.	7.	8.	8.	8.	10.	8.	10.	0.	0.	0.	75.

CALIFORNIA

WIND ROSES 05022 STINSON

JANUARY

FEBRUARY

MARCH

APRIL

ANNUAL AVERAGE

DATA BASED ON OBSERVATIONS
OF WIND DIRECTION AND SPEED
ON MAY 68 TO 30 MAY 73

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MOS.
HEIGHT (FT)													
MEAN	4.84	5.76	5.17	4.10	3.84	3.54	3.51	3.25	3.37	4.05	4.24	4.51	4.18
STD DEV	1.64	3.07	3.36	1.07	1.06	.84	1.14	1.35	1.44	1.63	1.83	1.83	1.83
NO. OBS.	62.	63.	56.	83.	100.	89.	80.	57.	52.	66.	52.	53.	747.
PERIOD (SEC)													
MEAN	10.94	11.12	10.32	12.03	10.69	10.47	9.82	10.72	12.54	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	2.67	2.67	2.67
NO. OBS.	62.	63.	36.	84.	44.	61.	75.	50.	51.	66.	52.	52.	776.
DIRECTION													
COASTAL SECTOR													
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	7.69	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	83.33
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
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.	13.	0.	6.	0.	0.	0.	0.	0.	30.
COMPASS SECTOR													
UCC.	N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	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	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	9.34	16.75	3.57	2.86	14.53	11.76	12.31	1.84	18.37	13.23
W	67.80	70.87	65.63	66.38	66.75	91.67	94.29	78.18	62.54	76.92	63.12	77.55	75.99
NW	0.00	0.00	28.03	14.50	0.00	3.57	2.86	7.27	19.61	6.15	9.22	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	3.82	0.00	0.00
NO. OBS.	52.	63.	32.	73.	80.	84.	70.	50.	51.	66.	52.	53.	733.
WREATH TYPE													
X/CC SPILL	3.23	14.75	50.00	12.05	6.19	12.50	30.86	32.76	57.91	43.94	32.73	24.04	22.52
SP/PL	0.00	0.00	0.00	4.82	10.31	0.00	7.41	0.00	0.00	0.00	0.00	0.00	2.54
PLUNGE	46.77	85.25	40.00	86.72	70.10	65.12	56.79	65.52	42.59	56.06	67.52	70.36	70.36
SURGE	0.00	0.00	0.00	2.41	13.40	4.94	0.00	1.72	0.00	0.00	0.00	0.00	4.54
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.	62.	61.	32.	83.	97.	84.	81.	58.	54.	66.	52.	49.	746.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.01	0.20	0.32	0.39	0.07	0.20	0.08	0.17	0.21	0.48	0.00	0.68	0.11
GROSS MEAN	1.11	1.16	0.81	0.75	0.75	0.75	0.73	0.57	0.77	0.85	1.00	1.00	0.82
STD DEV	0.67	0.71	0.62	0.58	0.58	0.58	0.51	0.50	0.76	0.81	0.54	0.60	0.62
NO. OBS.	27.	27.	28.	45.	47.	47.	50.	24.	35.	26.	16.	20.	307.
FRESHWATER SURGE													
MEAN (OCC)	2.97	2.44	4.44	2.28	2.49	3.77	4.26	5.29	7.57	6.80	4.76	5.04	4.46
STD DEV	1.34	1.12	1.57	0.97	1.59	1.09	2.05	2.49	5.06	3.24	1.78	2.49	2.49
NO. OBS.	32.	17.	7.	36.	46.	44.	50.	44.	35.	40.	24.	411.	411.
RIPS													
MEAN SPAC.	1.61	1.61	0.00	0.24	16.33	11.24	12.91	12.21	13.44	19.70	5.26	15.14	15.14
NO. OBS.	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
CUSP	1.14	1.14	0.00	0.00	2.00	7.47	16.29	37.93	3.70	6.06	7.02	11.52	9.33
MEAN SPAC.	107.14	107.14	0.00	180.00	108.00	89.43	64.27	63.45	100.00	80.50	300.00	254.14	120.14
NO. OBS.	61.	61.	16.	85.	100.	69.	82.	54.	54.	66.	57.	51.	804.

5002 THOMASON HEACH 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.
SUMMARY OBS.													
MEAN (FT)	0.00	0.00	0.00	3.96	3.63	3.76	4.00	3.71	3.00	4.46	4.88	3.95	3.95
STD DEV	0.00	0.00	0.00	1.67	1.49	1.49	1.67	1.50	1.27	1.90	1.83	1.21	1.30
N ₀ , OBS.	0.	0.	0.	50.	51.	59.	43.	20.	33.	39.	43.	43.	38.
PERIOD (SPEC)													
MEAN	0.00	0.00	0.00	12.41	11.15	10.60	10.40	12.99	11.06	11.33	11.03	10.84	11.30
STD DEV	0.00	0.00	0.00	3.14	3.19	3.02	2.82	3.55	2.03	2.54	3.46	2.02	2.39
N ₀ , OBS.	0.	0.	0.	50.	50.	53.	38.	17.	31.	39.	43.	42.	36.
DIRECTION COMPASS SECTOR													
MEAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23	0.00	0.00	0.00	.27
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
N ₀ , OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
HEIGHT TYPE													
MEAN	0.00	0.00	0.00	14.55	0.00	0.00	6.82	4.00	55.88	65.00	30.95	0.00	18.04
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
N ₀ , OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CURRENT OBS.													
MEAN	0.00	0.00	0.00	14.55	0.00	0.00	6.82	4.00	55.88	65.00	30.95	0.00	18.04
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
N ₀ , OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FURTHER OBS.													
MEAN	0.00	0.00	0.00	14.55	0.00	0.00	6.82	4.00	55.88	65.00	30.95	0.00	18.04
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
N ₀ , OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PERIOD (SPEC)													
MEAN	0.00	0.00	0.00	12.41	11.15	10.60	10.40	12.99	11.06	11.33	11.03	10.84	11.30
STD DEV	0.00	0.00	0.00	3.14	3.19	3.02	2.82	3.55	2.03	2.54	3.46	2.02	2.39
N ₀ , OBS.	0.	0.	0.	50.	50.	53.	38.	17.	31.	39.	43.	42.	36.
CUSPS & OCC.													
MEAN	0.00	0.00	0.00	14.55	0.00	0.00	6.82	4.00	55.88	65.00	30.95	0.00	18.04
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
N ₀ , OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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	1.40	3.94	3.49	1.36	1.11	.86	1.07	1.31	1.63	1.20	1.69	2.02	2.53
NO. OBS.	49.	42.	32.	19.	32.	30.	29.	33.	19.	26.	14.	10.	335.
PERIOD (SEC)													
MEAN	10.95	10.48	10.14	9.47	10.07	10.24	9.54	9.55	14.90	12.28	11.44	11.83	10.73
STD DEV	1.73	2.29	3.93	2.19	3.34	2.62	2.73	2.08	4.71	5.71	2.10	4.56	3.09
NO. OBS.	49.	42.	32.	19.	31.	30.	29.	33.	20.	26.	14.	10.	334.
DIRECTION													
COMPASS SECTOR													
Q 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	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	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	71.74	59.52	67.86	27.78	33.48	10.40	7.14	0.00	5.00	12.00	0.00	0.00	17.08
NW	0.00	25.00	25.00	27.78	32.26	36.67	85.71	98.97	75.00	72.00	56.33	55.56	68.01
CALM	0.00	0.00	0.00	0.00	32.26	3.33	7.14	3.03	20.00	12.00	33.33	0.00	13.98
NO. OBS.	46.	42.	28.	19.	31.	30.	28.	33.	0.00	0.00	0.00	0.00	9.
322.													
BREAKER TYPE													
X OCC SPILL	0.00	14.93	50.00	5.36	3.23	36.67	68.97	54.55	60.00	11.34	38.46	11.11	28.13
SP/PL	100.00	85.37	50.00	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	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.	49.	41.	28.	19.	31.	30.	29.	33.	20.	26.	13.	9.	327.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.01	.21	-.52	-.49	-.55	-.48	-.44	-.01	-.60	-.13	0.00	0.00	-.32
GROSS MEAN	1.11	1.18	.81	.86	.56	.72	.77	.51	1.08	1.31	0.00	0.00	.87
STD DEV	.67	.75	.62	.72	.44	.68	.51	.51	.87	.95	0.00	0.00	.69
NO. OBS.	27.	23.	20.	16.	20.	16.	21.	19.	13.	6.	0.	0.	185.
FRESHWATER SLOPE													
MEAN (DEG)	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	.78	1.57	0.00	2.57	1.50	1.51	2.10	.95	1.73	.58	.71	1.62
NO. OBS.	26.	13.	7.	0.	7.	21.	26.	26.	10.	11.	3.	2.	156.
RIPS													
X OCC	2.04	0.00	6.90	0.00	46.88	33.33	65.92	48.48	10.00	0.00	0.00	0.00	19.58
MEAN SPAC.	300.00	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.
CUSPS													
X OCC.	14.58	0.00	3.13	0.00	0.00	23.33	48.28	51.52	5.00	0.00	0.00	0.00	14.03
MEAN SPAC.	107.44	0.00	160.00	0.00	0.00	89.23	67.63	79.31	180.00	0.00	0.00	0.00	63.05
NO. OBS.	49.	42.	32.	19.	32.	30.	29.	31.	20.	26.	14.	10.	335.

5002 THUNDER 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.
SURF OBS. (FT)													
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	.99	0.00	0.00	0.00	0.00	0.00	1.47
NO. OBS.	13.	21.	4.	10.	17.	0.	8.	0.	0.	0.	0.	0.	73.
PERIOD (SEC)													
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.
DIRECTION													
COASTAL SECTION													
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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.
CROSS SECTION													
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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
DOCC. 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.	37.
BREAKER TYPE													
DOCC SPILL	15.38	15.00	50.00	10.00	31.25	0.00	25.00	0.00	0.00	0.00	0.00	0.00	21.13
DOCC SPL	0.00	0.00	0.00	40.00	62.50	0.00	75.00	0.00	0.00	0.00	0.00	0.00	28.17
DOCC PLUNGE	85.00	85.00	50.00	50.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
DOCC SINGLE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOCC 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.
CURRENT OBS. (FT/SEC)													
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.
FORESHORE SLOPE													
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	.42	0.00	.87	.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
NO. OBS.	4.	4.	0.	9.	13.	0.	1.	0.	0.	0.	0.	0.	31.
RIPS ± OCC													
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	600.00	450.00	1750.00	1000.00	0.00	466.67	0.00	0.00	0.00	0.00	0.00	713.15
NO. OBS.	13.	21.	4.	10.	15.	0.	8.	0.	0.	0.	0.	0.	71.
CUSPS ± OCC													
MEAN SPAC.	0.00	0.00	0.00	30.00	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	71.23
NO. OBS.	13.	21.	4.	10.	17.	0.	8.	0.	0.	0.	0.	0.	73.

WIND ROSES '05002 THORNTON

CALIFORNIA

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

MINIMUM INVERSE

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
OF APR 68 TO 25 JUL 70

SURF OBS. WIND (FT) STRENGTH NO. OBS.	0.00	0.00	0.00	0.00	3.15	4.23	3.75	2.86	4.64	5.24	5.11	4.48	4.23
	0.00	0.00	0.00	1.32	.87	1.48	.88	1.11	1.19	2.29	1.47	1.56	1.63
	0.	0.	0.	50.	46.	30.	32.	21.	26.	51.	35.	36.	329.
PREDICTION (SEC) MEAN STRENGTH NO. OBS.	0.00	0.00	0.00	10.99	13.14	15.46	13.51	16.63	14.12	10.49	10.80	9.07	11.96
	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
	0.	0.	0.	50.	47.	30.	30.	16.	27.	51.	35.	41.	325.
DIRECTION COMPASS SECTION 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
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WAVELENGTH 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	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CURRENT OBS. (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
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FURTHER SURF MEAN, STRENGTH 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
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIPPLES & CIRCLES MEAN, STRENGTH 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
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CURRENTS & DRIFT MEAN, STRENGTH 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
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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.
SURF OBS.													
HEIGHT (FT)													
MEAN	4.09	6.18	5.28	6.39	5.29	5.00	5.63	5.15	5.80	6.30	5.00	4.50	5.54
STD DEV	2.00	1.38	1.38	.94	1.25	.76	1.30	1.34	.84	1.00	0.00	4.04	1.86
NO. OBS.	45	40	47	23	7	8	8	13	5	4	1	4	205
PERIOD (SEC)													
MEAN	9.95	10.10	13.43	12.32	12.99	12.96	11.96	10.69	12.20	12.55	11.00	15.65	11.62
STD DEV	2.61	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
DIRECTION													
COMPASS SECTOR													
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
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	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	0.00	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	76.74	42.26	53.33	91.30	100.00	100.00	0.00	91.67	100.00	100.00	100.00	100.00	6.57
WIND	0.00	0.00	0.00	8.70	0.00	0.00	0.00	8.33	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	196
BREAKER TYPE													
TOCC SPILL	73.33	67.50	37.78	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	31.62	0.00	19.29	0.00	54.55	40.00	25.00	0.00	25.00	36.36
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.	45	40	45	22	7	7	7	11	5	4	1	4	198
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-4.41	0.09	-7.73	-1.24	-7.77	0.42	0.62	0.06	-1.56	0.93	-1.00	0.00	-1.38
GROSS MEAN	1.15	1.15	0.97	.50	.77	.42	.62	.49	.56	.93	1.00	.42	.89
STD DEV	1.02	1.21	.66	.43	.64	.42	.69	.41	.62	1.10	0.00	.38	.82
NO. OBS.	20	20	26	11	4	4	7	7	2	2	1	3	111
FURLOPE SLOPE													
MEAN (DEG)	6.06	7.30	12.50	13.00	14.75	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	3.40	0.00	2.54	3.00	.71	0.00	0.00	4.07
NO. OBS.	10	17	23	12	3	4	1	7	3	2	0	1	91
RIPS													
MEAN (DEG)	47.61	50.00	53.19	52.17	71.43	75.00	100.00	58.33	60.00	75.00	100.00	100.00	56.52
STD DEV	275.00	226.19	278.00	297.92	275.00	300.00	381.25	407.14	333.33	325.00	275.00	368.75	275.10
NO. OBS.	40	42	47	23	7	8	8	12	5	4	1	4	207
CUSPS X OCC.													
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
STD DEV	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.	40	42	47	23	7	8	8	13	5	4	1	4	208

SURF OBS. WEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.	MEAN STD DEV NO. OBS.
PERIOD (3FC)													
MEAN	12.47	11.50	12.80	11.43	9.96	0.00	9.87	10.51	7.45	0.00	0.00	0.00	10.32
STD DEV	2.19	0.00	1.29	1.29	2.09	0.00	1.53	2.06	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.
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	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	0.00	95.45	95.43	100.00	0.00	0.00	0.00	3.75
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	96.25
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.	1.	7.	0.	22.	48.	2.	0.	0.	0.	80.
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	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.50
NO. OBS.	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50
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.	3.	2.	1.	3.	7.	0.	22.	52.	2.	0.	0.	0.	8.
BREAKER TYPE													
TOCC SPILL	100.00	50.00	0.00	100.00	57.14	0.00	18.18	0.00	0.00	0.00	0.00	0.00	16.30
SP/PL	0.00	0.00	0.00	0.00	88.57	0.00	81.82	100.00	100.00	0.00	0.00	0.00	60.43
PLUNGE	0.00	50.00	100.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.26
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.	2.	1.	3.	7.	0.	22.	52.	2.	0.	0.	0.	92.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.09	0.17	-0.25	-0.17	-0.19	0.00	0.20	0.28	0.33	0.00	0.00	0.00	0.04
GROSS MEAN	0.34	0.17	1.25	0.53	1.19	0.00	0.50	0.59	0.33	0.00	0.00	0.00	0.60
STD DEV	0.49	0.24	0.00	0.24	0.49	0.00	0.57	0.57	0.33	0.00	0.00	0.00	0.59
NO. OBS.	2.	2.	1.	3.	5.	0.	18.	25.	1.	0.	0.	0.	55.
FORESHORE SLOPE													
MEAN (OBS)	14.00	2.00	0.00	0.00	11.75	0.00	11.56	8.77	12.00	0.00	0.00	0.00	9.02
STD DEV	0.00	0.00	0.00	0.00	2.36	0.00	3.32	1.82	0.00	0.00	0.00	0.00	2.86
NO. OBS.	1.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.
RIPS													
0 OCC	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
MEAN SPAC	425.00	325.00	400.00	366.67	425.00	0.00	500.00	500.00	150.00	0.00	0.00	0.00	475.00
NO. OBS.	3.	2.	1.	3.	5.	0.	22.	52.	2.	0.	0.	0.	92.
CUSPS													
0 OCC	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
MEAN SPAC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	285.71
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

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

DATA BASED ON OBSERVATIONS
MADE AT FRANCIS
03 APR 68 TO 14 SEP 70

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

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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	1.36	1.18
NO. OBS.	0.	0.	0.	51.	59.	51.	55.	52.	55.	61.	45.	52.	481.
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	13.07	13.29	13.96	14.50	18.09	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.	54.	57.	61.	47.	54.	490.
DIRECTION													
COMPASS SECTOR													
DEC. 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	90.20	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.
WAVE TYPE													
BOCC SPILL	0.00	0.00	0.00	37.74	37.29	46.00	63.46	58.82	80.70	58.06	40.82	61.82	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	33.22	17.54	41.94	59.18	30.91	35.45
SURGE	0.00	0.00	0.00	30.19	27.12	20.00	5.77	1.96	1.75	0.00	0.00	7.27	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.
CURRENT OBS.													
(FT/SEC)													
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	0.30	0.23	0.17	0.24	0.14	0.11	0.21	0.21	0.31	0.21
STD DEV	0.00	0.00	0.00	0.32	0.32	0.17	0.29	0.17	0.21	0.22	0.18	0.31	0.22
NO. OBS.	0.	0.	0.	25.	30.	25.	25.	25.	28.	31.	24.	24.	242.
FORESHORE SLOPE													
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.	29.	238.
RIPS													
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.
CUSPS													
MEAN SPAC.	0.00	0.00	0.00	30.19	16.95	1.96	5.45	0.00	12.28	32.26	20.41	5.26	14.11
NO. OBS.	0.	0.	0.	57.	62.	60.	78.33	0.00	61.86	86.55	97.50	114.67	70.09
NO. OBS.	0.	0.	0.	51.	59.	51.	55.	53.	57.	62.	49.	57.	496.

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

50004 NATURAL BATHING		JAN	FEB	MARCH	APRIL	MAY	JUNE
SURF WRS.							
HEIGHT (FT)							
MEAN	2.90	3.53	3.56	4.69	3.51	3.10	3.11
STD DEV	1.59	1.24	1.92	4.19	1.42	1.08	1.61
NO. OBS.	62	45	61	54	59	60	62
PERIOD (SEC)							
MEAN	9.46	10.92	15.48	16.25	14.33	17.11	16.31
STD DEV	1.90	2.10	5.46	4.16	2.01	4.93	4.61
NO. OBS.	62	44	61	52	59	60	62
DIRECTION							
COMPASS SECTOR							
D OCC. N	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
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	6.82	5.00	44.44	60.00	44.43	50.00
S	100.00	86.36	58.33	51.85	36.36	48.28	40.00
SW	0.00	6.82	3.00	1.85	0.00	6.90	6.66
W	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	1.66
CALM	0.00	0.00	0.00	1.85	3.64	0.00	0.00
NO. OBS.	55	44	60	54	55	58	60
BREAKER TYPE							
X OCC SPILL	70.49	51.33	80.33	94.55	79.66	95.00	93.33
SP/PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLUNGE	22.95	46.67	19.67	5.45	20.34	5.00	6.66
SLAGE	6.76	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	61	45	61	55	59	60	60
CURRENT WRS.							
(FT/SEC)							
NET MEAN	-0.27	-0.12	-0.07	-0.29	-0.02	-0.05	-0.00
GROSS MEAN							
MEAN	-0.28	-0.19	-0.31	-0.29	-0.15	-0.22	-0.21
STD DEV	-0.25	-0.26	-0.14	-0.19	-0.13	-0.27	-0.21
NO. OBS.	31	22	26	25	30	30	31
FORESHORE SLOPP							
MEAN (DEG)	3.54	1.77	2.23	2.46	2.97	1.76	3.33
STD DEV	0.99	1.02	1.70	0.72	1.68	0.58	0.91
NO. OBS.	31	22	30	24	29	29	29
RIPS X OCC							
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	62	44	61	54	59	60	62
CUSPS X OCC							
MEAN SPAC.	0.00	0.00	0.00	3.44	0.00	0.00	1.66
NO. OBS.	62	44	61	55	59	60	62

5004 NATURAL RHIDGES

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1= 1-70 AND ENDING 11-24=70.

ALL OBS.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
SURF OBS. (FT)												
HEIGHT MEAN	3.06	2.12	2.06	1.94	2.75	2.68	3.10	2.92	3.16	3.25	2.47	0.00
STD DEV	1.42	0.86	0.77	1.01	1.77	1.34	2.27	0.93	1.97	1.50	1.01	0.00
NO. OBS.	59	49	53	51	56	60	62	62	58	57	17	0
PERIOD (SEC)												
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
STD DEV	1.66	1.35	1.41	1.27	1.19	1.56	1.63	1.89	2.39	2.33	3.95	0.00
NO. OBS.	59	52	52	55	55	58	62	62	58	58	17	0
DIRECTION												
CENTRAL SECTOR												
DEC.	0.00	0.00	0.00	11.54	0.00	0.00	0.00	0.00	1.75	1.72	5.88	0.00
2	0.00	0.00	0.00	21.92	0.00	0.00	0.00	0.00	18.50	25.86	58.96	0.00
3	0.00	0.00	0.00	53.85	0.00	0.00	0.00	0.00	78.90	78.90	35.26	0.00
4	0.00	0.00	0.00	2.69	0.00	0.00	0.00	0.00	0.00	6.01	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
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
NO. OBS.	0	0	0	26	50	60	62	60	57	56	17	0
COMPASS SECTOR												
DEC.	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
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
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
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
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
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
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
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
NO. OBS.	59	50	52	29	0	0	0	0	0	0	0	0
BREAKER TYPE												
LOC SPILL	83.05	100.00	90.74	83.71	100.00	94.64	86.89	63.33	45.61	52.63	58.62	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
PLUNGE	10.17	9.20	9.20	15.71	0.00	1.37	1.11	28.33	26.32	34.03	35.29	0.00
BURGE	6.76	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
NO. OBS.	59	51	54	56	54	56	61	60	57	57	17	0
CURRENT OBS.												
(FT/SEC)												
NET MEAN	0.06	0.00	0.01	0.02	0.03	0.02	0.00	0.10	0.07	0.03	0.01	0.00
GROSS MEAN	0.19	0.11	0.11	0.08	0.04	0.04	0.04	0.10	0.08	0.06	0.01	0.00
STD DEV	0.17	0.10	0.10	0.08	0.07	0.07	0.11	0.10	0.11	0.09	0.02	0.00
NO. OBS.	30	26	26	26	27	30	31	32	24	26	7	0
FORESHORE SLOPE												
MEAN (DEC)	3.17	2.79	2.44	1.22	1.63	1.93	1.65	1.14	2.14	1.97	1.88	0.00
STD DEV	1.05	0.88	2.14	0.42	0.49	0.37	0.49	0.37	0.52	0.19	0.35	0.00
NO. OBS.	30	24	25	27	27	30	31	32	28	29	8	0
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
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
NO. OBS.	59	52	54	57	56	60	62	62	58	58	17	0
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
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
NO. OBS.	59	52	54	57	56	60	62	62	58	58	17	0

CALIFORNIA

WIND ROSES 5004 NATURAL BRIDGES

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

JANUARY

DATA BASED ON OBSERVATIONS
1951-1952
03 APR 00 TO 24 NOV 70

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

SURF OBS.											
HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
MEAN	1.37	1.59	1.58	1.64	1.34	1.38	1.05	1.52	1.90	1.22	1.92
STD DEV	.65	.70	.90	.91	.81	.59	.22	.75	.85	.83	1.56
NO. OBS.	35.	34.	40.	42.	30.	21.	20.	21.	20.	16.	43.
PERIOD (SEC)											
MEAN	9.63	11.22	11.02	12.49	13.08	13.17	11.71	11.53	12.20	11.31	10.63
STD DEV	2.80	1.83	1.96	3.16	3.10	3.44	1.02	1.77	1.80	.57	2.32
NO. OBS.	35.	34.	30.	43.	31.	21.	19.	20.	20.	16.	43.
DIRECTION											
COASTAL SECTOR											
Q OCC.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q	0.00	0.00	0.00	3.33	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
4	7.49	0.00	0.00	0.00	0.00	10.53	0.00	0.00	0.00	0.00	6.57
5	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
NO. OBS.	30.	37.	38.	30.	30.	19.	16.	30.	20.	18.	41.
BREAKER TYPE											
XOCC SPILL	23.08	6.06	5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.28
SPPL	76.92	87.88	92.11	86.05	89.74	89.71	100.00	100.00	100.00	100.00	83.72
PLUNGE	0.00	6.06	2.63	13.95	5.13	10.89	0.00	0.00	0.00	0.00	2.78
SURGE	0.00	0.00	0.00	0.00	5.13	0.00	0.00	0.00	0.00	0.00	25.00
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	35.	33.	38.	43.	39.	21.	20.	21.	20.	17.	43.
CURRENT OBS.											
(FT/SEC)											
NET MEAN	-0.04.	-0.09	-0.07	-0.04	-0.12	-0.03	-0.02	0.00	-0.08	-0.00	-0.01
GROSS MEAN	.04	.11	.08	.10	.15	.03	.02	.03	.08	.00	.03
STD DEV	.15	.20	.22	.16	.30	.07	.06	.07	.18	.02	.04
NO. OBS.	35.	36.	40.	33.	35.	20.	20.	31.	20.	17.	43.
FORESHORE SLOPE											
MEAN (DEC)	3.65	4.37	3.45	2.77	3.44	4.29	4.85	4.57	5.00	5.11	4.34
STD DEV	.69	1.35	1.48	1.09	.82	.66	.89	.68	.65	.32	1.45
NO. OBS.	37.	35.	40.	43.	40.	21.	20.	31.	20.	16.	35.
RIPS											
% OCC	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
NO. OBS.	35.	37.	40.	43.	40.	21.	20.	21.	20.	16.	43.
CURPS % OCC.											
MEAN SPAC.	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00
NO. OBS.	35.	37.	40.	43.	40.	21.	20.	21.	20.	16.	43.

5367 CAPITOLA BEACH CALIFORNIA

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

[illegible]

530.7 CAPTIVA HEARST SUMMARY FOR PERIOD STARTING 1-4-71 AND ENDING 12-31-71.

SUMMARY FOR PERIOD STARTING 1-4-71 AND ENDING 12-31-71.															
CALIFORNIA			JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL ORES.
SOUTH ORES.															
ME TON (T)			1.47	1.21	1.25	1.41	1.30	1.20	1.05	1.52	1.40	1.22	2.15	2.05	1.50
STO. RES.			.80	.43	.72	.80	.80	.41	.22	.75	.45	.43	1.73	1.13	.87
OIL, ORES.			17.	14.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	22.5
PERMIT (COST)			7.75	10.05	10.90	12.50	12.16	11.33	11.71	11.54	12.20	11.31	10.40	10.66	11.16
STO. RES.			2.17	2.40	1.66	1.59	1.57	1.87	1.02	.77	.80	.57	1.56	1.59	1.46
OIL, ORES.			20.	17.	19.	22.	19.	15.	19.	20.	20.	18.	20.	22.	23.1
DIRECTION															
COASTAL SECTION															
OIL, 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
OIL, 2			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
OIL, 3			65.00	100.00	94.00	84.89	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	97.57
OIL, 4			15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
OIL, 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
OIL, ORES.			20.	17.	18.	9.	14.	13.	16.	20.	20.	18.	20.	21.	20.6
HEARST TYPE															
OIL, 1			45.00	14.20	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68
OIL, 2			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
OIL, 3			0.00	14.20	5.56	27.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93
OIL, 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
OIL, 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
OIL, ORES.			20.	14.	18.	22.	20.	15.	20.	21.	20.	17.	20.	22.	22.9
COPIES OF ORES.															
OIL, 1			-0.1	-0.17	-0.14	-0.07	-0.10	-0.03	-0.02	0.00	-0.08	-0.00	0.00	0.00	-0.05
OIL, 2			0.3	0.22	0.15	0.18	0.10	0.03	0.02	0.01	0.08	0.00	0.00	0.00	0.07
OIL, 3			0.00	0.20	0.30	0.21	0.10	0.08	0.06	0.07	0.18	0.02	0.00	0.00	0.16
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	17.	20.	22.	23.4
FURTHER SHOT															
OIL, 1			1.26	4.00	2.20	3.01	3.20	4.33	4.45	4.57	5.00	5.11	5.74	4.95	4.05
OIL, 2			0.00	1.84	0.49	0.91	0.43	0.09	0.59	0.68	0.65	0.32	1.63	0.21	1.26
OIL, ORES.			19.	17.	20.	22.	20.	15.	20.	21.	20.	18.	19.	22.	23.3
OIL, 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
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
OIL, ORES.			20.	17.	20.	22.	20.	15.	20.	21.	20.	18.	20.	22.	23.3
OIL, 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
 
OIL, 13			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 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	0.00
 
OIL, 15			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 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	0.00
 
OIL, 18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 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	0.00
 
OIL, 20			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 21			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 22			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 23			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 24			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 26			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 27			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 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	0.00
 
OIL, 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	0.00
 
OIL, 30			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 31			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 32			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 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	0.00
 
OIL, 34			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 35			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 36			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
 
OIL, 37			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	1.28	1.85	1.90	1.90	1.39	1.83	0.00	0.00	0.00	0.00	0.00	0.00	1.69
STD DEV	.46	.75	.97	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.
PERIOD (SEC)													
MEAN	11.61	11.05	11.05	12.08	14.06	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.
DIRECTION													
COASTAL SECTION													
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
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.
BREAKER TYPE													
100% 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	10.51	50.00	0.00	0.00	0.00	0.00	0.00	0.00	4.81
SURGE	0.00	0.00	0.00	0.00	10.53	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.
CURRENT OBS. (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.
FORESHORE SLOPE													
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.
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.	19.	20.	20.	21.	20.	6.	0.	0.	0.	0.	0.	0.	106.
CUSPS % 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.	19.	20.	20.	21.	20.	6.	0.	0.	0.	0.	0.	0.	106.

CALIFORNIA

WIND ROSES 5367 CAPITOLA

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

RANGE REFERENCE

DATA BASED ON OBSERVATIONS
COLLECTED DURING THE PERIOD
05 NOV 70 TO 09 JUN 72

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)													
MEAN	3.19	3.02	3.09	2.79	2.67	2.67	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	1.35	1.43	1.44	1.69	1.38
NO. OBS.	58.	61.	66.	56.	52.	52.	18.	21.	131.	91.	91.	41.	786.
PERIOD (SEC)													
MEAN	12.18	13.55	13.72	13.69	14.03	13.68	15.11	16.56	14.73	13.40	12.88	12.26	13.64
STD DEV	2.65	3.41	2.22	2.39	3.13	2.85	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.	89.	84.	764.
DIRECTION													
CROSS SECTOR													
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	4.00	0.00	11.11	0.00	7.69	9.09	0.00	5.66	8.69	8.62	0.00	4.66	5.49
E	46.00	80.95	66.67	90.91	92.31	90.91	100.00	86.24	80.00	79.41	94.29	95.12	86.81
SE	4	0.00	19.05	11.76	0.00	0.00	0.00	1.76	8.69	11.76	5.71	0.00	7.33
S	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
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.37
NO. OBS.	25.	21.	18.	11.	13.	11.	2.	17.	45.	34.	15.	41.	273.
COMPASS SECTOR													
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	1.43	0.00	0.00	0.00	0.21
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	2.08	0.00	0.00	0.00	0.00	0.00	18.59	0.00	0.00	0.00	2.28
SW	17.24	0.00	2.13	0.00	0.00	0.00	0.00	0.00	4.59	7.64	3.57	8.16	3.94
NO. OBS.	3	17.24	95.63	95.74	100.00	100.00	100.00	100.00	86.00	86.24	96.03	86.80	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	0.21
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	0.21
NO. OBS.	3.45	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04
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
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
NO. OBS.	26.	37.	48.	47.	41.	34.	18.	5.	78.	51.	56.	44.	484.
BREAKER TYPE													
DOCC	21.33	13.34	21.31	13.34	15.34	16.00	57.14	27.27	10.00	2.15	5.56	21.74	15.75
SPILL	28.07	18.33	6.14	5.26	7.69	20.00	0.00	27.27	0.23	12.90	15.56	26.09	14.21
PLUNGE	49.12	51.67	73.85	47.66	76.92	64.00	33.71	50.00	86.77	82.80	77.78	51.09	68.12
SURGE	1.75	6.67	4.62	3.57	0.00	0.00	7.14	0.00	1.08	1.08	1.79	1.09	1.79
NO. OBS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08	1.08	0.00	0.13
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
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
NO. OBS.	37.	60.	65.	56.	52.	50.	18.	22.	130.	43.	40.	42.	761.
CURRENT OBS.													
(PI/SEC)													
MEAN	0.33	0.01	0.07	0.06	0.06	0.03	0.01	0.08	0.01	0.17	0.12	0.03	0.00
STD DEV	0.39	0.34	0.22	0.17	0.18	0.32	0.07	0.51	0.34	0.33	0.33	0.43	0.32
NO. OBS.	42.	36.	56.	40.	38.	43.	6.	16.	64.	57.	51.	54.	526.
FORESHORE SLOPE													
MEAN (FOU)	5.47	5.78	6.94	3.11	3.44	3.70	4.30	4.13	4.64	7.76	8.06	6.83	5.40
STD DEV	2.29	2.06	2.33	1.56	2.02	1.62	1.16	1.09	2.82	3.39	2.42	2.32	2.81
NO. OBS.	47.	41.	40.	46.	34.	44.	10.	16.	87.	54.	51.	54.	544.
RIPS													
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
MEAN	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
NO. OBS.	60.	60.	71.	61.	54.	54.	14.	22.	132.	44.	44.	46.	816.
CUSPS													
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
MEAN	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
NO. OBS.	60.	60.	71.	61.	54.	54.	14.	22.	132.	44.	44.	46.	816.

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.
SURF OBS.													
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	57.	51.	51.	50.	215.
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.					
PERIOD (SEC)													
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	1.94	1.79	1.60	1.52	1.81
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	46.	57.	46.	208.
DIRECTION													
COMPASS SECTOR													
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
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	8.16	6.10
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.74	86.24	9.31	89.60	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	2.04	1.41
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	57.	51.	56.	49.	213.
BREAKER TYPE													
XOCC SPILL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.93	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	92.88	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	1.75	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.
CURRENT OBS.													
(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.
FORESHORE SLOPE													
MEAN (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	10.73	9.69	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.
RIPS													
X UCC	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
MEAN SPAC.	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.
CUSPS X OCC.													
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	43.68
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.
SURE OBS.													
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	1.00	1.04	1.16	.81	1.21	1.58	1.08	0.00	0.00	0.00	1.46
NO. OBS.	10.	4.	14.	15.	12.	8.	12.	5.	12.	0.	0.	0.	116.
PERIOD (SEC)													
MEAN	11.13	10.13	13.38	14.05	15.63	16.60	14.95	15.90	17.87	0.00	0.00	0.00	14.17
STD DEV	2.04	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.
DIRECTION													
COMPASS SECTOR													
0 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	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	0.00	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	15.36	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	0.00
NO. OBS.	28.	4.	15.	15.	12.	8.	10.	5.	13.	0.	0.	0.	111.
ROFAKER TYPE													
XOCC SPILL	23.33	25.00	33.33	51.33	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	40.00	75.00	0.00	0.00	0.00	51.00
SURGE	3.33	0.00	20.00	13.33	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	6.19
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.	10.	4.	15.	15.	12.	8.	12.	5.	12.	0.	0.	0.	113.
CURRENT OBS.													
(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	.25	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.	69.
FUNESHORE SLOPE													
MEAN (DEG)	6.05	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.	89.
RIPS													
X UCC	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
MEAN SPAC.	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.	12.	4.	18.	17.	12.	8.	12.	5.	13.	0.	0.	0.	121.
CUSPS & OCC.													
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	44.57
NO. OBS.	12.	4.	18.	17.	12.	8.	12.	5.	13.	0.	0.	0.	121.

SOC'S TIDE LINES

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.
SURF OBS.													
HEIGHT (FT)	0.00	3.00	3.15	2.65	3.03	3.19	2.50	2.50	2.93	3.18	4.46	3.76	3.21
MEAN	0.00	1.34	1.33	1.32	1.30	1.22	.31	.31	1.92	1.68	1.24	1.36	1.27
STD DEV	0.00	32.	33.	31.	32.	31.	2.	2.	43.	28.	26.	24.	269.
NO. OBS.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PERIOD (SEC)													
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.
DIRECTION													
COASTAL SECTOR													
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
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.	27.	20.	27.	29.	111.
COMPASS SECTOR													
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	100.00	93.94	93.75	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	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.	33.	33.	32.	29.	31.	0.	0.	0.	0.	0.	0.	156.
BEACH TYPE													
ROCK SPILL	0.00	28.13	9.38	6.90	0.00	7.14	0.00	0.00	2.33	0.00	0.00	3.57	6.43
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	65.63	90.63	93.10	100.00	92.86	100.00	100.00	95.35	82.74	60.00	53.57	10.14
SINGLE	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	42.86	8.79
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	1.07
NO. OBS.	0.	32.	32.	29.	31.	28.	2.	2.	43.	24.	25.	26.	280.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	0.00	0.05	0.07	0.04	0.11	0.15	0.00	0.02	0.10	0.09	0.04	0.24	0.06
GROSS MEAN	0.00	0.13	0.18	0.11	0.15	0.29	0.00	0.00	0.19	0.16	0.28	0.47	0.21
STD DEV	0.00	0.19	0.25	0.23	0.23	0.40	0.00	0.26	0.32	0.23	0.41	0.58	0.29
NO. OBS.	0.	15.	23.	22.	22.	22.	2.	2.	24.	16.	13.	16.	182.
FORESHORE SLOPE													
FLAT (FO)	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	1.86	1.27	2.11	1.17	.31	0.00	0.83	1.86	1.05	1.84	1.61
NO. OBS.	0.	22.	16.	26.	21.	23.	2.	1.	36.	15.	14.	16.	186.
RIPS													
MEAN	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
SPAC.	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	35.00	110.00	0.00	50.00	43.01
NO. OBS.	0.	34.	34.	34.	33.	32.	2.	2.	43.	29.	29.	29.	301.
CUSPS & OCC.													
MEAN	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
SPAC.	0.00	00.00	70.00	122.08	89.47	106.05	120.50	120.00	109.14	120.45	0.00	78.33	68.17
NO. OBS.	0.	34.	34.	34.	33.	32.	2.	2.	43.	29.	24.	29.	301.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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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	12.39	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													
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	11.11	0.00	11.11	9.09	0.00	6.67	0.00	0.00	0.00	8.33	4.08
2	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
3	0.00	25.00	22.22	9.09	0.00	0.00	0.00	6.67	11.11	28.57	0.00	0.00	10.88
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	0.00
NO. OBS.	15.	16.	18.	11.	9.	11.	0.	15.	18.	14.	8.	12.	147.

BREAKER TYPE

20CC 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
41.18	35.00	22.22	25.00	44.44	71.43	71.43	0.00	33.33	57.89	35.71	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	57.14	25.00	8.33	33.54
SHRGE	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.

(FT/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	.67	.45
NO. OBS.	18.	17.	19.	11.	7.	13.	0.	14.	19.	14.	8.	12.	152.

FURESHORE SLOPE

MEAN (DEG)	4.18	6.60	5.80	3.00	1.80	3.92	0.00	4.27	3.84	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 % OCC

MEAN SPAC.	0.00	5.26	26.32	8.33	22.22	42.86	0.00	6.67	16.84	92.86	25.00	8.33	24.53
NO. OBS.	18.	19.	19.	12.	9.	14.	0.	15.	19.	14.	8.	12.	159.

CUSPS % OCC

MEAN SPAC.	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
NO. OBS.	18.	20.	19.	12.	9.	14.	0.	15.	19.	14.	8.	12.	160.

5005 TWIN LAKES		SUMMARY FOR PERIOD STARTING 1- 1-72 AND ENDING 2-16-72.												
		CALIFORNIA												
		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	0.00	4.13
STD DEV	1.32	1.22	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.	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	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	0.00	2.85
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
DIRECTION														
COASTAL SECTOR														
Q 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	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	0.00
3	90.00	100.00	0.00	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	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	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.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
BREAKER TYPE														
Q 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	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	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	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	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.	10.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
CURRENT OBS.														
(FT/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	0.00	.82
GROSS MEAN	.89	.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.85
STD DEV	.52	.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.34
NO. OBS.	10.	5.	0.	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	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	0.00	1.62
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
RIPS														
% OCC	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
MEAN SPAC.	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.33
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
CUSPS														
% OCC.	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
MEAN SPAC.	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.33
NO. OBS.	10.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.

CALIFORNIA

WIND ROSES 05005 TWIN LAKES

JANUARY

FEBRUARY

MARCH

APRIL

ANNUAL AVERAGE

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

WIND ROSES ON OBSERVATIONS
COLLECTED DURING THE PERIOD
01 SEP 68 TO 15 FEB 72

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS. HEIGHT (FT)	2.35	1.62	2.27	2.75	2.63	1.92	1.37	1.44	2.15	2.22	1.42	2.39	2.13
	1.56	1.40	1.33	2.53	1.27	.90	.64	.75	1.18	1.53	.79	1.27	1.79
	37.	11.	37.	69.	62.	50.	49.	34.	33.	27.	30.	36.	483.
	NO. OBS.												
PERIOD (SEC)	10.32	11.01	13.48	11.95	12.16	11.07	11.07	10.42	12.06	12.16	12.33	13.20	11.86
	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN
	3.50	3.67	1.92	2.75	2.69	3.08	2.89	2.39	4.06	1.94	3.33	2.99	3.05
	NO. OBS.	9.	18.	66.	61.	50.	49.	34.	33.	27.	33.	33.	475.
DIRECTION COASTAL SECTOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIRECTION COMPASS SECTOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BREAKER TYPE	92.63	100.00	46.65	31.62	32.26	10.20	2.04	0.00	0.00	42.66	52.63	36.11	29.38
	TOCC	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL	BPPL
	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
	NO. OBS.												
CURRENT OBS. (FT/SEC)	.50	.55	.28	.21	.12	.12	.07	.05	.08	.24	.19	.50	.20
	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN	NET MEAN
	45	45	22	21	14	15	13	105	108	38	43	48	30
	NO. OBS.	24.	9.	39.	37.	49.	33.	29.	31.	23.	23.	23.	320.
FORESHORE SLOPE	6.33	4.05	3.67	3.65	3.65	5.62	6.50	5.90	6.61	7.20	7.13	6.41	5.86
	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)	MEAN (SEC)
	2.31	1.00	1.62	2.23	2.56	2.23	2.16	3.57	5.31	4.33	2.92	3.16	3.16
	NO. OBS.	24.	22.	16.	43.	29.	36.	29.	31.	40.	26.	22.	327.
RIPES % OCC	0.00	18.18	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.78	.82
	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN
	36.	36.	36.	36.	36.	36.	36.	36.	36.	36.	36.	36.	36.
	NO. OBS.												
CURVES % OCC	10.53	18.18	42.11	49.28	44.44	90.00	8.16	0.00	0.00	0.00	10.26	2.78	24.18
	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN
	66.25	21.00	184.13	110.38	169.89	166.28	32.75	0.00	0.00	0.00	30.00	15.00	62.77
	NO. OBS.	16.	11.	36.	89.	81.	49.	34.	33.	26.	39.	39.	486.

SURF URS.
HEIGHT (FT)MEAN
STD DEV
NO. OBS.

PERIOD (SEC)

MEAN
STD DEV
NO. OBS.DIRECTION
COMPASS SECTORD OCC. N
E
S
W
CALM
NO. OBS.BREAKER TYPE
XORC SPILL
SP/PL
PLUNGE
SURGE
CALM
NO. OBS.CURRENT URS.
(FT/SEC)

NET MEAN

GROSS MEAN
STD DEV
NO. OBS.FORESHORE SLOPE
MEAN (DEG)
STD DEV
NO. OBS.RIPS. X OCC
MEAN SPAC
NO. OBS.CUSPS X OCC
MEAN SPAC
NO. OBS.

JAN

FEB

MARCH

APRIL

MAY

JUNE

JULY

AUG

SEPT

OCT

NOV

DEC

ALL OBS.

5001 NEW HEIGHTION

CALIFORNIA

SUMMARY FOR PERIOD STARTING 3- 9-69 AND ENDING 12-28-69.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURE 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	1.39	.93	.64	.75	1.18	.79	.79	1.27	1.49
NO. OHS.	0.	0.	32.	46.	47.	47.	46.	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	2.69	2.39	4.06	1.59	3.33	2.99	2.98
NO. OHS.	0.	0.	32.	46.	47.	47.	46.	34.	33.	26.	33.	33.	380.
DIRECTION													
COMPASS SECTION													
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	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 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.	46.	34.	33.	26.	37.	35.	384.
WAKEUP TYPE													
XUCC SPILL	0.00	0.00	40.63	2.17	14.89	6.38	2.04	0.00	0.00	44.44	52.63	34.11	18.04
PLUNGE	0.00	0.00	59.38	97.83	80.85	91.49	73.47	67.65	100.00	44.44	36.84	61.11	73.20
SINGE	0.00	0.00	0.00	0.00	0.00	2.13	24.49	32.35	0.00	11.11	5.26	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	2.78	1.77
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	32.	27.	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	.07	.05	.08	.25	.19	.50	.18
STD DEV	0.00	0.00	.24	.23	.16	.16	.13	.05	.08	.43	.43	.48	.27
NO. OHS.	0.	0.	21.	26.	30.	27.	33.	29.	31.	24.	23.	23.	267.
FORESHORE SLUPE													
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	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
MEAN SPAC.	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.	46.	34.	33.	27.	39.	36.	390.
CUSPS & UCC.													
MEAN SPAC.	0.00	0.00	44.84	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	125.73	111.45	112.67	106.28	32.35	0.00	0.00	0.00	3.00	15.00	58.15
NO. OHS.	0.	0.	32.	46.	47.	47.	49.	34.	33.	27.	39.	36.	390.

SUMMARY FOR PERIOD STARTING 10- 4-71 AND ENDING 10- 4-71.

CALIFORNIA

5001 NEW ORLEANS

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL MHS.
SURF. UNITS													
MEAN (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.
PERIOD (SEC)													
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.
DIRECTION													
COASTAL SECTOR													
0.00C.	0.00	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
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.
BREAKER TYPE													
0.00C. 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	0.00	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.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
CURRENT OBS.													
(FT/SEC)													
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.
FOUR SHORE SLUPE													
MEAN (FT)	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.
RIPS													
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.	1.	0.	0.	1.
CUSPS													
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.	1.	0.	0.	1.

CALIFORNIA

WIND ROSES 5001 NEW BRICHTON

JANUARY

MARCH

APRIL

ANNUAL AVERAGE

AUGUST

JULY

JUNE

MAY

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

WIND ROSES ON OBSERVATIONS
COLLECTED DURING THE PERIOD
05 APR 68 TO 04 OCT 71

5000 SEA CLIFF CALIFORNIA SUMMARY FOR PERIOD STARTING 40 0-08 AND ENDING 12-13-72, ALL OBS.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF OBS.													
HEIGHT (FT)	2.87	3.15	2.56	2.48	2.66	2.46	2.05	1.72	1.72	2.30	3.05	3.56	2.51
MEAN	1.46	1.57	1.30	1.05	1.09	.95	.69	1.00	.91	.98	1.00	1.51	1.30
STD DEV	1.56	1.37	.55	.61	.61	.61	.61	.61	.61	.47	.40	.61	.61
NO. OBS.	50	50	50	50	50	50	50	50	50	50	50	50	50
PERIOD (SEC)													
MEAN	10.44	11.20	12.72	10.95	11.70	12.13	12.33	12.57	12.55	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	3.16	3.56
NO. OBS.	50	50	50	50	50	50	50	50	50	50	50	50	50
DIRECTION													
COASTAL SECTOR													
0 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	25.00	0.00	2.36	0.00	4.17	0.00	10.00	3.25
3	0.00	75.00	100.00	83.33	80.00	92.50	95.83	90.83	86.67	70.83	38.89	55.00	78.86
4	20.00	16.87	0.00	0.00	20.00	12.50	0.00	7.14	6.67	12.50	61.11	35.00	18.23
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	0.00	0.00	0.00	.81
NO. OBS.	20	12	25	12	3	16	22	42	30	24	18	20	246
COMPASS SECTOR													
0 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	.24
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	.71
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	8.12	3.09
30-20	2.00	30.00	30.00	47.06	27.78	30.95	15.00	17.39	46.68	50.00	20.00	69.39	36.10
SW	60.00	66.67	46.67	45.10	46.52	69.03	77.50	73.91	53.13	50.00	80.00	26.49	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	.48
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	421
BREAKER TYPE													
TOCC SPILL	33.33	13.31	24.07	47.69	27.67	21.34	27.62	28.36	28.69	8.51	7.50	27.94	26.12
SP/PL	16.66	13.81	18.52	12.51	16.64	7.69	19.35	34.33	15.64	4.26	15.00	7.35	13.64
PLUNGE	28.00	45.95	27.78	16.62	40.98	40.00	30.65	25.37	10.14	34.04	52.50	48.53	31.93
SURGE	28.00	27.73	28.63	23.08	29.51	30.77	22.56	11.64	48.93	51.06	25.00	18.18	28.16
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13	0.00	0.00	.15
NO. OBS.	50	50	50	50	50	50	50	50	50	47	40	68	669
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.27	.29	.26	.17	.27	.24	.15	.04	.09	.15	.17	.21	.20
GROSS MEAN	.40	.37	.31	.21	.33	.31	.22	.17	.16	.28	.18	.32	.28
STD DEV	.46	.48	.45	.25	.45	.40	.35	.17	.19	.24	.18	.40	.31
NO. OBS.	38	26	51	52	46	60	59	65	67	46	33	61	607
FORESHORE SLOPE													
MEAN (OBS)	0.15	0.05	3.08	6.12	8.17	8.00	8.80	9.00	9.97	8.74	8.56	5.62	7.44
STD DEV	5.57	2.35	1.06	2.36	2.30	2.99	3.04	3.19	2.42	2.82	4.66	2.90	3.39
NO. OBS.	88	37	52	51	47	59	59	64	67	47	34	65	624
RIPS & OCC													
MEAN SPAC.	160.00	100.00	805.63	366.67	172.00	360.00	170.00	55.00	235.00	343.78	0.00	250.00	209.61
NO. OBS.	57	38	58	66	64	66	63	67	69	46	40	71	705
CUSPS & OCC.													
MEAN SPAC.	177.50	177.50	41.07	39.39	29.69	22.73	9.52	0.32	2.90	8.33	22.50	19.72	18.58
STD DEV	57.00	57.00	67.24	71.73	62.11	66.33	59.17	67.00	87.50	60.75	71.11	72.14	75.25
NO. OBS.	57	56	56	66	64	66	63	67	69	48	40	71	705

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SWELL (FT)													
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	2.72	1.66	1.56	1.87	1.71	1.98	1.02	1.97
NO. OBS.	0.	0.	0.	20	34.	25.	23.	15.	13.	8.	21.	34.	208.
PERIOD (SEC)													
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	2.35	1.34	2.33	1.44	2.65	1.96	2.44
NO. OBS.	0.	0.	0.	31.	35.	27.	23.	15.	13.	7.	21.	34.	208.
DIRECTION COMPASS SECTION													
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
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	36.16	44.94	13.04	0.00	8.33	0.00	0.00	8.82	3.50
W	0.00	0.00	0.00	25.00	57.56	55.36	86.96	100.00	91.67	100.00	20.00	55.88	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	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	7.14	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.	28.	33.	27.	23.	15.	12.	8.	20.	34.	208.
BREAKER TYPE													
ROCK 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
SHOUL	0.00	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	10.00	39.39	52.26	50.00	60.00	0.00	0.00	0.00	0.00	0.00
SURGE	0.00	0.00	0.00	0.00	0.00	0.00	36.36	33.33	23.08	75.00	80.95	67.65	49.75
CALM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.52	2.94	24.14
NO. OBS.	0.	0.	0.	30.	33.	27.	22.	15.	13.	8.	21.	34.	208.
CURRENT ORS. (FT/SEC)													
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	-0.37	-0.23	-0.25	-0.11	-0.16	-0.18	-0.08	-0.19	-0.15	-0.22
NO. OBS.	0.	0.	0.	20.	23.	22.	19.	15.	13.	7.	18.	30.	167.
FORESHORE SLOPE													
MEAN (DEG)	0.00	0.00	0.00	7.45	8.26	9.71	11.26	13.50	12.08	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.
RIPS % OCC													
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
NO. OBS.	0.	0.	0.	31.	35.	28.	23.	15.	13.	8.	21.	35.	208.
CUSPS % OCC													
MEAN SPAC.	0.00	0.00	0.00	41.94	14.29	3.57	0.00	0.00	0.00	12.50	38.10	8.57	14.83
NO. OBS.	0.	0.	0.	87.31	112.00	150.00	0.00	0.00	0.00	50.00	76.25	30.00	46.50
NO. OBS.	0.	0.	0.	31.	35.	28.	23.	15.	13.	8.	21.	35.	208.

500A SEA CLIFF

CALIFORNIA

SUMMARY FOR PERIOD STARTING

1- 1-69 AND ENDING 12-30-69.

SURF OBS. HEIGHT (FT)	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
MEAN	2.71	3.02	2.84	3.05	2.95	2.95	2.07	2.00	1.95	3.08	0.00	4.91	2.85
STD DEV	1.5A	1.47	.99	1.24	1.53	.67	.87	.62	.63	.64	0.00	2.02	1.36
NO. OBS.	24.	21.	25.	21.	22.	20.	17.	7.	20.	13.	0.	11.	205.
PERIOD (SEC)													
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	3.01	2.76	2.98	3.31	1.64	3.20	1.32	3.17	3.11	0.00	3.15	3.17
NO. OBS.	26.	21.	25.	22.	24.	20.	16.	8.	20.	13.	0.	15.	212.
DIRECTION													
COMPASS SECTOR													
0 DEC. N	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	.49
NE	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
SE	7.14	9.52	4.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	2.94
S	17.46	9.52	16.00	27.27	14.29	6.87	17.65	50.00	70.00	83.33	0.00	100.00	32.84
SW	75.00	60.95	0.00	72.73	85.71	93.33	68.71	25.00	30.00	16.67	0.00	0.00	62.85
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
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.	26.	21.	25.	22.	21.	15.	17.	8.	20.	12.	0.	15.	204.
BREAKER TYPE													
XOCC SPILL	23.0A	15.00	12.50	31.82	30.43	15.00	47.06	67.50	45.00	30.77	0.00	28.57	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	38.46	60.00	50.00	31.82	32.17	35.00	35.29	12.50	15.00	61.54	0.00	64.29	42.03
SURGE	18.46	25.00	31.50	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.	8.	20.	13.	0.	14.	207.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	.00	.13	-.26	.034	.035	.18	.15	.03	.05	.30	0.00	.043	.20
GROSS MEAN	.16	.23	.29	.38	.38	.31	.19	.15	.05	.02	0.00	.74	.29
STD DEV	.15	.20	.22	.43	.45	.28	.11	.13	.11	.27	0.00	.62	.32
NO. OBS.	21.	21.	22.	19.	18.	20.	17.	8.	20.	13.	0.	16.	195.
FOR SHORE SLOPE													
MEAN (DEG)	8.76	5.33	4.09	5.07	8.74	7.21	0.88	10.13	10.94	10.42	0.00	5.13	7.45
STD DEV	3.74	2.27	.75	1.81	2.26	1.97	1.96	2.42	1.43	4.23	0.00	2.73	3.64
NO. OBS.	21.	21.	22.	19.	19.	19.	17.	8.	18.	12.	0.	16.	192.
RIPS													
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	205.43	450.00	236.27	0.00	0.00	40.00	0.00	343.75	0.00	300.00	188.69
NO. OBS.	20.	21.	25.	22.	24.	20.	17.	8.	20.	13.	0.	16.	215.
CUSPS X OCC.													
MEAN SPAC.	3.45	23.81	72.00	54.55	58.33	45.00	17.65	0.00	0.00	23.08	0.00	62.50	34.88
NO. OBS.	16.50	86.80	98.33	51.75	71.43	61.67	43.33	0.00	0.00	75.00	0.00	80.50	75.31
NO. OBS.	20.	21.	25.	22.	24.	20.	17.	8.	20.	13.	0.	16.	215.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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	.85	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													
% 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	66.67	80.00	100.00	100.00	0.00	100.00	100.00	100.00	0.00	0.00	0.00	100.00	2.22
4	33.33	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.44
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	13.33
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.	12.	10.	8.	4.	0.	3.	4.	3.	0.	0.	0.	1.	45.
BREAKER TYPE													
%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	50.00	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	19.15
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	0.00	.42	.26	.40	0.00	.06	.34	.21	0.00	0.00	0.00	0.00	.33
STD DEV	0.00	.60	.37	.46	0.00	.47	.34	.31	0.00	0.00	0.00	0.00	.23
NO. OBS.	1.	2.	7.	4.	0.	4.	4.	2.	0.	0.	0.	0.	24.
FORFESHORE SLOPE													
MEAN (DEC)	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	0.00	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.	12.	11.	8.	4.	0.	4.	4.	3.	0.	0.	0.	1.	47.
CUSPS % OCC	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
MEAN SPAC.	0.00	107.33	0.00	0.00	0.00	95.00	65.00	0.00	0.00	0.00	0.00	0.00	37.57
NO. OBS.	12.	11.	8.	4.	0.	4.	4.	3.	0.	0.	0.	1.	47.

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

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

SURF DRS.		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
HEIGHT (FT)	MEAN	0.00	0.00	0.00	0.00	3.22	2.07	3.62	3.43	3.53	4.93	4.70	0.00	3.79
	STD DEV	0.00	0.00	0.00	0.00	1.06	.67	1.01	1.14	.84	.91	1.34	0.00	1.24
	NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	55.	54.	60.	0.	378.
PERIOD (SEC)	MEAN	0.00	0.00	0.00	0.00	10.90	9.98	12.53	13.61	13.40	13.40	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.
DIRECTION	COMPASS	0.00	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	0.00	0.00	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.
BREAKER TYPE	XOCC 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
	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
CURRENT DRS.	SURGE	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	26.67	0.00	8.67
	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.	0.	0.	0.	0.	39.	50.	58.	53.	57.	52.	60.	0.	369.
CURRENT DRS.	(FT/SEC)	0.00	0.00	0.00	0.00	-77	-73	-62	-76	-43	-50	-1.12	0.00	-71
	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
	NO. OBS.	0.	0.	0.	0.	21.	29.	29.	29.	27.	28.	31.	0.	194.
SEASHORE SLOPE	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	.62	.71	1.24	.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.
SHIPS	X OCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	.53
	MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	31.58
	NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	380.
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	10.00	0.00	1.58
	STD DEV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	156.33	0.00	25.00
	NO. OBS.	0.	0.	0.	0.	41.	55.	60.	53.	57.	54.	60.	0.	380.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF ORS.													
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	3.86
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	1.60	1.00	1.10	1.00	.40	.80	3.00	0.00	1.50	7.40
NO. OBS.	0.00	0.00	0.00	160	100	110	90	40	80	30	0.00	150	740
PERIOD (SEC)													
MEAN	0.00	0.00	0.00	10.68	12.92	11.81	11.42	9.33	12.41	10.90	0.00	18.09	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	2.94
NO. OBS.	0.00	0.00	0.00	100	100	110	80	40	80	30	0.00	140	740
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	70.00	42.86	100.00	75.00	66.67	0.00	69.23	47.14
W	0.00	0.00	0.00	75.00	77.78	30.00	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.	0.00	0.00	0.00	160	90	100	70	40	80	30	0.00	130	740
HFRAKER TYPE													
X OCC SPIEL	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.	0.00	0.00	0.00	160	100	110	70	40	80	30	0.00	130	740
CURRENT ORS.													
(FT/SEC)													
NET MEAN	0.00	0.00	0.00	-43	23	22	-94	-193	96	-108	0.00	-64	-51
GROSS MEAN	0.00	0.00	0.00	97	82	117	161	193	110	95	0.00	97	110
STD DEV	0.00	0.00	0.00	66	72	109	77	156	67	71	0.00	108	93
NO. OBS.	0.00	0.00	0.00	160	100	110	70	40	80	30	0.00	150	740
FORESHORE 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.	0.00	0.00	0.00	150	90	110	70	40	80	20	0.00	150	710
RIPS X OCC													
MEAN SPAC.	0.00	0.00	0.00	53.13	0.00	0.00	14.29	0.00	0.00	33.33	0.00	66.67	24.24
NO. OBS.	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
CUSPS X OCC													
MEAN SPAC.	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	33.33	0.00	40.00	14.81
NO. OBS.	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
						40	70	40	80	30	0.00	130	540

SUNOT SUNSET HEAD

CALIFORNIA

SUMMARY FOR PERIOD STARTING 1-4-70 AND ENDING 12-31-70.

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF (HRS.)													
HEIGHT (FT)	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	.90	.51	.46	1.76	0.00	0.00	0.00	0.00	0.00	0.00	.81	1.21
NO. OBS.	13	9	8	6	13	0	0	0	0	0	0	21	76
PERIOD (SEC)													
MEAN	11.45	9.49	11.71	11.04	10.81	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	1.91	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
DIRECTION													
COASTAL SECTOR													
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	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	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
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	6	13	0	0	0	0	0	0	21	40
COMPASS SECTOR													
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	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
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	41.53	71.43	14.29	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	26.67	0.00	57.14	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	14.29	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.	15	7	7	2	0	0	0	0	0	0	0	0	31
REFRACTION TYPE													
EXC 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
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	11.76	11.11	12.50	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
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.	11	11	8	0	0	0	0	0	0	0	0	0	0
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-0.03	.17	-0.03	-0.07	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.20	-0.13
STD DEV	.74	.77	.32	.20	.50	0.00	0.00	0.00	0.00	0.00	0.00	.76	.64
NO. OBS.	1	9	28	21	47	0	0	0	0	0	0	18	73
FURROWSHINE SLIPE													
MEAN (FT)	4.72	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	1.07	1.27	1.13	.89	1.94	0.00	0.00	0.00	0.00	0.00	0.00	1.28	1.45
NO. OBS.	16	9	8	8	13	0	0	0	0	0	0	16	72
RIPS													
MEAN SPAC	35.13	35.13	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	6.22
STD DEV	30.00	30.00	47.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	107.87
NO. OBS.	13	8	8	0	13	0	0	0	0	0	0	22	75
CUSPS													
MEAN SPAC	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	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.50	184.01
NO. OBS.	16	8	8	0	13	0	0	0	0	0	0	22	71

		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
SURF DRS. HEIGHT (FT)	MEAN	2.44	2.73	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	3.20	3.13	2.81
	STD DEV	.89	.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.51	.94	.74	.81
	NO. OBS.	16.	11.	1.	0.	0.	0.	0.	0.	0.	15.	15.	15.	75.
PERIOD (SEC)	MEAN	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
	STD DEV	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
	NO. OBS.	16.	9.	1.	0.	0.	0.	0.	0.	0.	15.	16.	15.	72.
DIRECTION														
COASTAL SECTION														
a 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	0.00	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	0.00
	0.00	0.00	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	0.00	70.59	0.00	0.00	17.57
	75.00	72.73	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76	81.25	30.77	54.05
	18.75	27.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76	18.75	69.23	27.03
	PLUNGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.68	0.00	0.00	1.35
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	0.00
	0.00	0.00	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.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	13.	74.
CURRENT DRS.														
(FT/SEC)	NET MEAN	-23.	-0.04	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	.83
	NO. OBS.	12.	7.	1.	0.	0.	0.	0.	0.	0.	17.	15.	15.	67.
FORF SHORE SLOPE														
MEAN (DEG)	2.50	2.19	2.00	0.00	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	0.00	64.71	0.00	0.00	14.47
	0.00	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
	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.	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	0.00	29.41	0.00	0.00	6.58
	0.00	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
	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.	11.	1.	0.	0.	0.	0.	0.	0.	17.	16.	15.	76.

5007 SHIPSET BEACH

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	.83
NO. OBS.	23.	15.	10.	5.	17.	3.	0.	1.	9.	5.	2.	10.	100.
PERIOD (SEC)													
MEAN	11.27	11.51	11.08	9.08	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	0.23	1.53	0.00	0.00	1.93	2.06	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. 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
D 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
D OCC. 3	100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	8.33	20.00	0.00	0.00	1.94
D OCC. 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
D 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	8.33	0.00	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	12.87
SP/PL	47.83	60.00	100.00	100.00	62.50	100.00	0.00	100.00	30.00	40.00	33.33	60.00	58.42
PLUNGE	21.74	20.00	0.00	0.00	18.75	0.00	0.00	0.00	70.00	60.00	66.67	40.00	27.72
SURGE	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.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.													
(FI/SEC)													
NET MEAN	-.44	-.30	-.27	-.37	-.58	-.02	0.00	0.00	-.10	.57	-.21	-.31	-.32
GROSS MEAN	.58	.02	.53	1.03	.74	.92	0.00	0.00	.84	1.07	.21	.51	.70
STD DEV	.41	.41	.42	.52	.45	.79	0.00	0.00	1.46	.08	.62	.36	.62
NO. OBS.	23.	15.	11.	4.	16.	3.	0.	1.	11.	5.	2.	10.	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	1.37	.90	.63	.45	.66	.58	0.00	0.00	1.57	1.67	1.00	1.39	1.39
NO. OBS.	23.	15.	10.	5.	16.	3.	0.	1.	11.	5.	3.	10.	102.
RIPS & OCC													
MEAN SPAC.	39.13	13.33	0.00	0.00	5.08	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.	23.	15.	11.	5.	17.	3.	0.	1.	12.	5.	3.	10.	105.
CUSPS & OCC.													
MEAN SPAC.	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	49.31
NO. OBS.	23.	15.	11.	5.	17.	3.	0.	1.	12.	5.	3.	10.	105.

SURF OBS.	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ALL OBS.
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.	7.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
PERIOD (SEC)	10.89	11.01	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.89
MEAN	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
STD DEV	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
DIRECTION													
COSTAL 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	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.
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
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	0.00	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	14.29	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.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
CURRENT OBS.													
(FT/SEC)													
NET MEAN	-0.58	0.00	-0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.32
GROSS MEAN	0.61	0.89	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
STD DEV	0.50	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
FORESHORE SLOPE													
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	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
NO. OBS.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
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.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.
CUSPS % 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.	7.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15.

WIND ROSES 5007 SUNSET

CALIFORNIA

JANUARY

FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

ANNUAL AVERAGE

DATA BASED ON OBSERVATIONS
FROM 1950 TO 1959
21 MAY 68 TO 03 OCT 72

<p>Schneider, Christine</p> <p>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."</p> <p>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</p> <p>TC203 .U58lmr 627</p>	<p>Schneider, Christine</p> <p>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."</p> <p>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</p> <p>TC203 .U58lmr 627</p>
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