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SUSITNA HYDROELECTRIC PROJECT

PROCESSED CLIMATIC DATA

OCTOBER 1981 THRU SEPTEMBER 1982

VOLUME 4

0640 - KOSINA CREEK STATION

DECEMBER 1982

PREPARED BY:



PREPARED FOR:



ALASKA POWER AUTHORITY

CNO 50
r8/s1

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

TASK 3 - HYDROLOGY

PROCESSED CLIMATIC DATA

VOLUME 4
0640 - KOSINA CREEK STATION
OCTOBER 1981 - SEPTEMBER 1982

DECEMBER 1982

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ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

TASK 3 - HYDROLOGY

PROCESSED CLIMATIC DATA

OCTOBER 1981 - SEPTEMBER 1982

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ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

KOSINA CREEK CLIMATIC DATA

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Acknowledgments

These climatic data were collected under contract to Acres American, Incorporated for the Alaska Power Authority's Susitna Hydroelectric Feasibility Study. The data recorders were Model 5100 Weather Wizards manufactured by Meteorology Research, Incorporated (MRI). All sensors were supplied by MRI. Field maintenance and data collection were performed by the hydrology staff of R&M Consultants, Incorporated. Data reduction and processing were performed by Lisa Fotherby, using computer programs developed by Mark Holmstrand. The computer hardware used was a Hewlett-Packard 9845 B system.

HISTORY OF KOSINA CLIMATE STATION (0640)

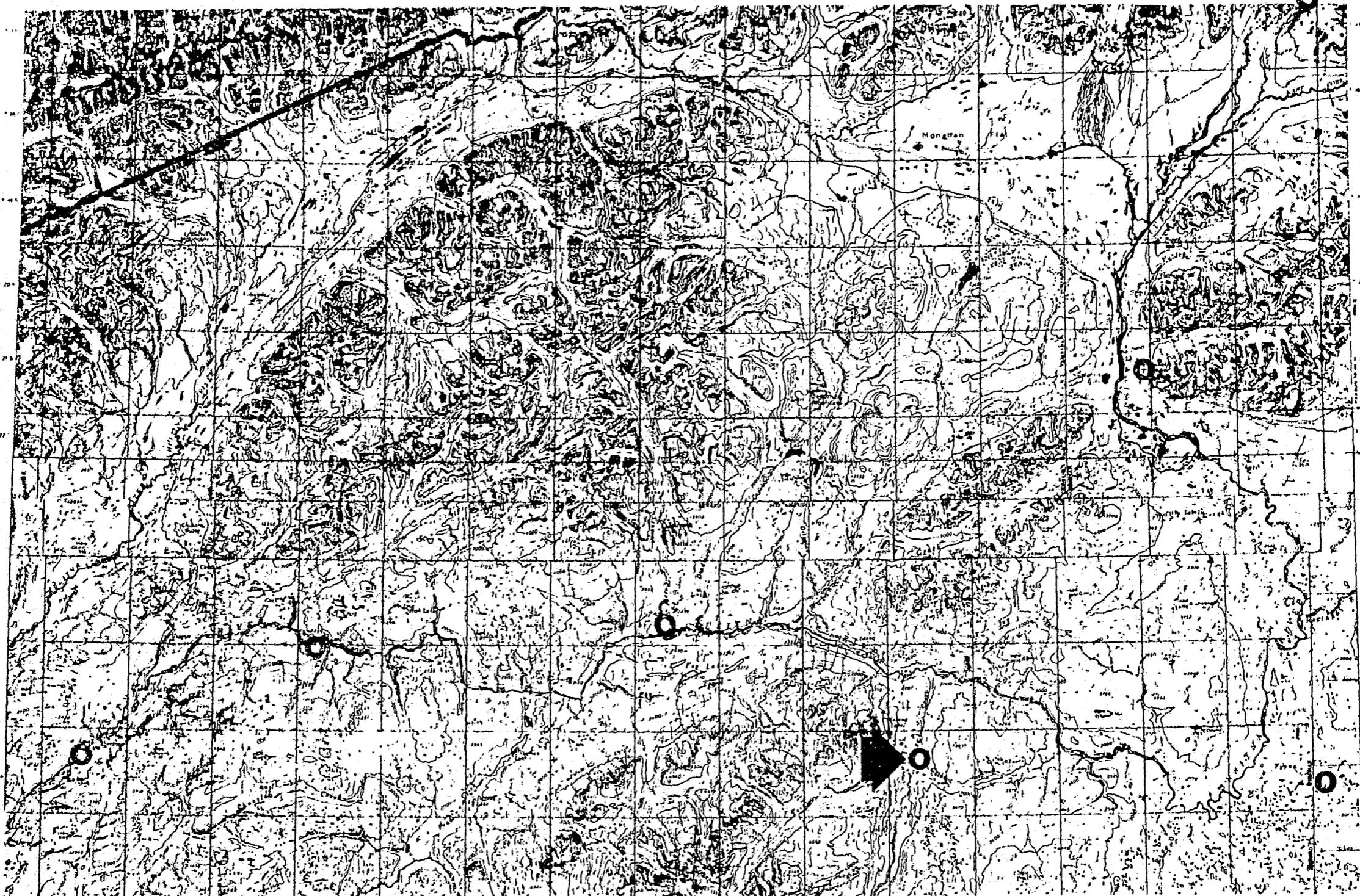
Kosina climate station was installed on August 25, 1980. It sits on a bluff approximately $\frac{1}{2}$ mile upstream of where Tsihi and Gilbert Creeks join together to form Kosina Creek. The mouth of Kosina Creek is at Susitna River Mile 206.9. Kosina Creek station is at an elevation of 2,600 feet above mean sea level.

This station location was chosen to aid the Alaska Department of Fish and Game (ADF&G) with their caribou studies in the area and to satisfy hydrology data requirements for the area south of the Susitna River in the Talkeetna Mountain drainage.

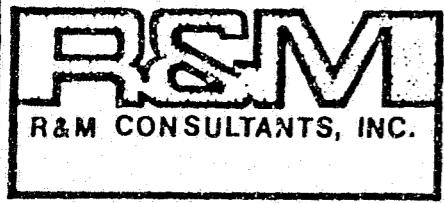
All data for the months of October and December 1981 were lost due to technical problems with the Weather Wizard units. The balance of the data for the water year 1982 is exceptionally clean, with almost 100 percent retrieval.

Previous data reports of this station are:

Processed Climatic Data
Volume 4
Kosina Creek Station
March 1980
For the period: August 1980 - September 1981



PREPARED BY: USGS TALKEETNA MTS. AND HEALY QUADRANGLES APPROX. SCALE 1" = 1 MILE PREPARED FOR:



KOSINA CLIMATE STATION UPPER SUSITNA BASIN

→ : Station Location



INTERPRETING DATA

Missing sections of data can bias or "throw off" the values listed as daily averages in the monthly summary. The user should be aware that daily solar radiation values are averages computed from whatever section of data for the day is available, whether it is extrapolated from a minimum time (night) or a maximum period (noon). The user is advised to become familiar with the methods of summation for each parameter. These are described in the section "Data Computation Standards".

The relative humidity sensors used in the Weather Wizards are printed circuit elements which sense changes in relative humidity by changes in impedance. The chemically treated surfaces of these sensors degrade with time, however, and at an individual rate. Therefore, monthly variations in relative humidity values can occasionally be noted. The variations usually appear as a decrease in the R.H. range for successive months at one station.

Blocks of R.H. readings have been completely eliminated from Watana (0650) and Glacier (0610) climate data. The deterioration patterns of the sensors at these stations were so severe as to make these data unreliable.

The relative humidity sensors will also occasionally transmit values over 100 percent. These values are a system malfunction, but are recorded and appear on the data printout as values less than 10 percent. Therefore, values under 10 percent should not be used for further computations.

Precipitation data from Watana (0650) have been reported for the entire year. The data are collected with a heated precipitation bucket which tests out at 43°F during an air temperature of 18°F. Precipitation data measured at the remaining stations are reported for April through September only. These stations do not have heated precipitation buckets so April, September and occasionally May, may only be partial or inaccurate measures of the actual precipitation for that month. This is due to Alaska's extended winters. There may be blowing snow in April, May, and September, which can not be accurately collected by the precipitation buckets without the aid of a Wyoming Wind Gage (Watana is the only precipitation Station equipped with a Wyoming Wind Gage). In addition, snow collected in the precipitation bucket may not melt until a sunny day two weeks later, thereby indicating a rainstorm on this sunny day.

DATA COMPUTATION STANDARDS

Graphical Data Plot

Graphical representation of valid recorded and/or computed data.

Hourly Precipitation Summary Table

Hourly precipitation values are calculated as the difference between valid consecutive hourly readings. When either of the hourly precipitation readings is invalid, no value is reported and zero precipitation is assumed.

Monthly Summary Table

1. Maximum daily and monthly temperatures are determined from all valid recorded temperatures.
2. Minimum daily and monthly temperatures are determined from all valid recorded temperatures.
3. Mean daily and monthly temperatures are determined from all valid recorded temperatures. The mean daily temperature is determined from the mean of the maximum and minimum temperatures. The mean monthly temperature is determined from the mean of all reported daily mean temperatures.
4. Resultant daily and monthly wind directions and speeds are summed vectorially from all valid readings.
5. Average daily and monthly wind speeds are determined for all valid readings (arithmetic mean).
6. Maximum daily and monthly gust speeds are determined from all valid readings. Associated directions are the resultant directions from the recording interval in which the peak interval gust was observed.
7. Prevailing daily and monthly directions are determined from all valid readings. The reported value is the most frequent direction observed.
8. Mean daily and monthly relative humidities are determined from all valid readings (arithmetic mean).
9. Mean daily and monthly dewpoint temperatures are determined from all valid readings (arithmetic mean). Dewpoints are omitted when the wind speed is less than 1 m/s, when the dewpoint calculates to a value greater than the recorded temperature, or

when the dewpoint calculates to less than minus 47 degrees or more than 27 degrees.

10. Daily and monthly precipitation values are determined from all valid readings.
11. Daily and monthly solar energy values are determined from all valid readings. Daily solar energy is determined by averaging the recorded solar intensity and converting the units. The monthly value is the sum of the daily values.

Three Hour Summary Tables

1. The temperature reported is the temperature recorded at the specified time.
2. The dewpoint temperature reported is the dewpoint calculated at the specified time. Dewpoints are omitted when the wind speed is less than 1 m/s, when the dewpoint is calculated to a value greater than the recorded temperature, or when the dewpoint calculates to less than minus 47 degrees or more than 27 degrees.
3. The relative humidity reported is the humidity recorded at the specified time.
4. The wind direction reported is the three-hour vectorial resultant sum of data recorded up to the specified time.
5. The wind speed reported is the three-hour vectorial resultant of data recorded up to the specified time.
6. The gust direction reported is the direction of the maximum gust recorded during the preceding three-hour period.
7. The gust reported is the maximum recorded during the three-hour period.
8. The radiation reported is the solar radiation intensity recorded at the specified time.

Wind Frequency Summary Table

1. Reported data are determined from all valid readings.

Wind Rose Graphical Plot

1. Plot is a graphical representation of the wind frequency summary table.

General Notes

1. The following are the valid data ranges; data outside these ranges are not used:

Time: 0000 through 2400 hours - at specified time intervals.

Temperature: -50 through +35 °C

Wind: 0 through 99.9 meters per second and less than or equal to GUST

Direction: 0 through 360 degrees

Relative Humidity: 0 through 99 percent

Precipitation: 0 through 99.8 mm & greater than the last precipitation except in the case of an automatic roll-over. The difference between precipitations cannot exceed 30mm. A '-1' implies a manual re-start.

Solar: 0 through 15 milliwatts/cm²

Gust: 0 through 99.9 m/sec

Battery: 9 through 14.5 volts

2. Accuracy of the MRI (Meteorology Research, Inc.) sensors and processor are as follows:

Temperature: ±1°C

Wind Speed: ±0.5 meters per second

Wind Direction: ±1% of full scale

Relative Humidity: ±6%

Precipitation: ±1% up to 76.2 mm/hr, ± 5 % from 76.2 mm/hr to 254 mm/hr

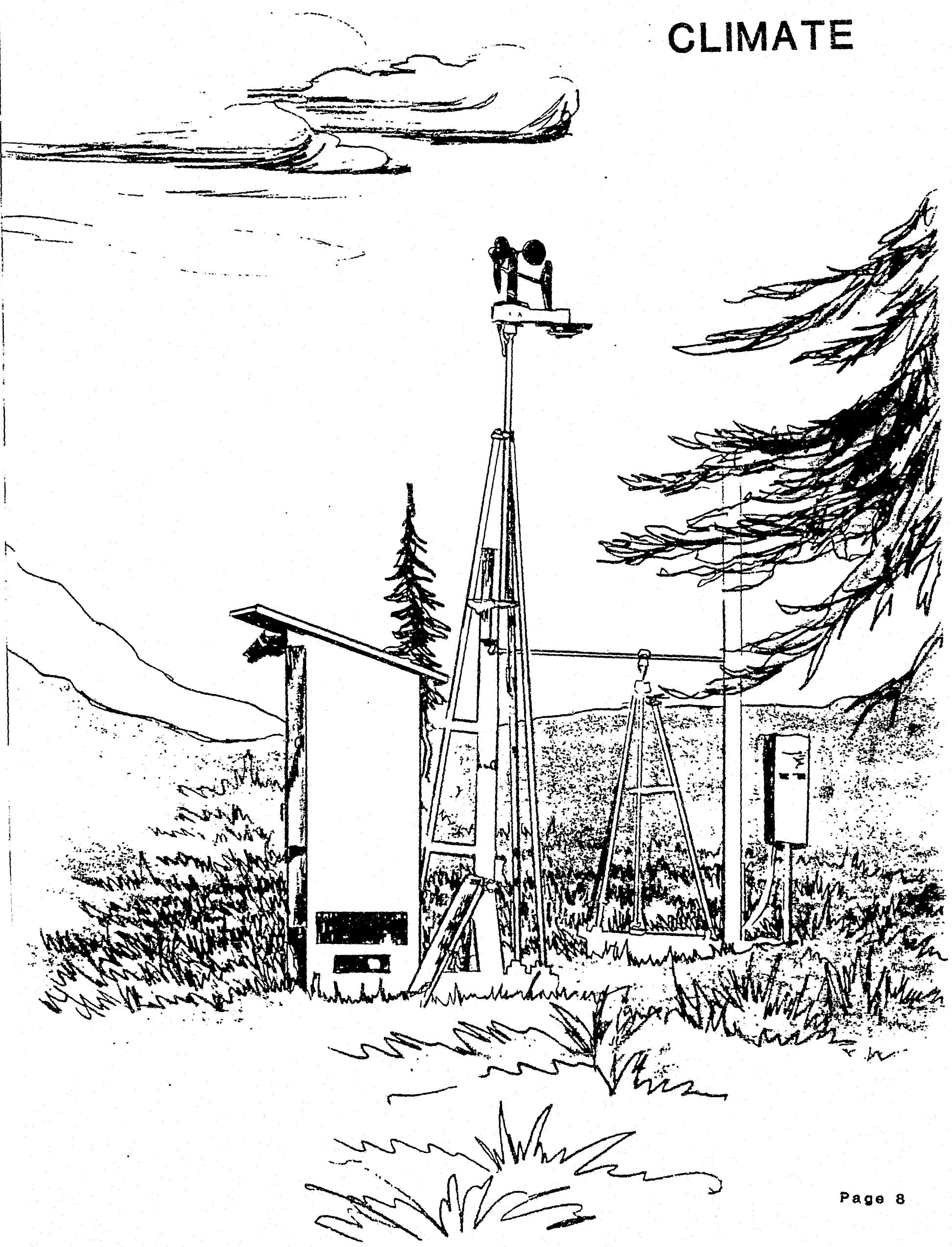
Solar Radiation: ±5mw cm⁻²

Tape Recorder Error Rate: 1 bit in 10⁷

3. The following are the direction ranges used in the prevailing direction, wind frequency and wind rose summaries:

<u>DIRECTION</u>	<u>COMPASS HEADING</u>
NORTH	350 through 11
NORTH-NORTHEAST	12 through 34
NORTHEAST	35 through 56
EAST-NORTHEAST	57 through 79
EAST	80 through 101
EAST-SOUTHEAST	102 through 124
SOUTHEAST	125 through 146
SOUTH-SOUTHEAST	147 through 169
SOUTH	170 through 191
SOUTH-SOUTHWEST	192 through 214
SOUTHWEST	215 through 236
WEST-SOUTHWEST	237 through 259
WEST	260 through 281
WEST-NORTHWEST	282 through 304
NORTHWEST	305 through 326
NORTH-NORTHWEST	327 through 349

CLIMATE



p8/s4

NO DATA FOR
OCTOBER 1981
AT
KOSINA CREEK CLIMATE STATION

No Precipitation data for November

(See INTERPRETING DATA).

R & M CONSULTANTS, INC.

SUSITTNA HYDRO ELECTRIC PROJECT PROGRESS

REE HOUR SUMMARY FOR KOSINA WEATHER STATION
TA TAKEN DURING November, 1981

DAY 01

DAY 02

DAY 03

DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG
DEG C % DEG. M/S MW	DEG C % DEG. M/S MW	DEG C % DEG. M/S MW

***** ** *** *** *** 0300 ***** *** *** *** 0300 -13.6 ***** 57 006 .6 022 2.5 1
***** ** *** *** *** 0600 ***** *** *** *** 0600 -15.3 -22.5 54 178 1.1 144 3.2 1
***** ** *** *** *** 0900 ***** *** *** *** 0900 -14.2 -25.2 39 166 1.4 153 2.5 14
***** ** *** *** *** 1200 ***** *** *** *** 1200 -14.7 -26.9 35 208 1.5 198 3.2 12
***** ** *** *** *** 1500 -5.8 -15.4 47 169 1.3 169 3.2 3 1500 -14.1 -25.4 38 189 2.1 186 3.8 3
***** ** *** *** *** 1800 -8.9 -16.8 53 078 3.1 076 8.9 1 1800 -13.1 -21.9 48 173 1.5 193 3.2 1
***** ** *** *** *** 2100 -11.0 -19.4 50 021 4.7 031 7.6 1 2100 -12.7 -20.3 53 165 1.7 181 3.2 1
***** ** *** *** *** 2400 -13.3 -21.3 51 015 2.7 017 5.7 1 2400 -11.3 -19.7 50 189 2.6 202 7.0 1

DAY 04

DAY 05

DAY 06

DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG
DEG C % DEG. M/S MW	DEG C % DEG. M/S MW	DEG C % DEG. M/S MW

-10.0 ***** 57 189 4.3 200 7.6 1 0300 -18.7 -26.6 50 183 2.1 153 3.8 1 0300 -18.6 ***** 53 177 .5 339 2.5 1
-8.4 -14.4 62 183 .6 207 3.2 1 0600 -17.7 ***** 49 214 1.5 213 3.8 1 0600 -22.6 -30.2 50 198 1.7 216 3.8 1
-8.4 -14.6 61 206 .4 217 2.5 3 0900 -15.9 -24.0 50 210 1.2 234 2.5 6 0900 -23.9 -34.5 37 188 1.9 201 3.8 12
-8.4 -15.2 58 008 1.3 013 5.7 8 1200 -14.2 ***** 36 223 .1 213 1.9 12 1200 -20.3 -30.8 39 198 1.8 152 3.8 7
-10.1 -16.8 58 023 5.7 029 8.9 2 1500 -16.1 -24.9 47 196 1.0 211 1.9 3 1500 -17.9 -26.3 48 175 1.6 157 2.5 1
-10.0 -17.1 60 016 2.6 026 5.7 1 1800 -17.6 -25.1 52 213 1.2 234 3.2 1 1800 -17.0 -24.8 51 189 1.6 194 2.5 1
-14.5 -22.2 52 269 .6 213 3.8 1 2100 -16.5 ***** 53 228 .9 188 1.9 1 2100 -16.5 -24.3 51 187 2.0 187 3.2 1
-18.5 -25.7 53 187 1.5 174 3.8 1 2400 -16.6 ***** 54 314 .7 353 2.5 1 2400 -16.0 -24.3 49 178 2.9 179 4.4 1

DAY 07

DAY 08

DAY 09

DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG	HOUR DEW TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG
DEG C % DEG. M/S MW	DEG C % DEG. M/S MW	DEG C % DEG. M/S MW

-15.8 -25.1 45 180 2.7 190 4.4 1 0300 -7.4 -17.7 44 161 2.4 153 4.4 2 0300 -11.1 -17.5 59 189 2.0 163 3.8 1
-15.8 -24.8 46 183 1.9 188 3.8 1 0600 -5.8 -15.6 46 160 1.9 139 4.4 1 0600 -6.3 -13.4 57 205 1.9 217 3.8 1
-13.6 -23.1 45 186 3.6 187 5.7 3 0900 -7.2 -16.9 46 174 1.4 090 9.5 5 0900 -5.3 -12.3 58 109 3.9 100 9.5 4
-11.3 -21.0 45 186 3.9 186 5.7 6 1200 -5.6 -16.3 43 119 2.7 119 7.6 24 1200 -5.1 -12.7 55 111 3.1 100 6.3 8
-10.3 -18.5 51 205 3.4 205 5.7 2 1500 -9.2 -16.6 55 134 4.6 128 8.3 2 1500 -6.6 -13.7 57 177 2.2 185 3.8 1
-10.4 -18.9 50 192 3.6 190 5.1 1 1800 -14.0 -20.7 57 182 2.9 162 5.7 1 1800 -2.8 -13.2 45 179 2.1 181 4.4 1
-12.6 -20.2 53 180 2.6 181 5.1 1 2100 -13.9 -20.8 56 181 2.4 181 4.4 1 2100 -4.5 -11.3 59 138 1.3 108 8.3 1
-10.1 -13.4 51 168 3.0 168 5.1 1 2400 -15.2 -21.8 57 178 2.5 143 6.3 1 2400 -2.4 -13.1 44 694 3.8 092 8.3 1

R & M CONSULTANTS, INC.

SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING November, 1981

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD				
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW
0300	-1.2	-12.9	41	085	3.5	102	9.5	1	0300	-4.5	-11.5	58	170	2.9	199	4.4	1	0300	-6.7	-13.4	59	169	2.8	158	6.3	1	1				
0600	-2.4	-10.0	56	317	1.2	286	7.6	1	0600	-1.	-11.6	42	172	2.9	154	5.7	1	0600	-6.7	-13.2	60	200	2.0	179	7.0	1	2				
0900	-0.8	-7.8	59	105	9.0	105	15.9	4	0900	-4	-14.9	33	173	2.7	193	4.4	8	0900	-8.4	-14.8	60	211	3.0	215	5.1	3					
1200	-0.2	-7.0	60	092	11.1	085	15.2	12	1200	-3.0	-14.5	41	173	2.0	142	5.1	10	1200	-3.3	-14.8	41	198	2.7	203	5.1	20					
1500	-0.4	****	58	133	2.4	106	12.7	1	1500	-2.1	-12.0	47	167	1.7	123	7.6	1	1500	-10.1	-18.1	52	207	2.3	212	4.4	1	1				
1800	-0.9	-7.9	59	044	1.1	059	5.1	1	1800	-1.4	-10.5	50	108	5.7	110	10.2	1	1800	-10.7	-18.7	52	199	3.2	192	6.3	1	2				
2100	-3.3	-9.1	64	187	1.3	172	3.2	0	2100	-1.2	-10.9	48	126	1.9	132	7.6	1	2100	-10.1	-18.1	52	195	2.8	206	5.1	1					
2400	-4.0	-10.6	60	187	2.4	183	5.1	1	2400	-3.0	-11.0	54	106	1.9	084	8.3	1	2400	-11.5	-19.9	50	196	3.2	197	5.7	1					

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD				
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW
0300	-9.3	-18.1	51	199	2.5	204	4.4	1	0300	-14.8	-25.8	39	176	3.4	162	5.3	2	0300	-14.8	-25.8	39	179	2.3	171	5.1	2					
0600	-14.3	-22.7	49	187	3.6	188	5.7	1	0600	-15.2	-27.0	36	178	3.2	156	7.0	2	0600	-16.6	-25.8	45	186	2.0	151	5.1	2					
0900	-12.1	-23.6	38	212	1.9	222	3.8	11	0900	-13.7	-26.3	34	179	3.0	160	6.3	7	0900	-14.1	-25.7	37	175	2.0	151	4.4	8					
1200	-7.9	-22.6	30	191	2.4	213	4.4	18	1200	-13.7	-29.2	26	180	2.6	161	5.1	15	1200	-13.0	-25.1	36	174	2.2	153	4.4	15					
1500	-9.8	-22.5	35	173	3.5	174	5.7	2	1500	-13.7	-25.4	37	192	2.2	175	4.4	2	1500	-14.6	-24.0	45	192	2.7	164	4.4	2					
1800	-10.9	-22.6	38	185	2.9	189	5.1	1	1800	-16.0	-27.4	37	186	2.4	167	5.1	2	1800	-15.4	-24.0	48	187	2.5	150	5.1	1					
2100	-12.6	-24.4	37	188	2.7	163	5.1	2	2100	-13.9	-26.2	35	168	2.8	150	5.7	2	2100	-17.7	-26.1	48	191	2.2	206	3.8	1					
2400	-12.6	-25.0	35	178	2.8	161	5.7	2	2400	-14.5	-25.8	38	176	2.4	162	5.1	2	2400	-16.1	-24.9	47	199	2.1	182	4.4	1					

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD				
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW
0300	-16.3	-25.1	47	175	3.0	179	5.1	1	0300	-22.5	-30.3	49	187	2.4	181	4.4	1	0300	-21.2	-29.8	46	201	2.9	198	5.1	1					
0600	-18.5	-27.1	47	194	2.7	185	6.3	1	0600	-22.6	-30.4	49	201	2.2	213	3.8	1	0600	-19.7	-28.2	47	204	2.5	203	4.4	2					
0900	-17.1	-27.6	40	186	3.0	145	7.6	10	0900	-20.2	-28.9	46	186	2.6	192	4.4	9	0900	-18.5	-27.8	44	189	4.1	192	7						

R. & M. CONSULTANTS, INC.

SUBSTITUTION HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING November, 1981

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	% DEG.	M/S	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	M/S	MW

0300	-15.2	-24.8	44	183	2.2	181	4.4	2 0300	-23.3	-31.7	46	147	4.8	137	8.3	1 0300	-20.4	-29.1	46	178	2.2	188	4.4	1
0600	-17.9	-26.8	46	151	2.6	144	5.1	1 0600	-25.2	-32.8	49	138	7.1	145	9.5	1 0600	-18.5	-27.3	46	184	2.4	174	5.1	1
0900	-18.0	-26.9	46	148	4.1	141	5.7	2 0900	-26.1	-34.8	44	144	6.7	144	10.2	3 0900	-19.4	-28.1	46	167	2.6	161	5.7	2
1200	-13.7	-25.1	38	160	3.2	155	5.1	2 1200	-23.9	-33.0	43	145	6.3	148	8.9	17 1200	-16.1	-27.0	39	163	3.2	153	6.3	17
1500	-16.2	-26.2	42	169	2.5	148	5.1	2 1500	-24.6	-33.4	44	140	5.5	139	7.6	2 1500	-18.0	-27.6	43	171	3.3	139	5.7	1
1800	-16.8	-26.5	43	187	2.4	167	3.8	1 1800	-26.5	-35.1	44	146	5.2	136	7.0	2 1800	-19.5	-28.7	44	205	3.4	204	5.7	1
2100	-19.6	-28.8	44	176	2.8	159	5.1	2 2100	-26.5	-35.1	44	149	4.3	148	7.0	2 2100	-20.4	-29.3	45	217	2.5	206	4.4	2
2400	-20.2	-29.1	45	155	3.6	149	5.7	1 2400	-24.4	-33.2	44	149	4.1	146	6.3	1 2400	-21.9	-31.2	43	197	2.5	186	4.4	2

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	% DEG.	M/S	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	M/S	MW

0300	-23.1	-32.3	43	204	2.5	191	4.4	2 0300	-16.6	-25.8	45	160	4.0	145	6.3	1 0300	-14.3	-22.5	50	164	2.9	146	5.1	1
0600	-20.6	-30.0	43	195	2.5	195	3.8	1 0600	-15.7	-25.5	43	156	3.6	143	6.3	2 0600	-13.7	-22.2	49	160	3.1	139	5.7	1
0900	-19.3	-28.8	43	201	2.4	188	4.4	2 0900	-15.4	-25.0	44	191	2.5	197	5.1	2 0900	-13.4	-21.4	51	158	2.8	140	5.1	2
1200	-17.9	-27.8	42	204	2.6	200	4.4	5 1200	-12.3	-24.1	37	181	2.3	158	5.1	22 1200	-12.2	-21.5	46	185	2.7	172	4.4	5
1500	-16.1	-25.1	46	198	2.2	195	5.1	1 1500	-14.3	-24.2	43	163	3.0	166	5.7	2 1500	-11.1	-20.0	48	162	2.3	170	3.8	1
1800	-15.7	-25.0	45	153	3.3	138	5.7	1 1800	-15.7	-24.0	49	162	3.3	146	6.3	1 1800	-9.5	-18.0	50	166	2.7	172	3.8	1
2100	-15.3	-23.9	48	149	3.3	136	5.7	1 2100	-14.9	-23.3	49	167	3.3	152	6.3	1 2100	-10.0	*****	61	140	1.6	145	4.4	1
2400	-15.7	-24.5	47	198	2.4	206	4.4	1 2400	-14.1	-23.0	47	136	2.9	135	7.0	1 2400	-11.3	-16.9	63	232	.5	189	3.2	1

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	% DEG.	M/S	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	M/S	MW

0300	-11.4	-17.4	61	203	1.6	191	3.2	1 0300	-9.1	-17.7	50	201	1.5	238	4.4	1 0300	-6.3	-12.4	62	157	1.8	141	3.2	1
0600	-10.1	-16.2	61	196	2.7	163	5.1	1 0600	-10.7	-17.4	58	160	3.1	140	7.6	1 0600	-6.0	-11.9	63	169	1.6	182	3.2	1
0900	-10.8	-17.9	56	191	2.2	185	3.8	1 0900	-10.5	-17.6	56	139	3.3	122	6.3	1 0900	-5.5	-12.2	59	178	2.0	175	3.2	1
1200	-7.5	****	38	195	1.1	172	3.2	16 1200	-10.1	-17.0	57	205	1.9	200	3.2	3 1200	-5.9	****	55	161	.7	144	3.2	4
1500	-13.4	-20.7	54	161	2.2	152	5.1	1 1500	-9.9	-16.4	59	190	2.6	184	3.8	1 1500	-6.7	-11.1	71	298	.4	353	3.2	1
1800	-12.4	-22.0	45	210	2.1	221	3.8	2 1800	-8.4	-15.4	57	196	2.5	103	3.8	1 1800	-4.2	-13.9	47	263	7.5	250	14.6	1
2100	-12.3	-23.0	41	185	1.9	196	3.8	1 2100	-7.8	-14.0	61	190	2.5	193	4.4	1 2100	-7.2	-15.7	51	252	4.6	259	14.6	1
2400	-9.9	-19.2	47	173	2.6	145	5.7	1 2400	-7.2	-14.1	58	174	2.4	192	3.8	1 2400	-6.3	-13.6	56	062	1.7	085	5.1	1

R & M CONSULTANTS, INC.

SUSTAINABLE HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING November, 1981

DAY 28

DAY 29

DAY 30

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

R & M CONSULTANTS, INC.

SUBSTITUTIVE HYDRO ELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING November, 1981

DAY	MAX. DEG C	MIN. DEG C	MEAN DEG C	RES. DIR. DEG	RES. SPD. M/S	Avg. WIND SPD. M/S	Max. GUST DIR. SPD. M/S	Max. GUST P'VAL DIR. RH %	Mean P'VAL DEG C	Mean RH %	Day's SOLAR ENERGY WH/SQM
1	*****	*****	*****	***	****	***	***	8.9 NNE 51	-18.2	****	266 2
2	-5.8	-13.3	-9.6	036	3.0	3.8	076	7.0 SSW 46	-23.1	****	1138 3
3	-11.3	-16.1	-13.7	182	1.4	1.7	202	8.9 NNE 57	-17.6	****	495 4
4	-6.6	-18.5	-12.6	031	1.4	2.5	029	3.8 SSW 49	-25.5	****	760 5
5	-11.7	-21.0	-16.4	210	1.9	1.3	153	4.4 S 48	-27.5	****	715 6
6	-16.0	-24.0	-20.0	187	1.7	1.9	179	5.7 S 49	-21.4	****	483 7
7	-9.7	-17.9	-13.8	186	3.0	3.1	187	5.7 S 50	-17.9	****	835 8
8	-4.5	-15.2	-9.9	158	2.4	2.9	090	9.5 S 55	-14.3	****	603 9
9	-2.3	-15.3	-8.8	139	1.9	3.0	100	9.5 S 56	-9.2	****	495 10
10	.9	-4.0	-1.6	104	3.2	4.6	105	15.9 E 47	-12.2	****	728 11
11	.8	-4.6	-1.9	146	2.4	3.1	110	10.2 SSE 47	-15.7	****	1020 12
12	-2.9	-13.0	-8.0	197	2.7	2.9	179	7.0 SSW 53	-22.3	****	1095 13
13	-6.2	-14.3	-10.3	187	2.7	2.9	188	5.7 S 39	-26.4	****	1008 14
14	-10.5	-17.5	-14.0	179	2.8	2.9	156	7.0 S 35	-25.2	****	913 15
15	-11.1	-19.7	-15.4	186	2.2	2.4	171	5.1 SSW 43	-26.4	****	1105 16
16	-14.8	-22.6	-18.7	173	3.2	3.5	145	7.6 S 47	-29.4	****	1120 17
17	-16.9	-23.9	-20.4	193	2.4	2.6	176	6.3 SSW 46	-29.7	****	1103 18
18	-16.5	-25.3	-20.9	198	2.8	2.9	192	7.0 SSW 44	-27.2	****	1120 19
19	-12.6	-21.5	-17.1	164	2.8	3.0	141	5.7 SSE 43	-33.4	****	1025 20
20	-20.1	-26.9	-23.5	144	5.5	5.5	144	10.2 SE 44	-29.3	****	985 21
21	-15.7	-24.4	-20.1	185	2.6	2.9	153	6.3 SSW 44	-27.4	****	495 22
22	-15.0	-23.5	-19.3	185	2.5	2.8	138	5.7 SSW 44	-24.5	****	710 23
23	-11.8	-17.4	-14.6	163	3.0	3.2	135	7.0 SSE 44	-20.7	****	423 24
24	-9.4	-14.8	-12.1	165	2.2	2.5	139	5.7 SSW 51	-19.7	****	723 25
25	-7.0	-15.7	-11.4	188	2.0	2.2	145	5.7 SSW 52	-16.6	****	298 26
26	-7.0	-10.9	-9.0	178	2.3	2.6	140	7.6 S 56	-13.1	****	385 27
27	-2.3	-7.9	-5.1	232	1.5	2.9	250	14.6 S 57	-19.4	****	653 28
28	-6.8	-15.3	-11.1	185	1.7	2.2	105	5.1 SSW 51	-21.6	****	600 29
29	-10.9	-16.8	-13.9	192	3.1	3.1	189	7.0 SSW 53	*****	*****	***** 30
30	*****	*****	*****	***	****	***	***	*****	*****	*****	*****
MONTH	.9	-26.9	-13.3	173	2.1	2.5	105	15.9 S 48	-22.0	****	21294

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 15.2

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.0

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.6

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 12.7

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

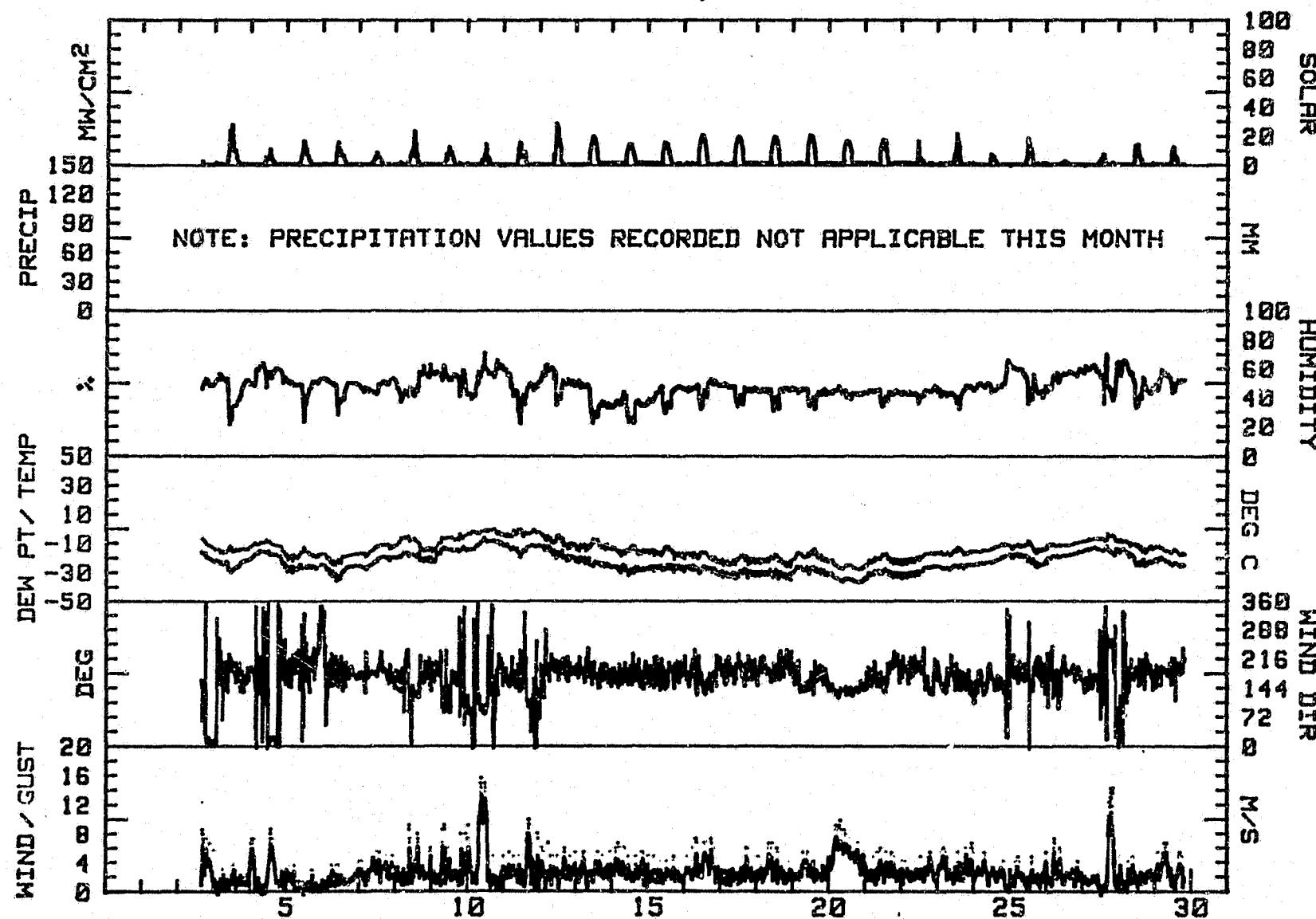
R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING November, 1981

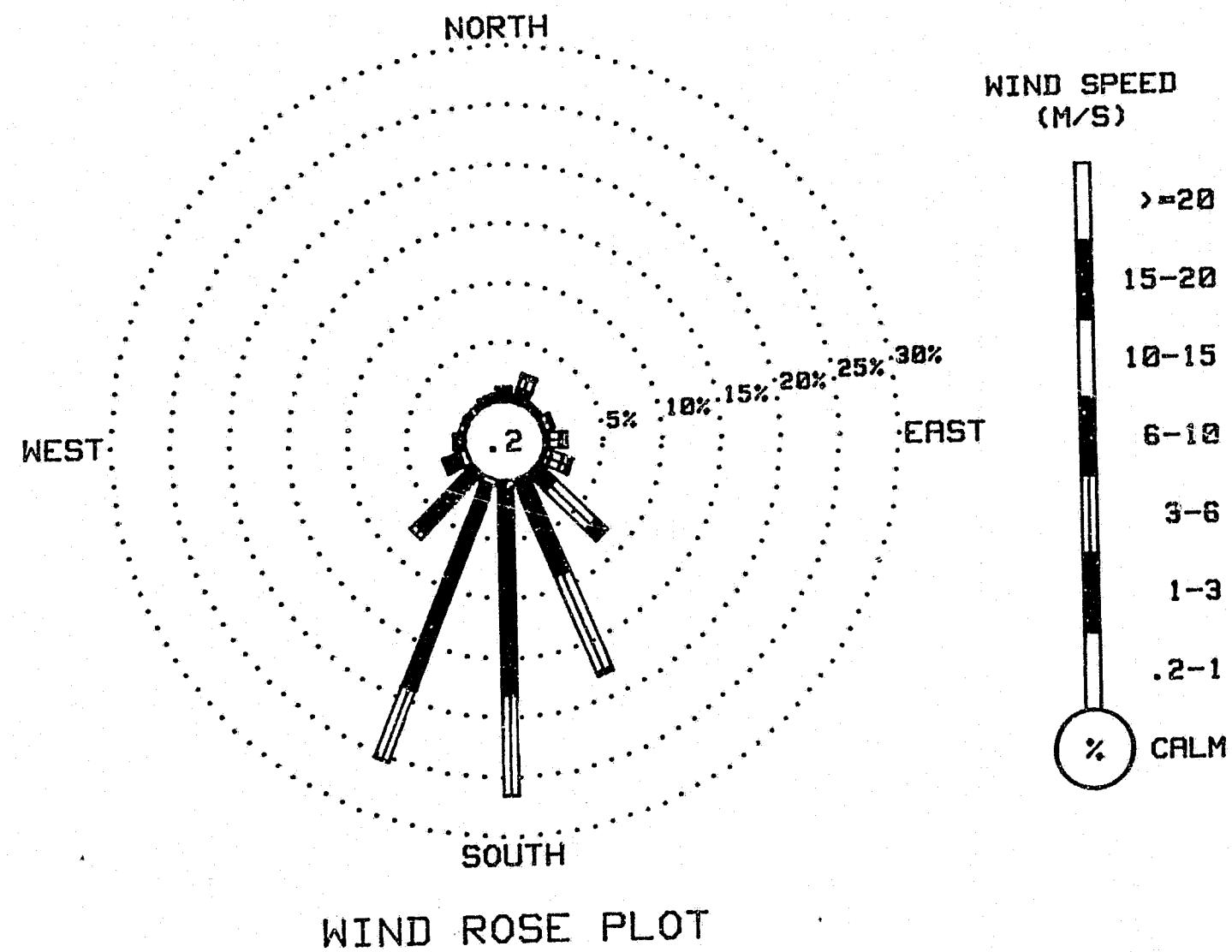
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.15	.81	.27	0.00	0.00	0.00	0.00	1.23	
NNE	.19	1.04	1.00	.27	0.00	0.00	0.00	2.49	
NE	.15	.31	0.00	0.00	0.00	0.00	0.00	.46	
ENE	.15	.65	.08	.08	0.00	0.00	0.00	.96	
E	.12	.27	.96	.15	.46	0.00	0.00	1.96	
ESE	.23	.54	1.00	.58	.31	0.00	0.00	2.65	
SE	.04	1.99	4.76	1.23	.04	0.00	0.00	8.06	
SSE	.12	8.71	8.78	.35	0.00	0.00	0.00	17.95	
S	.35	17.72	8.36	.04	0.00	0.00	0.00	26.47	
SSW	.50	18.45	6.33	.04	0.00	0.00	0.00	25.32	
SW	.38	6.48	.61	0.00	0.00	0.00	0.00	7.48	
WSW	.65	1.23	0.00	.08	.12	0.00	0.00	2.07	
W	.35	.23	.04	.27	.08	0.00	0.00	.96	
WNW	.31	.23	0.00	0.00	0.00	0.00	0.00	.54	
NW	.27	.23	0.00	0.00	0.00	0.00	0.00	.50	
NNW	.31	.38	.04	0.00	0.00	0.00	0.00	.73	
CALM								.19	
TOTAL	4.26	59.26	32.22	3.07	1.00	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2607 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
November, 1981



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
November, 1981



p8/s5

NO DATA FOR
DECEMBER 1981
AT
KOSINA CREEK CLIMATE STATION

No precipitation data for January

(See INTERPRETING DATA).

R & M CONSULTANTS, INC.

SUSTAINABLE HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DAY 01

DAY 02

DAY 03

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

DAY 94

DAY 05

DAY 06

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	*****	*****	**	***	***	***	***	***	***	0300	*****	*****	**	***	***	***	***	***	0300	-30.2	-42.2	30	159	3.2	179	6.3	3
0600	*****	*****	**	***	***	***	***	***	***	0600	*****	*****	**	***	***	***	***	***	0600	-31.7	-43.5	30	173	2.8	156	5.1	3
0900	*****	*****	**	***	***	***	***	***	***	0900	*****	*****	**	***	***	***	***	***	0900	-33.2	-45.4	28	179	2.3	149	4.4	3
1200	*****	*****	**	***	***	***	***	***	***	1200	*****	*****	**	***	***	***	***	***	1200	-31.5	-45.3	24	191	2.6	165	4.4	9
1500	*****	*****	**	***	***	***	***	***	***	1500	-26.2	-39.0	29	318	9.0	335	13.3	3	1500	-32.9	-44.6	30	186	2.7	183	5.1	3
1800	*****	*****	**	***	***	***	***	***	***	1800	-25.3	-38.2	29	307	8.9	295	14.6	3	1800	-31.8	-43.6	30	196	2.5	203	5.1	2
2100	*****	*****	**	***	***	***	***	***	***	2100	-26.0	-38.8	29	312	8.2	309	12.7	2	2100	-33.1	-44.4	31	182	2.7	171	6.3	3
2400	*****	*****	**	***	***	***	***	***	***	2400	-28.9	-41.3	29	313	5.9	307	12.7	3	2400	-30.9	-43.7	27	167	3.1	156	6.3	2

DAY 02

DAY 08

1088 09

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-31.6	-44.3	27	159	4.6	153	7.6	3	0300	-25.4	-41.3	21	161	3.2	161	5.7	2	0300	-20.7	-35.2	26	159	3.4	160	7.6	2
0600	-27.4	-41.0	26	158	4.7	146	7.6	3	0600	-25.2	-41.1	21	164	2.6	150	5.1	3	0600	-21.3	-35.4	27	136	2.5	136	5.7	3
0900	-28.0	-41.9	25	163	3.7	146	7.0	3	0900	-23.2	-39.8	20	170	1.7	150	3.8	3	0900	-19.4	-33.7	27	101	1.8	114	6.3	3
1200	-24.0	-40.1	21	168	2.7	143	5.7	10	1200	-21.4	-38.3	20	176	2.6	166	5.1	10	1200	-20.7	*****	23	113	1.4	091	6.3	4
1500	-28.4	-43.4	22	178	2.7	170	5.7	3	1500	-21.9	-38.7	20	191	4.0	192	7.6	3	1500	-18.7	-33.5	26	122	2.6	130	5.7	3
1800	-25.3	-41.2	21	164	3.6	150	6.3	3	1800	-23.9	-39.6	22	199	1.7	141	4.4	3	1800	-18.3	-33.1	26	109	6.1	110	12.1	3
2100	-26.1	-41.9	21	171	2.9	145	6.3	3	2100	-21.4	-37.9	21	198	2.2	195	6.3	3	2100	-19.4	-33.0	29	097	4.1	104	12.1	2
2400	-26.1	-41.9	21	177	2.6	160	5.1	3	2400	-21.7	-37.3	23	188	2.3	173	5.7	3	2400	-18.2	-32.3	28	108	6.2	146	13.3	3

R & M CONSULTANTS, INC.
SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DAY 10												DAY 11												DAY 12											
HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD											
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW						
0300	-17.9	-32.8	26	138	4.1	113	10.8	2	0300	-20.2	-28.9	46	149	7.7	154	10.8	1	0300	-14.0	-22.7	48	140	6.4	135	8.3	1									
0600	-18.5	-26.8	48	151	3.3	125	7.6	1	0600	-20.0	-29.4	43	138	8.9	140	10.8	2	0600	-13.4	-21.9	49	139	6.9	138	8.9	1									
0900	-18.2	-27.8	43	149	4.8	145	7.6	2	0900	-17.8	-27.9	41	148	8.4	137	11.4	2	0900	-12.2	-20.8	49	140	6.4	133	8.3	1									
1200	-17.1	-28.4	37	146	6.8	145	8.9	13	1200	-17.2	-28.2	38	155	6.5	145	10.2	10	1200	-11.1	-19.8	49	154	4.5	155	7.0	5									
1500	-18.0	-26.9	46	155	7.2	147	9.5	2	1500	-18.2	-28.0	42	144	6.8	133	9.5	2	1500	-12.6	-19.6	56	153	4.4	149	7.0	1									
1800	-20.3	-29.5	44	141	8.3	137	10.8	1	1800	-16.6	-26.3	43	144	7.0	142	9.5	2	1800	-13.4	-19.9	58	167	4.0	161	6.3	1									
2100	-21.0	-30.6	42	139	8.8	139	11.4	1	2100	-13.9	-23.1	46	152	5.7	141	8.9	2	2100	-13.6	-20.3	57	164	3.5	151	6.3	1									
2400	-21.1	-30.2	44	159	7.1	143	10.8	2	2400	-13.7	-22.7	47	156	4.7	141	7.0	1	2400	-15.2	-22.2	55	167	2.0	150	3.8	1									
DAY 13												DAY 14												DAY 15											
HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD											
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW						
0300	-14.9	-21.9	55	175	2.5	152	5.1	1	0300	-16.7	-32.6	24	125	4.5	105	10.2	2	0300	-24.8	-39.5	24	178	3.3	142	7.0	3									
0600	-15.9	-22.9	55	184	1.7	154	3.8	1	0600	-18.8	-36.1	20	146	2.1	126	6.3	3	0600	-24.5	-38.9	25	185	3.6	195	6.3	3									
0900	-13.4	-20.3	56	168	2.1	150	4.4	1	0900	-19.5	-37.2	19	135	3.8	120	7.6	3	0900	-24.6	-38.2	27	180	3.0	146	5.1	3									
1200	-15.3	-30.9	25	160	2.1	142	5.1	17	1200	-19.8	-37.5	19	126	4.9	119	8.9	10	1200	-23.1	-38.5	23	166	3.1	147	6.3	9									
1500	-18.4	-31.8	30	177	2.0	165	5.1	3	1500	-21.4	-37.9	21	122	5.0	109	7.6	3	1500	-23.4	-37.6	26	144	5.1	136	8.3	3									
1800	-20.7	-34.1	29	202	2.1	192	4.4	2	1800	-22.8	-37.8	24	174	1.9	112	6.3	3	1800	-24.1	-37.8	27	168	3.7	138	6.3	3									
2100	-19.6	-32.5	31	209	2.8	211	6.3	2	2100	-23.5	-38.4	24	204	2.8	226	5.7	3	2100	-23.8	-37.5	27	150	5.7	156	8.9	3									
2400	-17.3	-29.5	34	104	8.2	091	15.2	2	2400	-22.4	-37.4	24	213	1.9	179	5.7	3	2400	-24.3	-38.7	25	157	5.3	156	7.6	3									
DAY 16												DAY 17												DAY 18											
HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD											
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW						
0300	-22.5	-36.8	26	161	3.8	145	8.3	3	0300	-15.1	-31.2	24	183	2.4	161	4.4	3	0300	-23.4	-33.8	38	157	4.0	159	7.0	2									
0600	-21.5	-35.9	26	164	3.0	163	5.7	3	0600	-15.0	-30.7	25	295	.3	201	5.1	3	0600	-22.7	-32.9	39	147	5.1	138	7.0	2									
0900	-19.6	-34.6	25	203	1.5	162	5.1	3	0900	-19.3	-33.6	27	209	1.6	181	6.3	3	0900	-21.7	-32.3	38	155	3.4	155	7.0	3									
1200	-20.4	-37.5	20	147	4.1	145	7.6	11	1200	-19.3	-33.6	27	183	2.6	209	5.1	9	1200	-19.4	-32.0	32	164	1.9	201	3.2	7									
1500	-18.9	-34.9	23	152	3.2	145	6.3	3	1500	-18.3	-32.0	29	169	2.2	157	5.7	3	1500	-20.3	-31.6	36	261	.2	187	4.4	3									
1800	-19.8	-35.6	23	166	2.4	147	7.0	3	1800	-22.3	-34.0	34	176	2.5	146	5.7	3	1800	-20.1	-31.1	37	200	2.2	196	6.3	2					</				

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW	
0300	-17.0	-30.9	29	197	3.9	199	8.9	2	0300	-21.6	-34.9	29	194	2.3	185	4.4	2	0300	-18.9	-32.6	29	114	4.9	083	10.8	2	
0600	-17.1	-37.5	15	184	3.2	184	5.7	2	0600	-21.9	-34.9	30	193	2.6	175	4.4	3	0600	-18.2	-32.0	29	083	6.3	077	11.4	2	
0900	-17.4	-32.0	27	170	2.6	164	5.1	3	0900	-22.5	-35.4	30	190	2.8	203	4.4	3	0900	-23.8	-36.5	30	137	2.7	114	5.1	3	
1200	-18.2	-34.7	22	172	2.4	145	6.3	12	1200	-22.7	-36.2	28	158	3.8	138	7.0	9	1200	-19.6	-36.8	20	148	3.6	144	5.7	13	
1500	-18.5	-33.3	26	153	3.0	139	7.0	3	1500	-21.4	-34.4	30	205	2.9	214	5.1	3	1500	-20.1	-37.2	20	175	1.7	145	5.1	3	
1800	-20.4	-33.9	29	186	2.2	180	5.7	2	1800	-22.1	-34.7	31	156	4.3	132	8.3	2	1800	-22.0	-37.5	23	184	1.4	140	4.4	3	
2100	-20.4	-32.9	32	176	3.3	170	7.0	3	2100	-22.4	-34.4	33	147	4.5	137	7.6	2	2100	-24.1	-39.7	22	176	1.3	144	3.8	3	
2400	-22.0	-34.6	31	199	2.3	192	4.4	2	2400	-20.1	-32.3	33	149	3.6	135	7.6	2	2400	-23.8	-39.5	22	212	2.1	245	6.3	3	

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW	
0300	-23.8	-39.5	22	210	3.6	213	7.0	3	0300	-22.8	-38.2	23	172	3.6	165	7.0	3	0300	-23.7	-38.6	24	169	2.8	137	5.7	3	
0600	-26.2	-41.5	22	214	1.5	199	3.8	3	0600	-22.4	-37.9	23	160	3.6	134	7.6	3	0600	-25.0	-39.3	25	177	2.2	232	5.1	3	
0900	-27.9	-42.6	23	205	2.9	209	7.0	3	0900	-21.9	-37.4	23	137	3.9	135	6.3	3	0900	-27.9	-41.5	26	197	2.1	173	3.8	4	
1200	-25.3	-40.7	22	186	2.8	209	5.1	13	1200	-23.1	-39.3	21	153	3.8	154	6.3	13	1200	-27.0	-41.0	25	203	2.4	214	4.4	14	
1500	-24.9	-40.4	22	171	3.8	161	7.0	3	1500	-22.7	-38.1	23	161	3.8	142	6.3	3	1500	-27.1	-41.1	25	197	2.6	182	4.4	5	
1800	-27.3	-42.1	23	163	3.9	158	8.3	2	1800	-22.8	-38.2	23	174	2.0	155	5.1	3	1800	-26.7	-40.4	26	190	2.5	192	4.4	3	
2100	-26.4	-40.5	25	172	3.6	179	5.7	3	2100	-23.9	-38.4	25	177	3.4	177	7.0	3	2100	-27.3	-40.9	26	171	3.0	176	5.1	3	
2400	-22.4	-37.9	23	180	3.5	147	6.3	3	2400	-24.0	-38.4	25	146	3.4	148	7.0	3	2400	-25.5	-39.7	25	180	2.9	155	5.1	3	

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW	
0300	-25.5	-39.0	27	176	2.7	153	5.1	3	0300	-27.2	-39.2	31	160	3.7	168	7.0	2	0300	-29.3	-40.5	33	181	3.2	163	7.0	2	
0600	-25.7	-38.9	28	183	2.8	166	5.7	3	0600	-26.6	-39.0	30	160	4.0	148	6.3	2	0600	-30.3	-41.7	32	192	3.0	175	6.3	2	
0900	-24.6	-37.9	28	177	3.2	150	5.7	3	0900	-27.0	-39.4	30	181	2.8	162	6.3	4	0900	-28.0	-39.6	32	197	3.2	191	5.1	3	
1200	-25.2	-40.7	22	169	3.4	159	6.3	14	1200	-25.1	-38.3	28	166	3.8	157	8.3	13	1200	-24.9	-37.5	30	183	2.9	166	5.1	11	
1500	-25.7	-42.9	18	151	4.7	142	7.6	3	1500	-25.6	-38.4	29	174	3.4	157	7.0	3	1500	-24.4	-36.1	33	174	3.8	166	5.7	2	
1800	-27.2	-39.5	30	155	4.4	142	7.6	2	1800	-27.1	-39.4	30	154	4.3	143	7.0	2	1800	-23.2	-34.8	34	147	4.6	129	8.3	2	
2100	-27.0	-39.7	29	166	3.7	149	7.0	3	2100	-27.5	-39.2	32	165	3.7	150	7.0	2	2100	-22.9	-33.4	38	179	2.1	123	7.0	2	
2400	-27.5	-39.8	30	153	4.9	151</																					

R & M CONSULTANTS, INC.
SUSSEX TNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW	

0300	-21.6	-31.1	42	225	2.0	203	5.1	2	0300	-15.3	-24.4	46	138	6.6	137	8.9	1	0300	-16.9	-24.9	50	158	4.8	142	7.0	1
0600	-20.5	-29.9	43	200	3.2	211	6.3	2	0600	-16.3	-25.1	47	143	6.7	138	8.9	1	0600	-16.2	-24.0	51	152	5.1	152	7.6	1
0900	-18.0	-26.9	46	197	4.1	207	6.3	2	0900	-16.8	-25.5	47	151	5.6	133	7.6	2	0900	-16.0	-23.8	51	154	4.8	141	7.6	3
1200	-16.0	-25.3	45	141	3.4	152	6.3	6	1200	-15.8	-24.8	46	144	6.8	135	9.5	12	1200	-15.1	-23.9	47	149	5.5	142	7.6	20
1500	-16.0	-24.8	47	175	2.9	143	5.7	3	1500	-18.1	-27.2	45	144	6.3	148	8.3	3	1500	-14.2	-22.9	48	152	6.1	149	8.3	4
1800	-15.0	-23.9	47	167	3.0	159	4.4	1	1800	-17.7	-25.9	49	146	6.6	143	8.9	1	1800	-17.2	-25.0	51	159	5.2	154	7.6	1
2100	-15.6	-24.2	48	158	3.0	139	5.7	1	2100	-17.7	-25.9	49	144	6.3	141	8.3	1	2100	-18.4	-26.3	50	155	6.1	152	7.6	1
2400	-16.1	-25.4	45	149	4.2	149	6.3	2	2400	-18.1	-26.2	49	151	6.0	156	8.9	1	2400	-17.8	-25.7	50	157	5.3	161	7.0	1

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD			
	DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW

0300	-17.5	-25.5	50	152	4.3	145	6.3	1
0600	-18.8	-26.7	50	183	2.5	146	5.7	1
0900	-17.4	-25.4	50	197	2.7	197	3.8	2
1200	-15.3	-23.0	52	176	2.5	180	3.2	12
1500	-17.2	-26.1	46	174	2.4	151	3.8	7
1800	-19.3	-27.4	49	172	1.9	184	3.3	1
2100	-18.3	-26.2	50	189	1.9	164	3.8	1
2400	-16.8	-24.8	50	195	1.7	201	3.2	1

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DAY	MAX. TEMP. DEG C	MIN. TEMP. DEG C	MEAN TEMP. DEG C	RES. DIR. DEG	RES. SPD. M/S	AVG. WIND DIR. DEG	MAX. WIND SPD. M/S	MAX. GUST SPD. M/S	GUST P'VAL DIR. RH %	MEAN DEG C	MEAN DP MM	DAY'S PRECIP MM	SOLAR ENERGY WH/SQM	
1	*****	*****	*****	***	****	****	***	****	***	**	*****	***	*****	1
2	*****	*****	*****	***	****	****	***	****	***	**	*****	***	*****	2
3	*****	*****	*****	***	****	****	***	****	***	**	*****	***	*****	3
4	*****	*****	*****	***	****	****	***	****	***	**	*****	***	*****	4
5	-24.9	-28.9	-26.9	312	7.9	8.1	295	14.6	NW	49	-39.0	***	736	5
6	-27.9	-34.6	-31.3	178	2.7	2.9	179	6.3	S	28	-44.2	***	793	6
7	-23.1	-31.7	-27.4	166	3.4	3.6	153	7.6	SSE	24	-42.1	***	848	7
8	-19.4	-27.4	-23.4	180	2.4	2.7	192	7.6	S	21	-39.4	***	908	8
9	-17.7	-22.8	-20.3	116	3.3	3.8	146	13.3	ESE	26	-34.6	***	745	9
10	-17.1	-21.2	-19.2	147	6.2	6.4	139	11.4	SSE	40	-29.6	***	643	10
11	-13.2	-21.5	-17.4	147	6.9	7.1	137	11.4	SE	43	-27.5	***	473	11
12	-11.1	-15.8	-13.5	149	4.7	4.8	138	8.9	SSE	51	-21.7	***	420	12
13	-11.2	-23.1	-17.2	157	2.3	3.2	091	15.2	SSE	40	-27.6	***	943	13
14	-16.1	-26.5	-21.3	143	2.9	3.7	105	10.2	SE	22	-36.5	***	895	14
15	-20.4	-27.0	-23.7	163	4.0	4.3	156	8.9	SSE	25	-38.3	***	858	15
16	-16.4	-24.1	-20.3	166	2.6	3.0	145	8.3	ESE	23	-35.9	***	973	16
17	-14.1	-24.7	-19.4	176	2.3	2.8	155	7.0	SSE	29	-33.1	***	893	17
18	-13.5	-24.4	-19.0	162	2.2	3.0	040	7.6	SSE	36	-31.3	***	718	18
19	-15.0	-25.0	-20.0	180	2.8	3.0	199	8.9	S	28	-33.2	***	900	19
20	-18.5	-26.5	-22.5	169	3.1	3.5	132	8.3	SSW	30	-34.7	***	848	20
21	-16.8	-25.0	-20.9	133	2.3	3.4	077	11.4	SE	25	-36.1	***	983	21
22	-22.3	-28.7	-25.5	184	3.0	3.3	158	8.3	S	22	-40.5	***	1070	22
23	-19.2	-26.2	-22.7	159	3.4	3.6	134	7.6	SSE	23	-38.1	***	1090	23
24	-21.9	-29.2	-25.6	185	2.5	2.7	137	5.7	SSW	24	-40.5	***	1105	24
25	-24.2	-26.3	-26.3	164	3.6	3.8	151	8.3	SSE	27	-39.9	***	1050	25
26	-23.0	-29.6	-26.3	165	3.7	3.8	157	8.3	SSE	30	-38.9	***	1028	26
27	-21.9	-32.1	-27.0	178	3.0	3.4	129	8.3	S	34	-37.3	***	825	27
28	-14.3	-23.2	-18.8	173	2.9	3.4	211	6.3	SSE	45	-25.7	***	518	28
29	-14.2	-19.1	-16.7	145	6.4	6.4	135	9.5	SE	47	-25.7	***	695	29
30	-14.2	-18.5	-16.4	154	5.3	5.4	149	8.3	SSE	50	-24.7	***	1118	30
31	-15.3	-21.1	-18.2	177	2.4	2.6	145	6.3	S	50	-25.5	***	675	31
MONTH	-11.1	-34.6	-21.7	161	3.2	3.5	091	15.2	SSE	33	-34.2	***	22743	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 13.3

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.6

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 12.7

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 11.4

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

*** SEE NOTES AT THE BACK OF THIS REPORT. ***

R & M CONSULTANTS, INC.

SUSITTNA HYDROELECTRIC PROJECT

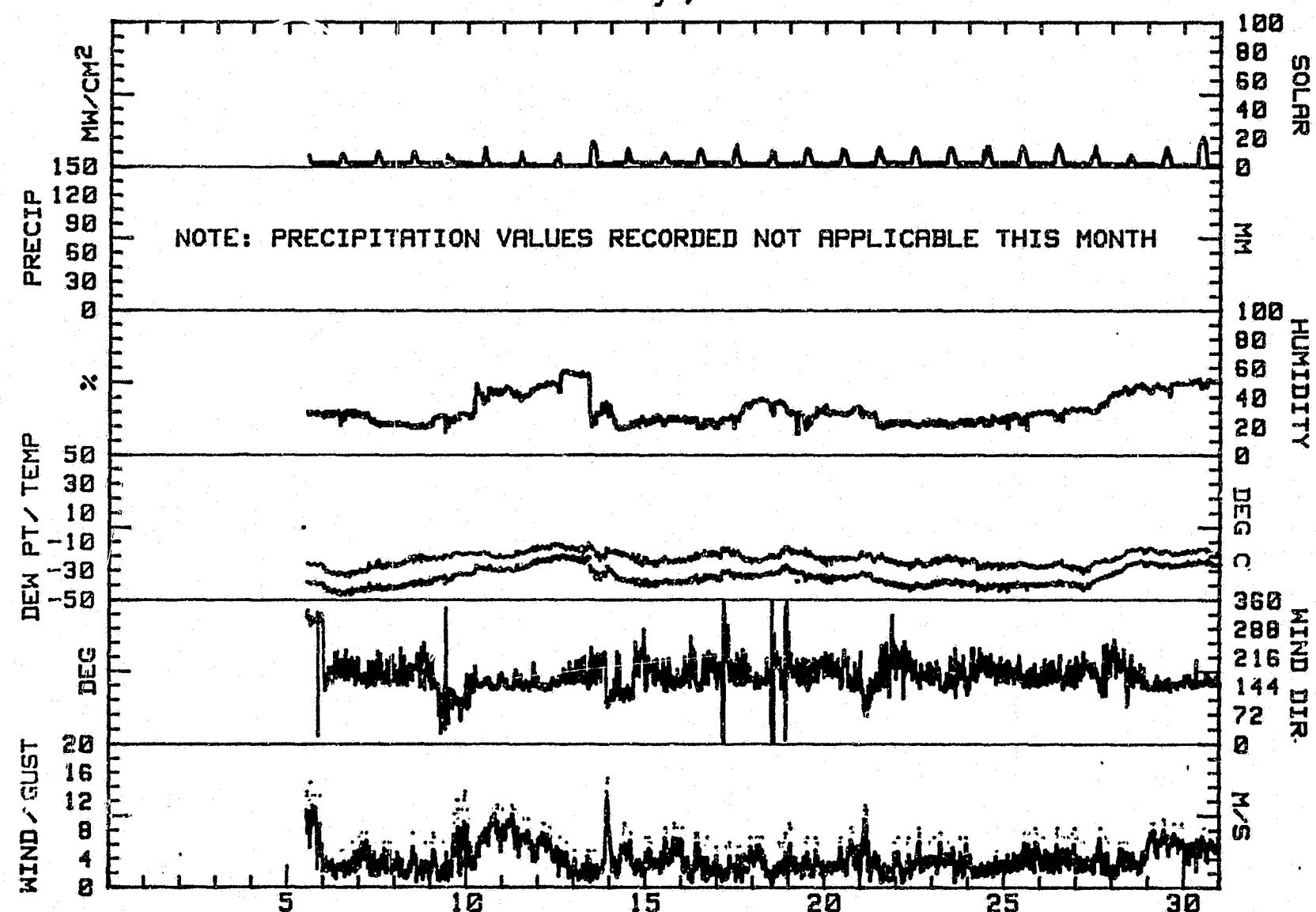
WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING January, 1982

DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.16	.16	.08	0.00	0.00	6.00	0.00	.39	
NNE	0.00	.12	0.00	0.00	0.00	0.00	0.00	.12	
NE	.08	.12	.04	0.00	0.00	0.00	0.00	.24	
ENE	0.00	.16	.08	.20	0.00	0.00	0.00	.43	
E	.04	.28	.39	.55	.20	0.00	0.00	1.46	
ESE	.08	.83	1.34	.71	0.00	0.00	0.00	2.95	
SE	0.00	1.30	9.05	7.63	.08	0.00	0.00	18.06	
SSE	0.00	5.74	20.73	4.37	0.00	0.00	0.00	30.84	
S	.20	10.74	9.52	.12	0.00	0.00	0.00	20.57	
SSW	.12	10.50	4.84	.04	0.00	0.00	0.00	15.50	
SW	.08	4.56	.79	.04	0.00	0.00	0.00	5.47	
WSW	.08	1.18	.16	0.00	0.00	0.00	0.00	1.42	
W	0.00	.43	0.00	0.00	0.00	0.00	0.00	.43	
WNW	0.00	.16	.04	.08	.08	0.00	0.00	.35	
NW	0.00	.08	.24	1.06	.20	0.00	0.00	1.57	
NNW	0.00	.08	.04	.08	0.00	0.00	0.00	.20	
CALM								0.00	
TOTAL	.83	36.43	47.32	14.87	.55	0.00	0.00	100.00	

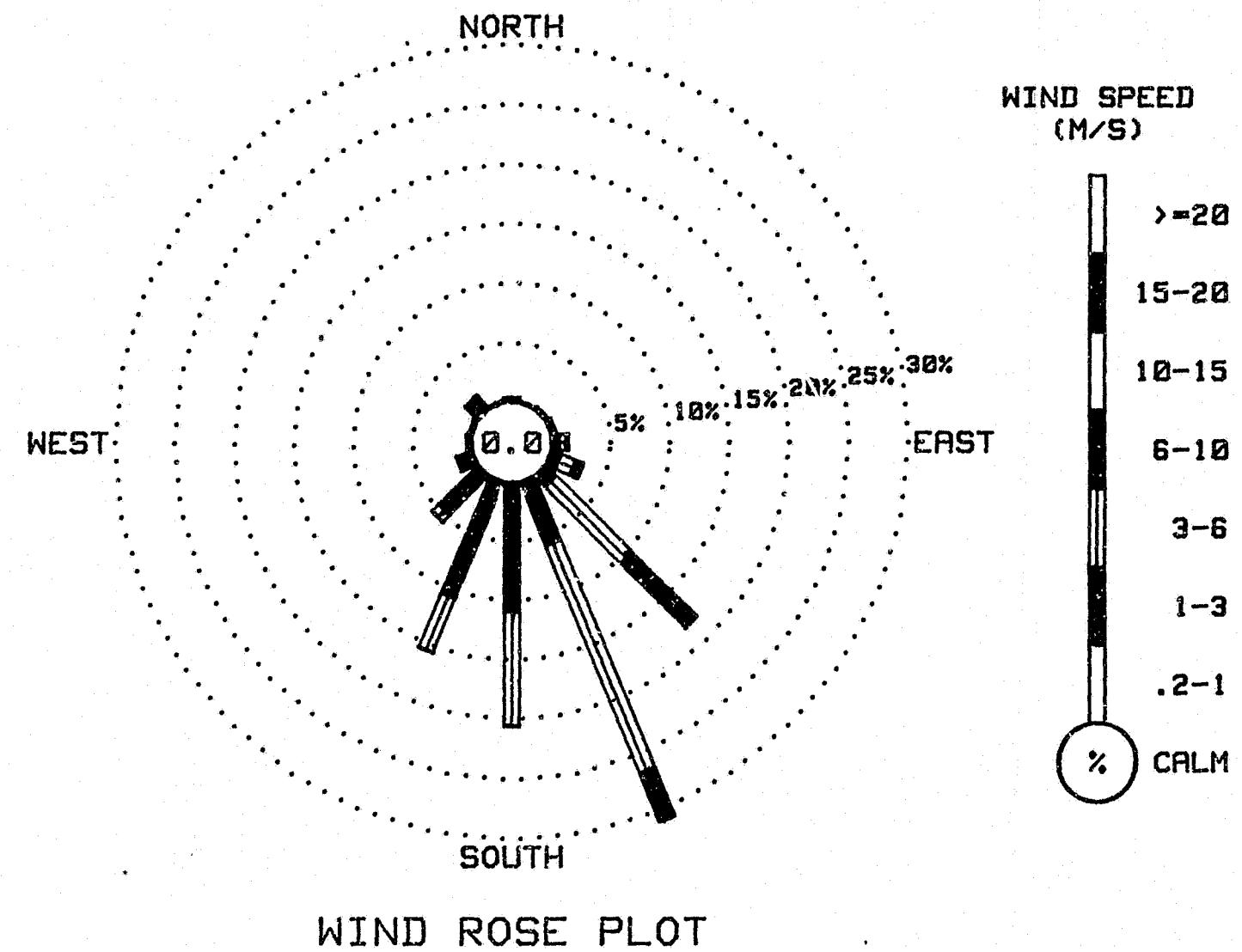
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT

2542 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
January, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
January, 1982



No precipitation data for February
(See INTERPRETING DATA).

R & M CONSULTANTS, INC.
SUSTAINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

DAY 01

DAY 02

DAY 03

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-14.7	-22.9	50	203	2.4	213	3.8	1	0300	-6.6	-13.1	60	162	2.8	146	6.3	1	0300	-4.1	-11.8	55	164	3.6	144	7.0	1
0600	-13.4	-21.0	53	147	2.7	139	5.1	1	0600	-4.9	-11.2	61	157	3.8	137	7.0	1	0600	-4.5	-11.7	57	180	3.0	188	5.1	1
0900	-12.4	-20.0	53	189	2.2	176	3.8	1	0900	-6.2	-12.7	60	154	4.4	138	8.3	2	0900	-2.3	-9.7	57	166	2.6	140	5.7	1
1200	-10.4	-19.1	49	187	2.2	168	3.8	13	1200	-7.8	-14.8	57	175	3.1	129	6.3	8	1200	-2.1	-10.9	51	168	2.1	166	5.1	10
1500	-10.7	-18.7	52	196	2.4	179	5.1	2	1500	-5.3	-12.9	55	195	3.4	199	6.3	3	1500	-2.9	-10.0	58	165	3.2	130	7.6	3
1800	-8.9	-16.5	54	176	3.7	187	5.7	1	1800	-4.8	-11.8	58	148	2.8	102	7.0	1	1800	-1.3	-7.0	65	162	2.3	134	7.6	1
2100	-8.7	-15.5	58	147	3.2	130	5.7	1	2100	-5.9	-12.6	59	140	4.6	148	6.3	1	2100	-2.0	-8.3	62	179	3.3	151	7.6	1
2400	-7.1	-13.3	61	165	2.7	135	5.7	1	2400	-6.5	-13.4	58	169	3.6	160	5.7	1	2400	*****	*****	**	***	****	142	4.4	***

DAY 04

DAY 05

DAY 06

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	1.2	-4.2	67	155	2.1	150	3.2	1 0300	-5.7	*****	69	***	****	***	****	1 0300	-8.1	*****	55	***	0.0	176	.6	1
0600	1.6	*****	72	164	1.6	148	3.2	1 0600	-5.3	*****	68	***	****	***	****	1 0600	-6.5	*****	52	***	0.0	204	.6	1
0900	1.4	-3.6	69	183	1.0	180	1.9	3 0900	-5.0	*****	67	***	****	***	****	3 0900	-5.6	*****	37	***	0.0	223	.6	12
1200	2.2	*****	59	197	.9	206	1.9	10 1200	-3.7	*****	54	***	0.0	***	0.0	15 1200	-3.3	-18.2	31	182	.8	143	3.2	33
1500	1.0	-2.6	77	353	.9	010	2.5	3 1500	-4.0	*****	72	***	0.0	***	0.0	4 1500	-4.3	-16.9	37	179	1.4	143	3.8	10
1800	-2.4	*****	74	243	.7	316	2.5	1 1800	-5.1	*****	69	***	0.0	***	0.0	1 1800	-5.0	*****	54	154	.4	147	4.4	1
2100	-4.9	*****	71	***	****	***	****	1 2100	-5.6	*****	67	***	0.0	***	0.0	1 2100	-6.2	*****	60	***	0.0	***	0.0	1
2400	-4.3	*****	70	***	****	***	****	1 2400	-6.7	*****	62	***	0.0	***	0.0	1 2400	-4.5	*****	58	***	0.0	***	0.0	1

DAY 0%

DAY 08

DAY 09

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-4.7	*****	59	***	0.0	***	0.0	1	0300	-5.8	-13.0	57	172	3.0	174	6.3	1	0300	-4.2	-12.4	53	298	8.0	288	15.9	1
0600	-1.3	*****	52	***	0.0	***	0.0	1	0600	-7.5	-12.0	70	150	4.8	135	8.9	0	0600	-4.6	-15.1	44	330	5.7	311	9.5	1
0900	.8	-10.8	42	186	2.3	179	6.3	8	0900	-10.1	-15.4	65	142	7.0	133	9.5	4	0900	-4.5	-16.5	39	334	5.1	331	8.3	7
1200	-2.4	-13.4	43	142	2.6	196	7.0	15	1200	-8.5	-14.1	64	146	4.8	131	8.9	10	1200	-5.5	-19.4	33	321	4.3	334	8.3	8
1500	.2	-12.6	38	178	1.8	170	3.8	8	1500	-6.9	-12.7	63	173	2.5	181	5.1	3	1500	-5.7	-20.3	31	325	6.9	321	13.3	7
1800	-3.7	-11.9	53	177	2.3	155	5.1	1	1800	-5.8	*****	68	121	.8	163	3.8	0	1800	-6.5	-20.6	32	330	6.4	330	12.1	2
2100	-3.6	-11.8	53	186	2.9	174	5.7	1	2100	-3.5	-10.6	58	034	1.7	084	7.0	1	2100	-7.0	-20.7	33	251	2.4	186	10.2	2
2400	-5.1	-11.9	59	170	3.2	145	8.3	1	2400	-3.7	-11.2	56	011	2.4	330	9.5	1	2400	-7.7	-20.6	35	197	1.2	156	4.4	2

R & M CONSULTANTS, INC.

SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	MW	
0300	-8.8	-22.6	32	321	1.2	333	10.8	2	0300	-22.5	-35.1	31	189	1.9	201	3.8	3	0300	-20.9	-36.2	24	175	3.1	153	6.3	3	
0600	-10.2	-23.2	34	332	9.5	323	14.6	2	0600	-21.9	-33.9	33	187	2.4	151	5.7	2	0600	-22.6	-38.0	23	158	3.4	151	5.7	3	
0900	-11.4	-24.6	33	319	11.9	315	15.9	6	0900	-19.9	-33.3	27	175	2.3	166	6.3	10	0900	-18.6	-36.0	20	156	3.8	159	7.0	12	
1200	-11.0	-26.8	26	319	8.1	319	12.7	21	1200	-18.1	-34.6	22	188	2.0	144	5.1	23	1200	-15.8	-34.1	19	163	4.0	155	5.7	25	
1500	-11.8	-28.8	23	309	7.0	313	10.2	9	1500	-16.6	-34.8	19	142	1.9	109	7.6	10	1500	-17.2	-35.8	18	159	4.0	152	6.3	11	
1800	-15.3	-29.5	30	185	3.2	167	7.0	2	1800	-20.4	-35.3	25	203	2.1	243	5.1	2	1800	-18.7	-35.1	22	143	5.5	133	8.9	3	
2100	-17.7	-31.5	29	181	2.9	185	5.7	3	2100	-22.1	-37.6	23	184	3.4	186	6.3	3	2100	-19.7	-35.5	23	135	8.3	136	10.2	3	
2400	-20.1	-32.9	31	189	2.1	168	5.1	2	2400	-20.8	-36.5	23	199	2.0	191	5.1	3	2400	-21.4	-35.5	27	144	6.3	146	10.2	2	

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	MW	
0300	-23.3	-36.8	28	133	7.0	133	9.5	2	0300	-21.2	-31.8	38	155	2.4	143	6.3	2	0300	-27.0	-36.8	39	331	4.2	331	7.6	2	
0600	-23.6	-36.0	31	131	7.3	123	10.2	2	0600	-19.2	-28.7	43	129	2.4	137	8.9	1	0600	-27.9	*****	40	305	1.0	321	2.5	2	
0900	-21.5	-34.5	30	145	5.2	126	9.5	6	0900	-19.9	-30.4	39	226	1.7	249	7.6	7	0900	-29.0	-39.4	36	291	.3	343	2.5	8	
1200	-20.0	-33.2	30	134	6.7	139	8.3	15	1200	-20.6	-31.3	38	317	.7	318	8.9	13	1200	-28.6	-40.5	31	159	2.2	167	4.4	19	
1500	-13.2	-28.3	27	130	3.6	119	7.6	6	1500	-23.6	-34.3	37	315	9.9	315	14.0	8	1500	-27.4	-39.4	31	183	1.8	206	3.8	10	
1800	-16.5	-29.8	31	168	1.9	171	4.4	2	1800	-25.4	-35.6	38	318	10.7	319	13.3	2	1800	-27.8	-38.1	37	172	2.3	161	4.4	2	
2100	-19.1	-31.4	33	176	4.3	174	6.3	2	2100	-26.6	-37.5	35	317	10.6	316	13.3	2	2100	-28.6	-38.3	39	184	2.7	192	5.1	2	
2400	-18.1	-30.5	33	163	3.1	142	5.7	2	2400	-26.7	-38.5	32	323	8.3	317	11.4	2	2400	-29.8	-39.6	38	190	3.2	188	5.7	2	

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	% DEG.	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	M/S	MW	DEG C	DEG C	% DEG.	M/S	M/S	M/S	MW	
0300	-24.8	-35.1	38	183	4.8	183	7.6	2	0300	-24.4	-33.7	42	161	2.5	141	5.1	1	0300	-20.9	-29.5	46	195	2.4	207	4.4	1	
0600	-25.3	-35.3	39	359	.2	137	6.3	2	0600	-24.5	-34.3	40	170	3.0	142	6.3	2	0600	-20.9	-29.3	47	188	2.3	190	4.4	1	
0900	-24.7	-37.3	30	069	2.3	057	9.5	13	0900	-21.9	-32.2	39	182	2.6	197	5.1	8	0900	-22.6	-34.8	32	184	4.2	188	6.3	13	
1200	-26.3	-39.4	28	163	3.4	167	5.7	24	1200	-21.5	-34.8	29	178	2.8	176	5.1	24	1200	-20.4	-31.4	37	179	3.7	176	6.3	17	
1500	-26.3	-38.4	31	188	2.4	166	4.4	8	1500	-23.5	-36.9	28	199	2.3	201	3.8	13	1500	-20.6	-32.2	35	188	3.9	195	7.0	11	
1800	-26.5	-37.2	36	180	3.3	184	6.3	2	1800	-23.2	-33.9	37	171	3.1	173	6.3	2	1800	-22.1	-32.7	38	167	2.0	137	5.7	2	
2100	-25.1	-35.1	39	173	2.9	162	5.7	2	210																		

R & M CONSULTANTS, INC.

SUSSEX TNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-27.0	-35.6	44	204	1.4	208	3.2	2	0300	-27.7	-38.5	35	188	2.3	171	5.1	2	0300	-29.5	-42.5	27	190	2.4	156	5.7	3		
0600	-26.6	-35.5	43	189	1.5	154	4.4	2	0600	-28.3	-39.6	33	161	2.5	133	7.0	2	0600	-32.1	-44.8	27	194	1.9	201	4.4	3		
0900	-23.1	****	34	189	1.7	174	4.4	15	0900	-26.6	-41.9	22	165	2.4	128	5.7	24	0900	-28.4	-43.0	23	182	2.3	189	5.7	19		
1200	-23.0	-36.5	28	176	1.7	173	4.4	39	1200	-24.5	-40.5	21	190	1.8	157	3.8	42	1200	-25.8	-41.6	21	169	2.4	141	5.7	33		
1500	-24.2	-36.6	31	181	3.1	145	5.7	11	1500	-25.2	-41.1	21	192	1.8	188	3.8	17	1500	-22.7	-39.4	20	187	1.3	321	8.3	16		
1800	-25.7	-35.9	38	180	2.7	161	5.7	2	1800	-28.1	-42.0	25	190	1.6	158	4.4	3	1800	-25.4	-40.8	22	311	7.0	306	12.7	3		
2100	-27.7	-37.7	38	147	2.5	144	5.7	2	2100	-28.8	-42.6	25	185	2.6	188	5.1	2	2100	-29.7	-43.7	24	098	.7	140	5.1	2		
2400	-28.9	-38.8	38	172	3.0	169	5.7	2	2400	-28.6	-42.4	25	171	3.0	163	5.7	2	2400	-30.7	-44.6	24	201	2.1	206	3.8	3		

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-33.7	-46.2	27	173	2.8	149	6.3	3	0300	-26.1	-39.5	27	188	2.5	190	6.3	3	0300	-26.1	-41.9	21	160	3.8	166	7.0	3		
0600	-31.0	-44.2	26	178	2.9	176	5.1	3	0600	-26.5	-40.2	26	174	2.8	154	7.0	3	0600	-25.0	-40.5	22	170	3.4	150	6.3	3		
0900	-30.0	-44.4	23	169	3.1	150	7.0	17	0900	-27.0	-41.8	23	164	4.0	147	8.3	18	0900	-24.3	-39.9	22	171	3.4	145	6.3	19		
1200	-28.0	-43.1	22	170	3.4	157	6.3	30	1200	-22.9	-39.6	20	156	4.4	138	8.3	31	1200	-21.5	-37.9	21	165	3.6	180	6.3	32		
1500	-26.1	-41.9	21	159	3.5	164	7.0	15	1500	-20.6	-38.1	19	172	2.5	148	5.1	15	1500	-19.7	-37.4	19	176	2.8	161	6.3	16		
1800	-27.8	-42.5	23	158	4.0	155	7.0	3	1800	-24.1	-39.7	22	162	3.5	157	6.3	3	1800	-22.1	-38.5	21	161	3.3	149	6.3	3		
2100	-28.8	-42.2	26	162	3.2	145	7.0	3	2100	-23.1	-39.8	20	169	2.9	161	6.3	3	2100	-22.2	-39.0	20	157	4.0	149	6.3	3		
2400	-28.9	-41.7	28	160	3.9	150	7.0	3	2400	-24.8	-40.7	21	157	4.0	144	6.3	3	2400	-22.5	-38.8	21	164	3.5	148	6.3	3		

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-21.6	-38.5	20	164	2.5	143	5.1	3	0300	-20.2	-37.8	19	182	2.7	159	6.3	3	0300	-15.7	-34.6	18	177	2.6	174	5.1	3		
0600	-23.3	-39.9	20	150	4.6	145	7.0	3	0600	-23.4	-40.0	20	169	2.7	150	5.7	3	0600	-16.8	-34.0	21	141	4.1	136	6.3	3		
0900	-20.9	-37.9	20	156	3.9	150	6.3	20	0900	-20.6	-38.1	19	183	2.6	172	7.0	20	0900	-17.2	-34.3	21	136	5.4	136	7.6	13		
1200	-19.3	-36.6	20	164	2.7	142	5.7	32	1200	-18.5	-36.4	19	163	3.6	156	7.0	32	1200	-14.9	-33.9	18	157	3.0	133	7.0	37		
1500	-17.7	-36.2	18	183	2.2	160	5.1	16	1500	-16.7	-35.4	18	157	4.1	148	6.3	17	1500	-14.9	-33.9	18	183	2.7	173	4.4	15		
1800	-20.3	-37.9	19	174	2.6	163	5.7	3	1800	-18.0	-36.5	18	174	3.1	147	6.3	3	1800	-17.7	-36.2	18	177	2.5	188	4.4	3		
2100	-21.1	-38.1	20	158	3.9	145	6.3																					

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

DAY 28

HOUR DEW WIND WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-16.9	-35.6	18	170	3.0	180	5.7	3
0600	-17.7	-36.2	18	152	3.6	136	7.6	3
0900	-18.9	-36.7	19	167	3.3	143	7.0	22
1200	-14.4	-34.1	17	181	3.1	166	6.3	35
1500	-15.0	-34.6	17	192	4.2	197	7.0	18
1800	-18.5	-36.4	19	183	3.4	195	5.7	3
2100	-19.6	-37.3	19	176	2.7	155	5.1	3
2400	-17.4	-35.5	19	188	3.4	193	6.3	3

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

DAY	MAX. DEG C	MIN. DEG C	MEAN DEG C	RES. DIR.	RES. M/S	AVG. M/S	WIND DIR.	MAX. SPD. M/S	GUST SPD. M/S	P'VAL DIR.	MAX. RH %	MEAN DEG C	MEAN DP MM	DAY'S PRECIP MM	SOLAR ENERGY WH/SQM
1	-7.1	-17.7	-12.4	174	2.5	2.8	187	5.7	S	53	-19.1	****	580	1	
2	-4.3	-8.5	-6.4	161	3.4	3.8	138	8.3	SSE	59	-12.8	****	523	2	
3	.1	-6.4	-3.2	168	2.8	3.1	130	7.6	S	59	-9.9	****	625	3	
4	3.1	-4.9	-.9	175	.8	.9	150	3.2	SSE	69	-3.9	****	657	4	
5	-2.5	-7.0	-4.8	***	0.0	0.0	***	0.0	***	**	*****	***	950	5	
6	-1.4	-9.7	-5.6	176	.3	.4	147	4.4	SSW	34	-17.4	****	1710	6	
7	1.3	-6.2	-2.5	173	1.8	2.1	145	8.3	S	48	-12.0	****	1283	7	
8	-2.5	-10.1	-6.3	142	2.5	3.8	133	9.5	SE	64	-12.5	****	653	8	
9	-1.6	-8.4	-5.0	316	4.5	5.4	288	15.9	NNW	36	-18.1	****	995	9	
10	-7.5	-20.8	-14.2	310	4.0	6.0	315	15.9	NW	30	-26.8	****	1380	10	
11	-16.2	-22.5	-19.4	184	2.1	2.5	109	7.6	S	26	-34.4	****	1605	11	
12	-15.8	-22.8	-19.3	150	4.7	4.9	136	10.2	SSE	22	-35.9	****	1775	12	
13	-12.0	-24.6	-18.3	142	4.7	5.0	123	10.2	SE	30	-33.0	****	1218	13	
14	-17.7	-27.0	-22.4	315	4.4	6.2	315	14.0	NW	37	-33.1	****	1103	14	
15	-26.5	-30.1	-28.3	200	1.0	2.4	331	7.6	S	36	-38.7	****	1413	15	
16	-22.8	-29.0	-25.9	170	2.3	3.3	057	9.5	S	35	-36.9	****	1595	16	
17	-19.3	-26.9	-23.1	174	2.6	2.7	142	6.3	S	37	-33.3	****	1725	17	
18	-18.8	-24.6	-21.7	186	2.5	2.7	195	7.0	S	41	-31.3	****	1305	18	
19	-22.0	-29.7	-25.9	177	2.1	2.4	145	5.7	SSW	37	-36.5	****	1798	19	
20	-23.8	-30.3	-27.1	179	2.2	2.5	133	7.0	S	27	-40.7	****	2383	20	
21	-21.9	-32.9	-27.4	219	1.2	3.0	306	12.7	S	24	-42.6	****	2380	21	
22	-24.9	-34.0	-29.5	165	3.4	3.5	150	7.0	SSE	24	-43.3	****	2213	22	
23	-18.7	-29.2	-24.0	166	3.3	3.5	147	8.3	SSE	23	-39.8	****	2295	23	
24	-17.9	-26.4	-22.2	165	3.4	3.6	166	7.0	SSE	20	-39.1	****	2380	24	
25	-16.1	-24.9	-20.5	165	3.0	3.2	145	7.0	SSE	20	-38.2	****	2423	25	
26	-15.1	-24.7	-19.9	172	3.0	3.2	172	7.0	S	19	-37.3	****	2475	26	
27	-13.2	-20.9	-17.1	162	3.0	3.3	136	7.6	SSE	19	-35.1	****	2235	27	
28	-14.2	-20.2	-17.2	177	3.3	3.5	136	7.6	S	19	-35.9	****	2628	28	
MONTH	3.1	-34.0	-16.6	176	1.8	3.2	288	15.9	S	34	-29.5	****	44299		

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 15.2

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 15.2

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.0

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 15.2

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

**** SEE NOTES AT THE BACK OF THIS REPORT ****

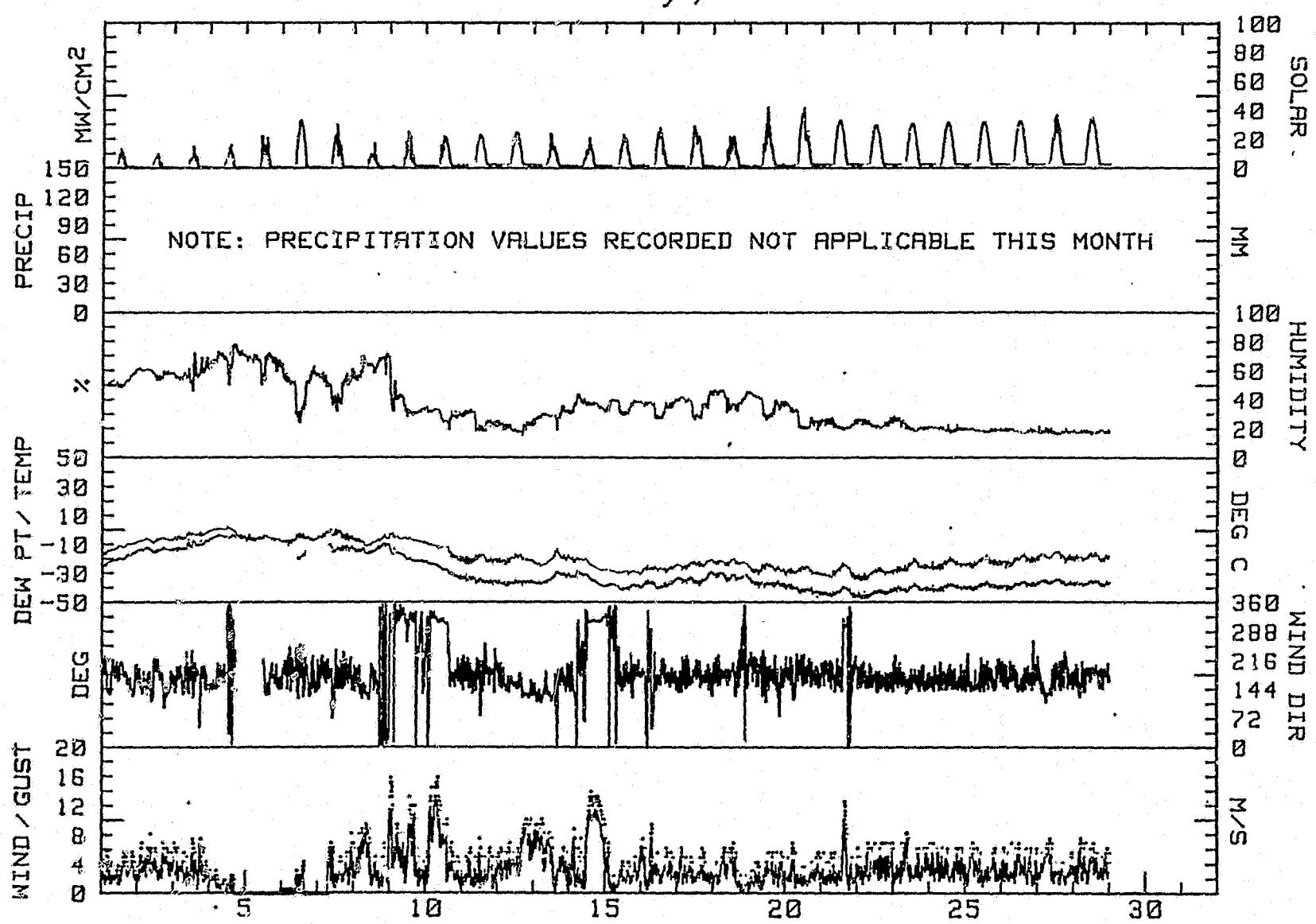
R. & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING February, 1982

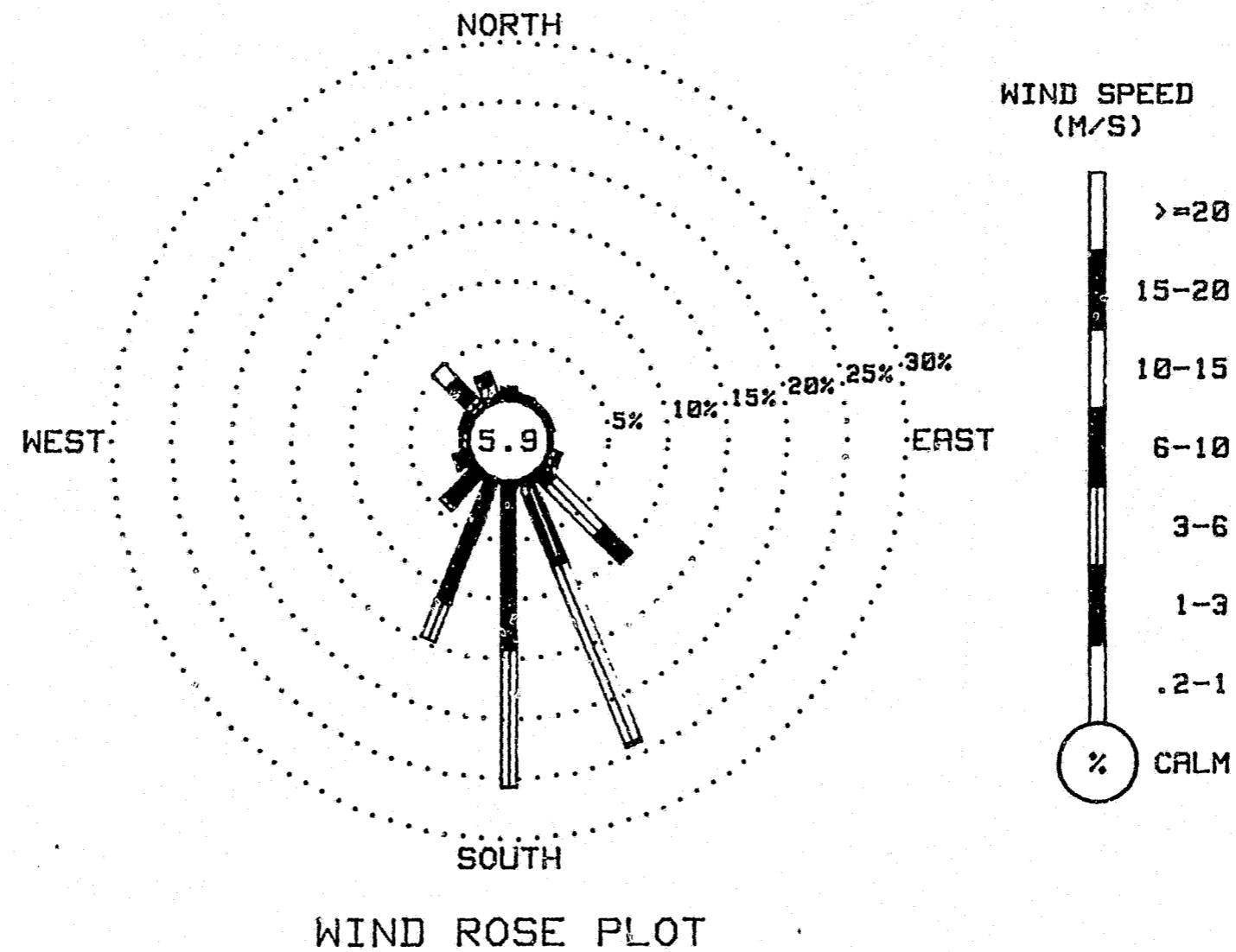
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2	1.0	3.0	6.0	10.0	15.0	20.0	OR GREATER	
	TO 1.0	TO 3.0	TO 6.0	TO 10.0	TO 15.0	TO 20.0	TO 20.0		
N	.11	.69	.34	0.00	0.00	0.00	0.00		1.15
NNE	.15	.38	.11	0.00	0.00	0.00	0.00		.65
NE	.04	.38	.04	.04	0.00	0.00	0.00		.50
ENE	.08	.19	.11	.08	0.00	0.00	0.00		.46
E	.04	.15	.08	0.00	0.00	0.00	0.00		.27
ESE	0.00	.23	.57	.38	0.00	0.00	0.00		1.19
SE	.08	1.46	5.86	3.10	0.00	0.00	0.00		10.49
SSE	.31	7.47	15.97	.27	0.00	0.00	0.00		24.01
S	.31	13.79	11.45	.04	0.00	0.00	0.00		25.58
SSW	.15	11.07	3.29	0.00	0.00	0.00	0.00		14.52
SW	.15	3.52	.50	0.00	0.00	0.00	0.00		4.17
WSW	.31	1.03	.15	0.00	0.00	0.00	0.00		1.49
W	.08	.57	.11	0.00	0.00	0.00	0.00		.77
WNW	.23	.27	.08	.11	.31	0.00	0.00		1.00
NW	.15	.46	.61	2.22	1.72	0.00	0.00		5.17
NNW	.23	.38	1.00	.77	.27	0.00	0.00		2.64
CALM									5.94
TOTAL	2.41	42.05	40.29	7.01	2.50	0.00	0.00		100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2611 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
February, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
February, 1982



No Precipitation data for March
(See INTERPRETING DATA)!

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-16.8	-35.5	18	161	3.8	142	7.0	3	0300	-16.5	-35.2	18	163	4.3	155	7.0	3	0300	-21.2	-37.7	21	170	2.8	147	6.3	3	
0600	-17.2	-35.8	18	162	4.2	162	7.6	3	0600	-15.8	-34.6	18	149	4.3	168	8.3	3	0600	-23.5	-40.1	20	164	3.6	150	7.0	3	
0900	-18.1	-36.0	19	154	4.7	152	8.3	22	0900	-16.9	-35.6	18	159	4.1	156	7.0	24	0900	-20.4	-38.0	19	147	5.4	142	8.3	24	
1200	-13.1	-33.0	17	153	4.2	157	7.0	35	1200	-15.1	-34.6	17	157	2.6	151	5.7	36	1200	-16.7	-35.4	18	143	4.8	145	7.6	36	
1500	-11.0	-31.9	16	158	3.4	163	5.7	19	1500	-15.6	-34.5	18	188	3.4	184	5.7	19	1500	-15.7	-34.6	18	153	4.5	140	7.0	20	
1800	-13.7	-33.5	17	162	3.3	154	5.7	3	1800	-17.1	-35.7	18	182	3.7	184	5.7	3	1800	-19.1	-36.4	20	184	3.4	151	5.7	3	
2100	-14.5	-34.1	17	197	3.3	183	5.7	3	2100	-21.1	-38.1	20	174	3.5	147	5.7	3	2100	-19.9	-37.5	19	191	2.7	189	5.1	3	
2400	-16.9	-35.6	18	165	3.9	145	6.3	3	2400	-19.8	-37.5	19	208	2.7	204	5.1	3	2400	-20.5	-37.6	20	179	3.0	163	5.1	3	

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-21.0	-38.0	20	182	2.6	157	5.7	3	0300	-15.8	-31.8	24	157	4.1	148	6.3	3	0300	-14.3	-26.8	34	149	4.8	142	7.0	2	
0600	-22.7	-39.4	20	196	1.8	162	4.4	3	0600	-15.6	-31.2	25	151	3.4	136	6.3	3	0600	-12.4	-25.5	33	154	3.9	131	8.3	2	
0900	-19.3	-36.6	20	201	1.9	174	5.7	25	0900	-13.4	-29.3	25	146	4.0	137	7.0	16	0900	-12.4	-25.5	33	137	6.2	140	8.3	15	
1200	-14.3	-34.0	17	151	3.2	147	5.7	38	1200	-10.8	-31.1	17	144	4.9	142	7.6	41	1200	-10.1	-26.0	26	145	5.7	132	7.6	21	
1500	-13.7	-33.5	17	136	3.4	138	6.3	17	1500	-11.7	-30.2	20	139	5.4	132	7.6	17	1500	-10.2	-20.8	42	168	4.3	184	7.0	14	
1800	-13.4	-29.7	24	163	2.0	147	5.1	1	1800	-12.4	-29.3	23	141	4.5	143	7.0	3	1800	-9.2	-18.3	48	165	3.1	161	5.1	1	
2100	-14.7	-32.7	20	154	3.0	145	5.7	3	2100	-13.4	-28.1	28	156	3.6	147	5.7	2	2100	-10.1	-18.4	51	153	3.7	146	5.7	1	
2400	-16.9	-34.0	21	154	4.1	140	7.0	3	2400	-14.2	-28.8	28	155	4.3	139	6.3	2	2400	-10.5	-17.8	55	183	2.3	147	5.1	1	

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-10.3	-17.8	54	186	2.3	190	3.2	1	0300	-9.2	-16.6	55	177	2.5	164	5.1	1	0300	-14.0	-22.9	47	194	2.2	151	5.7	1	
0600	-9.8	-17.4	54	165	2.3	150	3.8	1	0600	-9.1	-16.1	57	141	2.7	135	4.4	1	0600	-10.9	-19.8	48	067	4.4	087	12.1	2	
0900	-8.4	-18.0	46	191	1.4	188	2.5	15	0900	-8.6	-17.2	50	182	2.7	146	5.1	14	0900	-9.8	-19.1	47	097	5.3	079	10.8	11	
1200	-5.1	****	26	183	1.2	159	3.2	27	1200	-6.1	-20.6	31	197	1.1	195	2.5	37	1200	-9.0	-20.9	38	114	1.0	085	8.3	34	
1500	-7.5	-21.1	33	209	1.0	215	2.5	21	1500	-6.1	-18.9	36	108	.8	057	3.8	18	1500	-10.1	-21.0	41	127	2.4	085	7.6	12	
1800	-10.5	-16.6	61	190	1.6	191	3.2	1	1800	-8.0	-18.2	44	094	1.9	111	6.3	1	1800	-11.2	-21.4	43	186	3.1	206	4.4	1	
2100	-11.0	-17.8	57	181	1.9	171	4.4	1	2100	-9.9	-19.9	44	147	2.1	123	5.1	2	2100	-12.3	-21.9	45	179	2.5	154	4.4	1	
2400	-9.6	-18.6	48	182	2.2	183	4.4	1	2400	-13.0	-22.8	44	171	2.6	152	5.1	2	2400	-11.2	-20.9	45	181	2.4	205	3.8	1	

R. A. M. CONSULTANTS, INC.

SUSSETINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S

0300	-11.2	-20.4	47	163	1.9	179	5.7	1 0300	-14.7	-25.4	40
0600	-10.4	-16.1	63	355	2.6	340	7.0	1 0600	-11.8	-20.2	50
0900	-8.4	-23.4	29	123	2.2	142	5.1	27 0900	-14.8	-24.4	44
1200	-5.8	-24.2	22	138	2.2	143	4.4	41 1200	-12.2	-25.0	34
1500	-6.6	-25.9	20	248	1.8	265	7.0	17 1500	-11.2	-23.1	37
1800	-9.9	-24.7	29	188	2.7	187	6.3	2 1800	-12.6	-23.0	42
2100	-12.7	-26.8	30	185	2.9	184	5.7	2 2100	-16.9	-26.3	44
2400	-12.0	-25.1	33	179	2.3	197	4.4	2 2400	-16.1	-25.4	45

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S

0300	-17.1	-31.7	27	188	3.2	185	5.7	2 0300	-23.9	-36.6	30
0600	-20.3	-34.1	28	189	3.6	173	6.3	3 0600	-21.5	-34.5	30
0900	-16.8	-34.9	19	178	3.6	189	6.3	30 0900	-16.3	-31.4	26
1200	-15.5	-32.9	21	172	2.7	172	5.7	43 1200	-16.0	-30.4	28
1500	-15.3	-33.7	19	205	2.1	208	4.4	25 1500	-14.9	-28.7	30
1800	-20.2	-34.4	27	197	2.5	201	4.4	3 1800	-15.2	-24.8	44
2100	-21.5	-34.8	29	193	2.7	203	5.1	2 2100	-14.8	-23.9	46
2400	-24.3	-37.3	29	208	3.9	210	6.3	2 2400	-15.2	-24.3	46

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S

0300	-11.7	-18.9	55	149	3.0	130	5.1	1 0300	-9.1	-16.5	55
0600	-11.4	-18.9	54	144	3.5	160	5.1	1 0600	-8.0	-15.7	54
0900	-10.8	-19.7	48	149	3.3	147	5.7	21 0900	-7.9	-17.3	47
1200	-9.5	-21.9	36	141	3.5	139	5.7	28 1200	-4.4	-18.8	32
1500	-9.6	-21.1	39	134	4.0	135	5.7	21 1500	-5.3	-18.2	36
1800	-11.0	-20.4	46	145	3.5	135	5.7	1 1800	-8.0	-16.9	49
2100	-10.6	-17.7	56	197	2.9	198	4.4	1 2100	-6.7	**** 48	202
2400	-9.9	-17.0	56	197	3.4	200	4.4	1 2400	-4.4	-13.8	48

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	DIR.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-11.4	-20.3	48	191	2.2	161	4.4	1	0300	-7.1	-17.1	45	218	2.1	184	5.7	1	0300	-4.2	-13.9	47	155	8.2	165	11.4	1		
0600	-9.3	-19.1	45	208	2.6	198	3.8	2	0600	-7.8	-18.0	44	247	2.4	247	5.1	2	0600	-4.2	-13.4	49	179	4.0	138	9.5	1		
0900	-6.6	-20.0	34	231	2.6	274	5.7	36	0900	-5.5	-21.2	28	217	2.8	217	7.0	34	0900	-1.5	-16.6	31	111	.8	115	8.3	20		
1200	-3.3	-19.7	27	234	2.6	247	5.7	48	1200	-3.5	-21.2	24	215	2.4	213	4.4	48	1200	-7	-15.1	33	126	2.1	090	9.5	30		
1500	-5.5	-16.9	28	142	2.0	178	8.3	26	1500	-3.0	-20.8	24	193	2.1	187	4.4	29	1500	-1.6	-11.0	49	257	1.8	258	6.3	15		
1800	-1.5	-16.2	32	109	3.4	864	10.2	2	1800	-7.7	-17.7	45	196	1.6	178	3.2	1	1800	-2.9	-10.0	58	162	2.4	183	5.1	1		
2100	-8.0	-18.5	43	220	2.2	225	5.1	1	2100	-6.1	-13.9	54	205	1.8	224	3.8	1	2100	-7.0	-13.9	58	176	1.1	162	3.8	1		
2400	-9.2	-18.5	47	236	1.7	252	3.8	1	2400	-6.5	-12.6	62	203	1.7	200	4.4	1	2400	-7.0	-12.1	67	162	2.4	147	7.0	1		

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	DIR.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-7.1	-12.4	66	194	2.2	189	3.8	1	0300	-9.0	-18.6	46	213	1.5	229	3.8	1	0300	-8.3	-14.3	62	197	1.9	215	3.2	1		
0600	-6.5	-12.4	63	189	2.8	194	5.1	1	0600	-6.7	-13.8	57	180	1.9	165	3.8	2	0600	-10.0	-16.7	58	188	3.4	186	5.7	2		
0900	-6.8	-20.9	32	191	2.2	185	3.8	34	0900	-7.2	-14.1	58	123	3.1	114	7.6	24	0900	-7.4	-19.7	37	173	3.9	189	5.7	34		
1200	-5.9	-23.3	24	19%	2.1	177	4.4	39	1200	-5.6	-17.2	40	180	2.8	118	7.6	39	1200	-5.3	-18.8	34	159	3.1	151	5.1	38		
1500	-5.7	-21.4	28	181	2.4	190	4.4	31	1500	-6.3	-16.9	43	194	3.9	192	5.7	20	1500	-4.8	-21.9	25	183	1.5	156	4.4	29		
1800	-10.0	-21.8	38	167	2.9	146	5.1	2	1800	-7.2	-15.9	50	189	4.3	188	5.7	2	1800	-8.6	-18.8	44	243	.9	232	2.5	2		
2100	-7.5	-20.5	35	180	2.7	182	5.1	2	2100	-7.1	-15.0	50	158	2.8	138	5.1	1	2100	-9.8	-20.1	43	270	.9	345	2.5	1		
2400	-7.6	-20.6	35	184	1.9	160	3.8	2	2400	-7.2	-13.4	61	183	1.5	185	3.2	1	2400	-10.2	****	57	242	.3	268	1.9	1		

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	DIR.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-9.4	-17.7	51	136	1.4	144	3.8	1	0300	-17.0	-29.2	34	147	3.2	139	5.1	2	0300	-21.1	-30.7	42	206	4.0	197	5.7	1		
0600	-10.4	****	53	210	1.0	159	3.2	2	0600	-16.5	****	35	189	1.9	197	3.8	3	0600	-21.9	-31.9	40	191	3.4	201	5.1	4		
0900	-7.8	-21.4	33	286	.8	006	2.5	25	0900	-10.5	****	17	218	.7	160	1.9	41	0900	-16.4	-30.7	28	187	2.5	159	5.1	43		
1200	-6.7	****	17	261	1.2	249	3.2	34	1200	-12.6	-30.4	21	211	1.8	204	3.8	50	1200	-12.9	-29.3	24	188	2.8	190	4.4	52		
1500	-4.9	****	14	295	.3	341	3.2	26	1500	-12.0	-30.9	19	207	2.5	199	3.8	33	1500	-12.3	-28.8	24	193	3.2	198	4.4	34		
1800	-9.2	****	26	322	1.3	322	5.1	3	1800	-15.6	-29.0	31	208	3.1	210	5.1	4	1800	-15.5	-28.9	31	177	3.1	183	5.1	3		
2100	-11.4	-25.6	30	291	1.7	307	5.7	2	2100	-18.9	-29.5	39	199	4.6	193	6.3	1	2100	-15.0	-26.8	36	184	2.2	178	4.4	2		
2400	-15.5	-28.2	33	189	.8	138	4.4	2	2400	-20.4	-30.3	41	212	3.8	203	5.7	2	2400	-13.6	-25.9	35	186	2.5	189	3.8	2		

R & M CONSULTANTS, INC.
SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.				
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	DEG C	%	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	MW	

0300	-14.9	-26.8	36	173	2.4	187	4.4	0300	-15.1	-28.5	31	187	2.7	197	4.4	2 0300	-14.5	-25.0	41	166	2.7	176	5.7	2
0600	-15.7	-27.2	37	159	3.4	157	5.7	0600	-15.6	-29.3	30	170	2.7	185	5.1	4 0600	-16.6	-27.7	38	188	1.9	146	3.8	4
0900	-13.7	-28.8	27	172	2.4	151	5.1	0900	-12.0	-32.1	17	191	2.1	203	3.8	41 0900	-15.8	-31.0	26	202	1.5	188	3.2	44
1200	-9.6	-28.9	19	182	1.9	193	3.2	1200	-8.6	-30.6	15	191	1.3	197	3.2	67 1200	-12.3	-32.3	17	195	1.5	164	3.2	54
1500	-8.9	-28.3	19	199	1.3	221	1.9	1500	-9.6	-29.5	18	215	1.3	223	2.5	38 1500	-11.3	-29.8	20	189	1.5	216	2.5	36
1800	-13.5	-26.8	32	183	2.1	175	4.4	1800	-10.1	-27.3	23	192	1.7	226	3.2	6 1800	-14.3	-30.1	25	172	2.8	169	4.4	5
2100	-14.0	-27.6	31	178	3.4	176	5.1	2100	-12.9	-27.7	28	166	1.6	167	4.4	3 2100	-20.0	-31.6	35	189	2.3	182	5.1	2
2400	-14.3	-27.8	31	181	2.7	184	5.1	2400	-13.2	-27.2	30	170	2.4	166	3.8	2 2400	-20.9	-31.6	38	196	2.4	211	3.8	2

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	DEG C	%	DEG. M/S	MW					

0300	-23.4	-33.6	39	203	1.9	207	3.8	2
0600	-22.9	-33.4	38	205	2.1	207	4.4	4
0900	-19.4	-34.1	26	212	3.3	206	5.1	47
1200	-15.8	-31.8	24	216	3.2	220	5.1	57
1500	-14.7	-31.3	23	207	2.6	206	3.8	36
1800	-18.1	-32.6	27	193	2.7	195	5.1	5
2100	-21.6	-34.3	31	194	2.7	183	4.4	2
2400	-21.4	-33.8	32	191	2.1	187	3.8	2

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

DAY	MAX.	MIN.	MEAN	RES.	RES.	AVG.	MAX.	MAX.	GUST P'VAL	MEAN	MEAN	PRECIP	DAY'S
	TEMP.	TEMP.	TEMP.	WIND DIR.	WIND SPD.	WIND SPD.	GUST DIR.	GUST SPD.	DIR.	RH %	DP DEG C		SOLAR ENERGY MM/kWh
	DEG C	DEG C	DEG C	M/S	M/S	M/S	DEG	M/S		MM	MM		MM/kWh
1	-10.2	-20.7	-15.5	163	3.8	3.9	152	8.3	SSE	18	-34.6	****	2680 1
2	-14.0	-22.4	-18.2	171	3.4	3.8	168	8.3	SSE	18	-35.8	****	2753 2
3	-15.5	-23.5	-19.5	163	3.6	3.9	142	8.3	S	19	-37.1	****	2775 3
4	-13.1	-22.9	-18.0	162	2.6	2.9	140	7.0	SSE	20	-34.9	****	2535 4
5	-9.2	-18.0	-13.6	148	4.2	4.4	142	7.6	SE	23	-30.2	****	2700 5
6	-9.2	-15.9	-12.6	153	4.1	4.4	131	8.3	SE	39	-22.8	****	1858 6
7	-5.1	-12.6	-8.9	183	1.7	1.8	171	4.4	S	48	-18.4	****	2145 7
8	-5.5	-13.0	-6.8	157	1.8	2.3	111	6.3	S	45	-18.4	****	2230 8
9	-7.7	-16.0	-11.9	135	1.8	3.6	087	12.1	SSW	44	-21.2	****	2178 9
10	-4.8	-13.4	-9.1	173	1.3	2.6	340	7.0	SE	35	-23.1	****	3000 10
11	-10.9	-16.9	-13.9	187	2.8	3.2	098	7.6	SSW	52	-23.7	****	2294 11
12	-10.0	-17.7	-13.9	223	1.3	2.9	296	9.5	SSE	33	-27.1	****	2305 12
13	-14.5	-24.8	-19.7	191	3.0	3.1	173	6.3	S	25	-34.1	****	3353 13
14	-14.4	-26.0	-20.2	187	2.9	3.1	206	5.7	SSW	34	-30.3	****	2443 14
15	-8.8	-15.1	-12.0	174	2.0	2.2	191	4.4	SSE	48	-20.1	****	2150 15
16	-8.6	-12.8	-10.7	155	3.1	3.5	147	5.7	SE	48	-19.6	****	2408 16
17	-4.2	-10.0	-7.1	188	2.2	2.6	132	7.0	SSW	46	-16.7	****	2955 17
18	-2.3	-8.6	-5.5	186	1.8	2.0	145	3.8	S	48	-15.4	****	2360 18
19	.1	-11.8	-5.9	198	1.7	2.7	064	10.2	SW	38	-18.5	****	2965 19
20	0.0	-9.9	-5.0	213	2.0	2.2	217	7.0	SSW	41	-17.9	****	3265 20
21	1.5	-7.8	-3.2	163	2.5	3.4	165	11.4	SSE	46	-13.4	****	2620 21
22	-4.0	-10.4	-7.2	184	2.4	2.5	194	5.1	S	42	-18.5	****	3275 22
23	-5.2	-9.7	-7.5	177	2.5	2.9	114	7.6	S	49	-16.1	****	2645 23
24	-2.2	-10.7	-6.5	186	1.8	2.2	186	5.7	S	44	-18.1	****	3113 24
25	-3.2	-16.2	-9.7	260	.5	1.6	307	5.7	W	35	-22.8	****	3043 25
26	-10.5	-21.1	-15.8	197	2.5	2.8	193	6.3	SSW	29	-30.4	****	3995 26
27	-11.9	-22.6	-17.3	190	2.9	3.0	197	5.7	S	32	-29.3	****	4125 27
28	-7.6	-17.6	-12.6	176	2.4	2.5	157	5.7	S	29	-27.7	****	3870 28
29	-7.2	-18.0	-12.6	183	1.9	2.1	185	5.1	S	24	-29.4	****	4250 29
30	-9.7	-22.1	-15.9	185	2.0	2.2	176	5.7	S	30	-29.4	****	4365 30
31	-14.4	-24.3	-19.4	203	2.6	2.6	206	5.1	SSW	30	-32.9	****	4845 31
MONTH	1.5	-26.0	-12.1	176	2.3	2.9	087	12.1	S	36	-24.8	****	91494

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 11.4
 GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 10.8
 GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 12.1
 GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 10.8

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

R & M CONSULTANTS, INC.

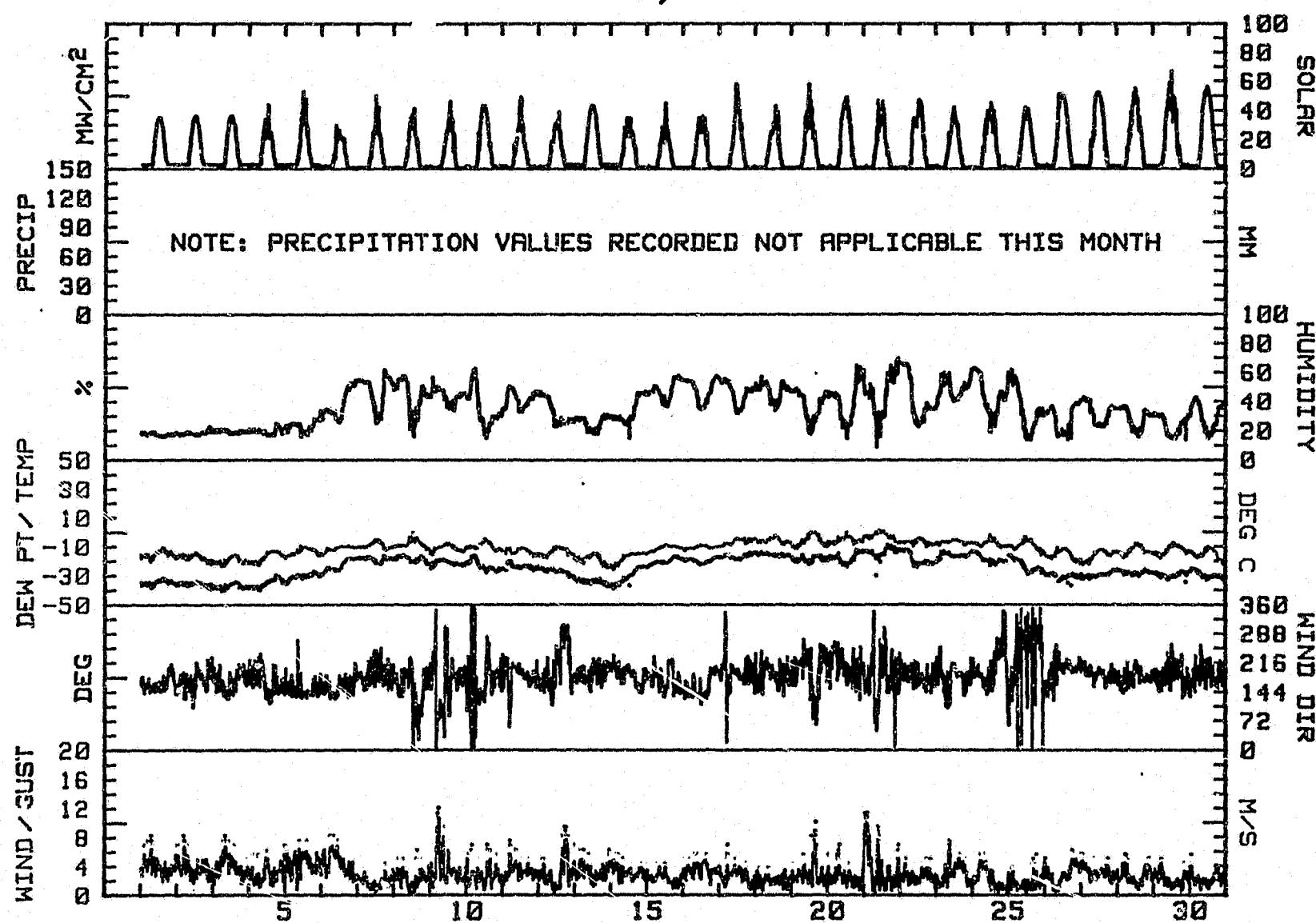
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING March, 1982

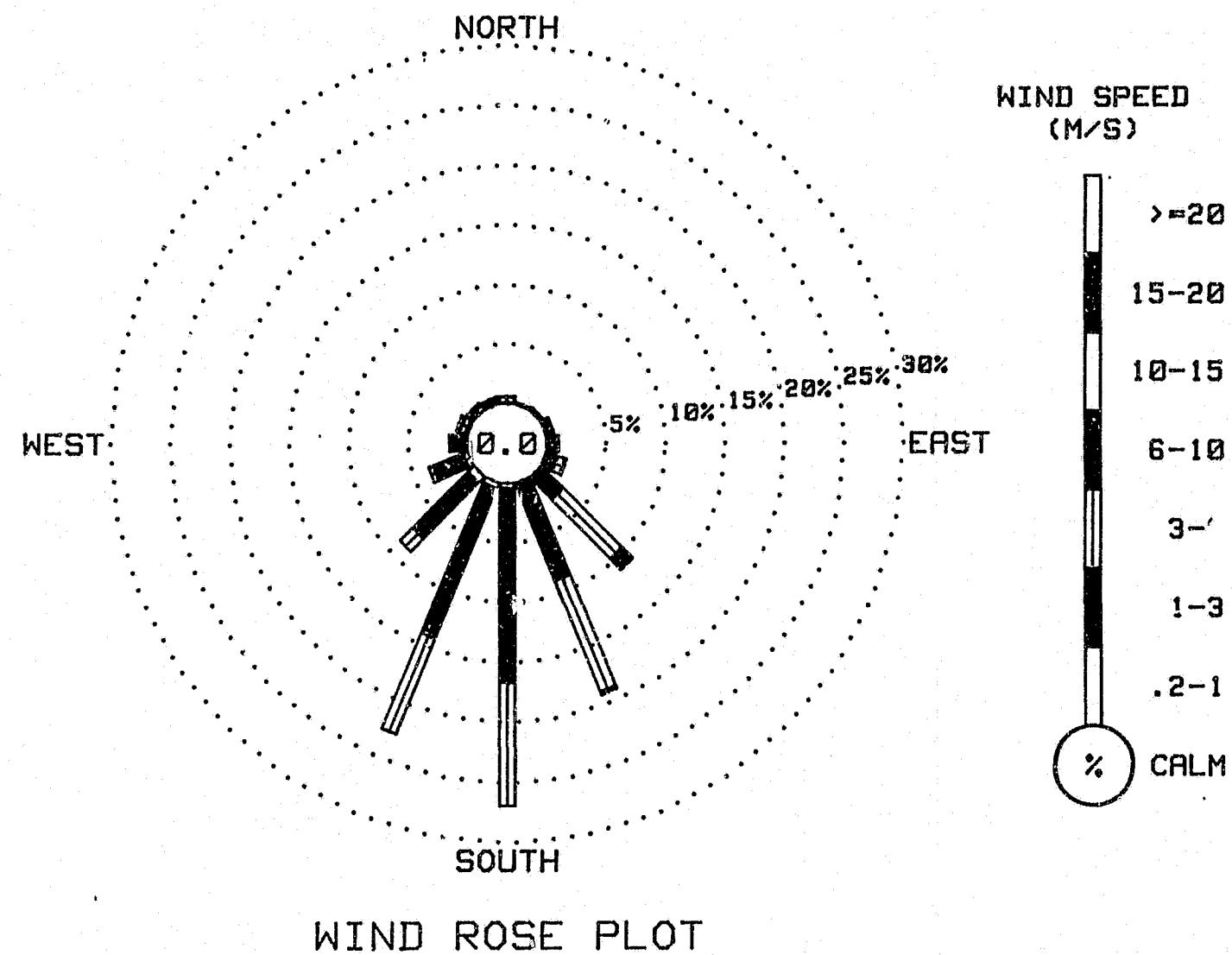
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.10	.40	.07	0.00	0.00	0.00	0.00	.57	
NNE	0.00	.10	.03	0.00	0.00	0.00	0.00	.13	
NE	.07	.10	.03	.03	0.00	0.00	0.00	.24	
ENE	.13	.17	.17	.13	.03	0.00	0.00	.64	
E	.07	.34	.24	.37	0.00	0.00	0.00	1.01	
ESE	.17	.84	.71	.10	0.00	0.00	0.00	1.82	
SE	.27	2.35	7.03	1.24	0.00	0.00	0.00	10.89	
SSE	.27	8.54	10.02	.27	0.00	0.00	0.00	19.09	
S	.40	16.24	10.25	0.00	0.00	0.00	0.00	26.89	
SSW	.47	13.61	8.54	.03	0.00	0.00	0.00	22.66	
SW	.71	6.52	1.51	0.00	0.00	0.00	0.00	8.74	
WSW	.40	2.76	.37	0.00	0.00	0.00	0.00	3.53	
W	.30	.84	.37	0.00	0.00	0.00	0.00	1.51	
WNW	.20	.50	.13	.17	0.00	0.00	0.00	1.01	
NW	.03	.34	.13	.20	0.00	0.00	0.00	.71	
NNW	.17	.34	.07	0.00	0.00	0.00	0.00	.57	
CALM	-----	-----	-----	-----	-----	-----	-----	0.00	
TOTAL	3.76	53.98	39.66	2.55	.03	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2975 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
March, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
March, 1982



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	A.	ST.	D.
	DEG C	DEG C	%	DEG	M/S	MW						DEG C	M/S	MW							DEG C	M/S	MW							
0300	-22.0	-33.4	35	207	1.2	227	2.5	2	0300	-22.8	-37.8	24	183	3.6	179	6.3	3	0300	-21.3	-36.9	23	179	2.4	152	6.3	3	.2	2		
0600	-21.8	-32.1	39	198	1.6	156	3.2	6	0600	-23.5	-38.8	23	185	3.0	204	5.1	6	0600	-21.1	-36.7	23	172	3.5	149	7.1	10	.9	7		
0900	-17.4	-32.7	25	197	1.8	202	4.4	43	0900	-19.8	-37.0	20	181	2.3	149	4.4	44	0900	-17.4	-35.5	19	163	4.7	155	8.3	44	0	0		
1200	-13.2	-33.1	17	186	2.0	190	4.4	55	1200	-16.0	-34.8	18	189	1.9	183	3.2	56	1200	-13.2	-33.1	17	144	4.9	140	7.6	58	.6	2		
1500	-12.4	-33.0	16	192	1.9	177	4.4	37	1500	-14.5	-34.1	17	184	2.1	171	3.2	38	1500	-12.6	-32.0	18	171	3.2	142	6.3	38	8	5		
1800	-15.2	-34.7	17	308	4.5	316	10.2	6	1800	-18.9	-36.2	20	180	2.9	178	4.4	6	1800	-15.5	-33.9	19	188	3.6	190	5.7	6	.9	3		
2100	-19.9	-37.1	20	253	1.8	278	7.6	3	2100	-21.8	-38.2	21	170	3.1	171	5.7	3	2100	-16.9	-32.3	25	193	3.1	191	5.1	3	.2	2		
2400	-20.7	-36.8	22	177	3.1	180	6.3	2	2400	-22.1	-38.5	21	160	3.5	147	5.7	3	2400	-17.6	-32.9	25	192	2.8	204	4.4	3	4	2		

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG	M/S	MW						DEG C	M/S	MW						DEG C	M/S	MW						
0300	-18.0	-33.7	24	186	3.0	164	5.7	3	0300	-12.6	-27.8	27	195	1.5	194	3.2	2	0300	-7.6	-25.7	22	161	2.5	144	4.4	3		
0600	-16.2	-33.0	22	192	3.0	170	6.3	12	0600	-12.0	-28.5	24	207	1.6	200	3.8	11	0600	-7.8	-24.9	24	175	2.4	179	4.4	7		1
0900	-13.3	-33.1	17	182	2.9	176	5.1	47	0900	-9.8	-30.3	17	182	1.7	185	3.8	44	0900	-4.3	-27.1	15	166	2.8	158	5.7	49	8	
1200	-11.0	-31.2	17	199	3.6	208	5.1	45	1200	-4.9	-28.3	14	207	1.2	214	3.2	57	1200	-3.0	-27.6	13	173	2.6	143	5.1	58	R	
1500	-9.2	-30.4	16	204	3.3	195	4.4	41	1500	-4.8	-27.5	15	196	1.7	199	3.8	32	1500	-2.4	-26.3	14	201	2.7	200	3.8	31		
1800	-9.9	-26.7	24	205	2.5	206	3.8	5	1800	-6.8	-27.8	17	171	2.3	181	4.4	7	1800	-3.2	-22.5	21	183	1.8	190	3.2	6	2	
2100	-11.9	-26.1	30	189	2.9	188	4.4	2	2100	-6.8	-26.0	20	167	2.6	152	4.4	2	2100	-3.9	-20.3	27	176	1.9	189	3.8	2	3	
2400	-12.9	-27.7	28	193	1.6	189	3.2	3	2400	-7.0	-26.8	19	154	3.0	151	5.1	3	2400	-5.1	-18.3	35	177	1.1	144	3.8	2		

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG	M/S	MW						DEG C	M/S	MW						DEG C	M/S	MW						
0300	-5.6	-16.9	41	172	1.8	175	3.8	1	0300	-8.1	-20.7	36	203	2.0	212	3.8	1	0300	-10.7	*****	62	210	1.1	141	3.8	1		
0600	-3.7	-17.8	33	174	2.4	188	4.4	7	0600	-8.1	-20.7	36	209	1.9	165	3.8	7	0600	-11.1	-17.3	60	198	1.3	182	2.5	6		
0900	-3.0	-15.1	39	005	1.2	009	3.8	22	0900	-3.6	-21.8	23	214	1.4	219	5.1	30	0900	-5.8	-16.8	42	192	3.1	192	5.7	49		
1200	.9	-14.9	30	280	4.8	272	13.3	64	1200	-3.4	-20.7	25	197	2.2	174	3.8	35	1200	-2.3	-22.8	19	214	2.7	200	6.3	58		
1500	1.7	-18.4	21	307	5.8	289	12.1	44	1500	-3.4	-18.2	31	184	2.1	199	4.4	34	1500	-3.4	-23.8	19	301	3.6	326	7.6	40		
1800	-.6	-18.8	24	290	2.6	313	5.7	6</																				

R & M CONSULTANTS, INC.

SUSTAINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

DAY 10

DAY 11

DAY 12

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-13.9	-25.6	37	161	3.4	168	5.7	2	0300	-11.5	-19.9	50	183	3.3	178	4.4	1	0300	-10.9	*****	36	206	1.0	211	3.2	2
0600	-13.4	-25.4	36	182	2.4	160	4.4	9	0600	-10.6	-19.8	47	179	3.2	176	4.4	6	0600	-9.2	*****	32	297	.1	275	1.9	7
0900	-7.5	*****	15	188	1.9	218	3.8	48	0900	-7.9	-22.9	29	175	3.1	175	4.4	43	0900	-5.0	*****	15	223	.4	006	1.3	40
1200	-7.5	-25.1	23	122	3.1	106	8.3	61	1200	-6.5	-24.3	23	162	2.1	176	3.8	58	1200	-4.6	-27.3	15	224	1.2	221	2.5	52
1500	-5.8	-25.2	20	108	4.2	123	7.6	39	1500	-3.9	-23.1	2	144	1.6	140	3.2	37	1500	-3.8	-27.4	14	195	2.2	198	3.8	35
1800	-8.7	-21.5	35	190	2.0	202	3.8	6	1800	-8.1	-21.3	3	212	2.1	143	3.2	6	1800	-4.7	*****	15	216	1.3	222	3.2	8
2100	-10.9	-20.9	44	170	2.2	152	3.8	1	2100	-13.0	-23.9	40	195	1.6	161	3.2	1	2100	-7.2	-24.9	23	026	2.4	025	4.4	2
2400	-10.6	-18.8	51	181	2.8	189	3.8	1	2400	-12.4	-24.5	36	200	1.7	199	3.8	2	2400	-7.9	*****	26	012	1.6	021	4.4	2

DAY 13

DAY 14

DAY 15

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-9.0	-24.3	28	099	.4	320	1.9	3	0300	-15.0	-27.2	35	195	3.0	194	4.4	2	0300	-10.0	-20.0	44	194	2.5	223	4.4	1
0600	-9.5	*****	27	133	.6	139	1.9	8	0600	-14.9	-29.1	29	202	3.2	187	5.1	16	0600	-8.7	*****	40	197	1.6	189	3.2	8
0900	-7.0	-27.3	18	207	.6	142	1.9	44	0900	-8.4	-27.9	19	209	2.6	212	5.7	49	0900	-6.0	-20.5	31	194	2.7	195	3.8	38
1200	-4.5	-28.0	14	226	1.3	227	1.9	59	1200	-5.8	-24.7	21	121	3.4	095	8.3	64	1200	-4.5	-21.6	25	192	2.4	189	3.8	40
1500	-5.0	-28.4	14	208	1.3	219	2.5	35	1500	-4.8	-22.8	23	126	4.3	120	7.0	36	1500	-2.9	-20.3	25	189	2.8	185	4.4	36
1800	-5.2	*****	15	140	1.8	123	4.4	14	1800	-5.8	-21.5	28	190	1.9	171	3.8	7	1800	-4.8	-16.8	39	189	2.1	201	3.2	6
2100	-12.7	-25.1	35	191	2.0	191	4.4	2	2100	-8.3	-18.5	44	179	3.4	185	6.3	1	2100	-7.4	-17.4	45	173	2.4	164	3.8	1
2400	-13.7	-26.0	35	202	2.1	206	3.8	2	2400	-8.0	-18.5	43	186	3.4	187	6.3	1	2400	-7.2	-18.9	39	180	2.4	160	5.1	2

DAY 16

DAY 17

DAY 18

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	-9.1	-19.5	43	193	2.0	199	3.8	1	0300	-7.6	-24.8	24	192	1.5	183	3.2	3	0300	-8.7	-16.3	54	182	2.1	148	5.1	1
0600	-10.7	-22.4	38	203	1.6	232	3.8	11	0600	-8.5	*****	26	194	1.2	219	3.8	9	0600	-6.6	-15.9	48	200	2.4	199	5.7	8
0900	-4.4	-24.0	20	188	2.5	199	4.4	52	0900	-5.9	-28.4	15	243	.9	250	1.9	51	0900	-5.2	-18.1	36	093	4.6	085	7.0	41
1200	-2	-26.3	12	177	2.2	178	3.2	76	1200	-2.4	-26.3	14	227	1.5	225	1.9	61	1200	-3.9	-23.1	21	177	.4	085	4.4	51
1500	-6	-25.7	13	188	2.4	196	3.8	47	1500	-2.9	-22.8	20	192	2.2	205	3.2	35	1500	-4.1	-23.8	20	117	.7	021	5.7	28
1800	-4.4	-22.0	24	188	3.6	184	5.1	10	1800	-5.0	-17.9	36	188	2.6	195	3.8	10	1800	-6.7	-18.5	39	022	4.4	028	7.0	12
2100	-6.6	-24.8	22	168	3.2	178	5.1	2	2100	-8.4	-18.0	46	197	1.6	194	3.8	1	2100	-11.4	-18.9	54	329	.8	022	5.7	1
2400	-9.2	-26.6	23	166	3.4	155	5.7	2	2400	-8.2	-17.8	46	184	1.9	207	3.2	1	2400	-12.5	-21.5	47	176	2.0	142	3.8	1

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	RA
NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	

0300	-15.1	-24.2	46	180	2.8	164	5.7	1	0300	-2.8	-10.6	55	183	2.1	131	11.4	1	0300	-6.9	-19.0	38	160	3.1	170	5.7	2
0600	-13.7	-25.4	37	178	3.1	148	6.3	13	0600	-3.0	-13.6	44	131	3.7	094	9.5	19	0600	-5.8	-15.6	46	193	1.4	219	3.2	9
0900	-9.0	-21.8	35	180	2.7	148	5.1	35	0900	.9	-18.5	22	079	4.5	091	10.8	53	0900	-2.5	-17.8	30	176	1.6	139	3.2	36
1200	-6.2	-20.7	31	186	2.9	187	4.4	52	1200	2.6	****	11	105	1.1	084	3.8	54	1200	-1.1	-20.4	20	213	1.3	172	3.2	63
1500	-5.9	-20.4	31	185	1.7	195	2.5	31	1500	1.0	-20.1	19	159	.8	137	3.2	39	1500	1.8	-18.3	21	165	2.4	149	3.8	64
1800	-6.9	-14.7	54	173	2.0	176	3.2	5	1800	-3.7	-15.8	39	189	3.3	185	5.1	8	1800	-6	-13.3	38	185	2.7	192	5.1	10
2100	-6.4	-12.5	62	199	1.9	197	3.8	1	2100	-4.9	-16.9	39	183	2.5	220	4.4	1	2100	-2.3	-14.5	39	175	3.1	189	5.7	2
2400	-5.2	-10.9	64	213	1.1	229	3.2	1	2400	-6.8	-18.9	38	171	2.3	139	4.4	2	2400	-3.3	-15.1	40	188	5.0	188	6.3	1

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	RA
NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	

0300	-3.4	-15.5	39	174	2.9	185	5.7	1	0300	-8.8	-20.6	36	191	2.4	193	5.1	2	0300	-6.7	-16.5	46	181	1.9	176	3.2	1
0600	-2.6	*****	37	113	1.1	129	3.2	11	0600	-9.7	-22.4	35	186	2.2	173	3.8	13	0600	-6.1	-19.2	35	185	2.2	198	3.8	17
0900	-.6	*****	22	267	.6	057	2.5	44	0900	-4.9	-22.4	24	186	2.5	194	4.4	53	0900	-5.4	-21.6	27	213	2.5	221	3.8	44
1200	.3	-25.0	13	232	1.4	201	2.5	71	1200	-1.8	-25.8	14	202	2.2	189	3.2	66	1200	-3.0	-19.9	26	208	2.6	202	3.8	45
1500	.9	-20.8	18	202	1.8	246	2.5	50	1500	-1.2	-22.5	18	203	1.9	213	2.5	39	1500	-2.5	-17.8	30	197	2.8	192	5.1	32
1800	-2.5	-16.7	33	180	2.6	194	5.1	10	1800	-2.5	-19.5	26	207	1.7	224	2.5	13	1800	-2.8	-14.6	40	179	2.8	188	4.4	9
2100	-5.8	-18.6	36	179	3.2	188	4.4	1	2100	-5.1	-18.0	36	178	2.8	164	5.1	2	2100	-3.3	-13.9	44	185	2.1	188	3.8	1
2400	-7.0	-19.4	37	163	3.1	160	5.1	2	2400	-6.2	-18.7	37	167	2.3	168	4.4	1	2400	-2.6	-12.7	46	179	.9	113	4.4	1

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	RA
NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	NDNG TEMP.	POINT RH	DIR. SPD.	DIR. GUST RAD	
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	

0300	-3.3	-13.6	45	135	3.4	141	5.7	1	0300	-6.7	-12.2	65	170	1.5	154	4.4	1	0300	-3.6	-8.3	70	169	1.2	161	2.5	1
0600	-1.6	-14.9	36	164	1.5	095	7.6	12	0600	-7.6	-17.3	46	175	3.5	167	5.7	10	0600	-.9	-9.3	53	216	.9	201	2.5	10
0900	1.0	-19.5	20	110	2.9	073	7.6	38	0900	-3.2	-21.5	23	191	1.7	201	4.4	68	0900	-.9	-12.3	37	238	1.0	227	2.5	35
1200	4.1	-23.9	11	181	1.6	191	7.6	70	1200	-2.9	-20.7	24	186	2.3	192	3.8	60	1200	5.1	-15.5	21	128	2.3	107	7.0	60
1500	7.0	*****	9	168	1.4	140	4.4	52	1500	-1.8	-17.2	30	198	2.3	194	3.8	43	1500	3.2	-17.7	20	200	1.0	098	5.1	39
1800	-.6	-11.7	43	036	.6	062	7.0	12	1800	-3.3	-11.5	53	184	1.9	187	3.2	11	1800	2.4	-14.4	28	142	2.7	124	5.1	12
2100	-2.1	*****	74	028	3.8	030	7.6	1	2100	-4.1	-9.7	65	178	2.0	187	3.2	1	2100	1.4	-7.9	50	112	3.8	108	10.8	1
2400	-3.4	-9.6	62	077	.7	228	6.3	1	2400	-3.7	-9.1	66	178	2.0	188	3.8	1	2400	-.4	-11.4	41	168	1.6	180	4.4	1

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	-2.2	-14.4	39	138	3.0	144	9.5	1	0300	-3.4	-8.2	69	175	1.2	142	3.8	1	0300	-7.4	-20.4	35	189	4.1	198	6.3	2
0600	-1.1	-18.3	26	152	2.9	145	6.3	24	0600	-3.1	-10.9	55	180	.8	190	1.9	8	0600	-6.6	-20.7	32	192	3.1	185	5.1	17
0900	-2.0	-20.0	24	193	2.3	193	5.7	41	0900	-1.3	-16.4	31	223	.8	245	1.9	49	0900	-3.5	-22.2	22	207	1.9	216	3.2	52
1200	2.1	-20.5	17	185	2.0	221	3.2	57	1200	.9	-19.0	21	192	1.9	175	3.8	70	1200	.8	-24.6	13	218	1.3	206	2.5	73
1500	1.7	-17.8	22	167	1.9	178	4.4	31	1500	.1	-19.2	22	152	1.9	162	3.2	52	1500	.2	-25.9	12	203	1.7	213	2.5	51
1800	-.7	-12.4	41	233	4.6	228	8.3	14	1800	-1.5	-15.8	33	182	2.1	190	3.8	18	1800	-1.7	-16.8	31	195	2.2	188	3.2	13
2100	-2.1	-10.9	51	214	2.9	252	7.6	1	2100	-5.4	-17.6	38	192	3.5	195	5.1	2	2100	-4.6	-18.6	33	186	2.8	206	4.4	2
2400	-2.8	-11.8	50	171	1.6	210	3.8	1	2400	-6.5	-19.6	35	194	4.4	194	5.7	2	2400	-7.3	-23.2	27	166	3.6	173	5.7	2

R & M CONSULTANTS, INC.

SUSTAINABLE HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

DAY	MAX.			RES.			AVG.			MAX.			P'VAL			MEAN		MEAN		DAY'S	
	TEMP., DEG C	TEMP., DEG C	TEMP., DEG C	WIND DIR.	WIND SPD. M/S	WIND SPD. M/S	GUST DIR. DEG	GUST SPD. M/S	P'VAL DIR.	RH %	DP DEG C	PRECIP MM	SOLAR ENERGY WH/SQM	DAY							
1	-10.9	-23.3	-17.1	219	1.4	2.5	316	10.2	S	24	-33.6	0.0	4665	1							
2	-14.1	-25.6	-19.9	178	2.8	2.8	179	6.3	S	20	-37.1	0.0	4858	2							
3	-11.2	-24.7	-18.0	173	3.4	3.7	155	8.3	S	21	-34.6	0.0	4801	3							
4	-8.5	-18.8	-13.7	194	2.8	2.9	170	6.3	SSW	22	-30.5	0.0	4698	4							
5	-2.8	-13.3	-8.1	180	1.8	2.1	151	5.1	SSW	19	-28.0	0.0	4823	5							
6	-1.8	-8.1	-5.0	176	2.2	2.4	158	5.7	SSW	22	-24.3	0.0	4358	6							
7	2.5	-8.8	-3.2	261	1.5	3.3	272	13.3	S	33	-17.4	.4	4938	7							
8	-1.8	-10.7	-6.3	178	1.4	2.1	099	8.3	SSW	40	-17.8	.2	3585	8							
9	-2.0	-12.4	-7.2	209	2.0	2.9	326	7.6	S	37	-21.5	0.0	4921	9							
10	-5.4	-14.5	-10.0	157	2.4	3.0	106	8.3	S	32	-24.4	0.0	4888	10							
11	-3.9	-14.3	-9.1	177	2.3	2.4	178	4.4	S	36	-22.3	0.0	4718	11							
12	-3.5	-13.3	-8.4	226	.3	1.4	025	4.4	SSW	23	-26.2	0.0	4490	12							
13	-2.9	-14.1	-8.5	186	1.0	1.4	123	4.4	SSW	22	-27.0	0.0	4978	13							
14	-4.1	-17.7	-10.9	173	2.7	3.4	095	8.3	SSW	31	-24.0	0.0	4980	14							
15	-2.4	-12.6	-7.5	188	2.3	2.4	160	5.1	S	36	-19.6	0.0	4470	15							
16	.4	-11.9	-5.8	182	2.6	2.7	155	5.7	S	26	-23.1	0.0	5570	16							
17	-2.2	-10.5	-6.4	198	1.6	1.7	219	3.8	S	28	-23.0	0.0	4785	17							
18	-1.2	-13.2	-7.2	114	.8	3.0	085	7.0	SSW	39	-19.6	.2	4705	18							
19	-4.2	-17.7	-11.0	184	2.3	2.4	148	6.3	S	44	-20.0	0.0	4240	19							
20	3.9	-7.5	-1.0	148	1.9	2.9	131	11.4	S	37	-16.1	3.4	5570	20							
21	2.5	-7.5	-2.5	180	2.5	2.7	188	6.3	S	34	-17.0	.2	4958	21							
22	1.5	-7.6	-3.1	180	1.8	2.2	185	5.7	S	29	-18.8	0.0	5920	22							
23	-.5	-10.2	-5.4	189	2.2	2.3	193	5.1	SSW	29	-21.2	0.0	5400	23							
24	-1.0	-8.7	-4.9	193	2.2	2.3	192	5.1	S	36	-17.9	0.0	5148	24							
25	7.6	-4.2	1.7	113	1.2	2.7	095	7.6	SE	36	-15.6	0.0	5700	25							
26	-1.3	-10.3	-5.8	182	2.1	2.3	167	5.7	S	45	-15.4	.2	5498	26							
27	6.4	-3.7	1.4	150	1.5	2.2	108	10.8	ESE	45	-11.4	1.6	4723	27							
28	2.9	-3.0	-.1	186	2.2	2.9	144	9.5	SSW	33	-15.8	0.0	5580	28							
29	2.9	-6.7	-1.9	186	2.0	2.2	194	5.7	SSW	37	-16.4	.4	6053	29							
30	1.3	-8.2	-3.5	190	2.5	2.6	198	6.3	SSW	26	-21.4	0.0	6225	30							
MONTH	7.6	-25.6	-6.9	182	1.8	2.5	272	13.3	S	31	-22.0	6.6	150232								

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 6.3

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 12.1

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 12.7

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 12.7

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

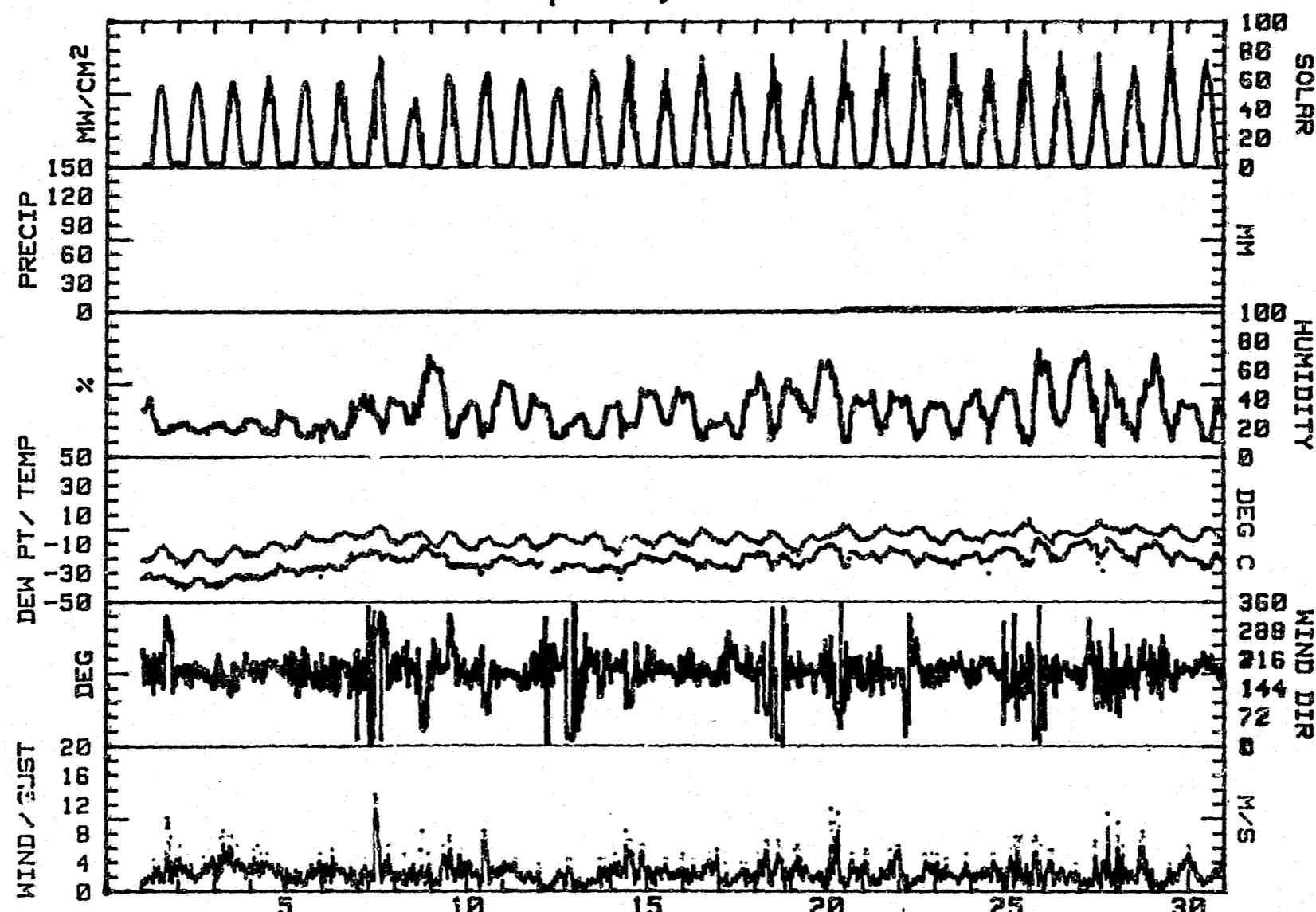
R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING April, 1982

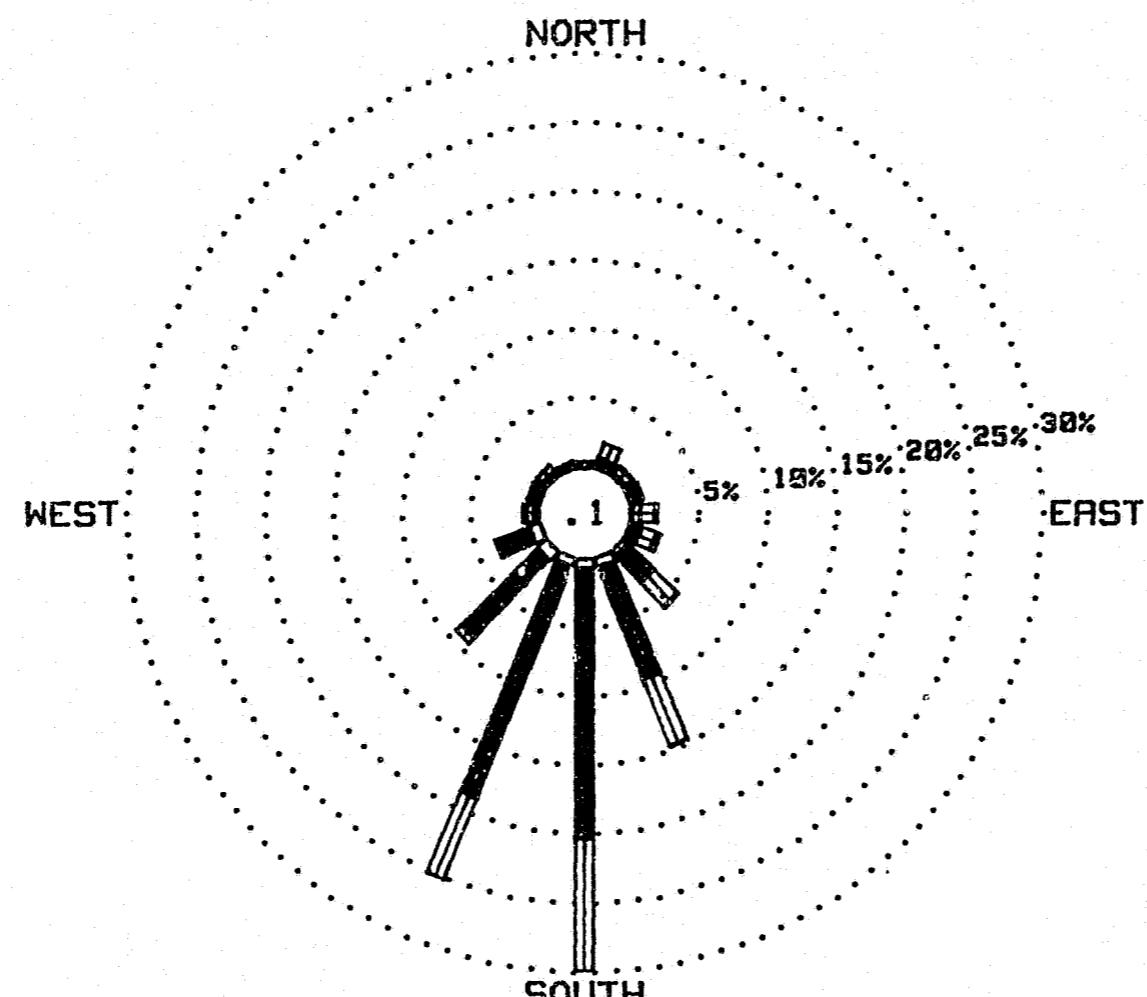
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.14	.24	.07	0.00	0.00	0.00	0.00	,45	
NNE	.14	.66	1.08	0.00	0.00	0.00	0.00	1.88	
NE	.24	.52	.14	0.00	0.00	0.00	0.00	,90	
ENE	.28	.42	.21	.07	0.00	0.00	0.00	,97	
E	.10	.59	1.08	.14	0.00	0.00	0.00	1.91	
ESE	.07	.83	1.15	.31	0.00	0.00	0.00	2.36	
SE	.45	2.67	2.36	.10	0.00	0.00	0.00	5.59	
SSE	.66	8.72	5.17	.10	0.00	0.00	0.00	14.65	
S	.66	19.55	9.55	0.00	0.00	0.00	0.00	29.76	
SSW	.59	18.13	6.28	0.00	0.00	0.00	0.00	25.00	
SW	.90	7.81	.52	0.00	0.00	0.00	0.00	9.24	
WSW	.80	2.29	.24	.10	0.00	0.00	0.00	3.44	
W	.38	.49	.21	.03	.07	0.00	0.00	1.18	
WNW	.17	.31	.14	.24	.14	0.00	0.00	1.01	
NW	.24	.24	.49	.03	0.00	0.00	0.00	1.01	
NNW	.07	.28	.14	.03	0.00	0.00	0.00	.52	
CALM	-----	-----	-----	-----	-----	-----	-----	.14	
TOTAL	5.90	63.75	28.82	1.18	.21	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2880 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
April 1, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
April, 1982



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSTINA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

R & M CONSULTANTS, INC.

SUSSEKINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-9.7	-24.9	28	167	2.8	154	5.1	2	0300	-6.8	-21.6	30	183	1.9	224	3.2	2	0300	-9.2	-22.3	34	190	2.1	183	3.8	2	
0600	-9.5	-28.8	19	167	2.6	145	5.7	26	0600	-5.2	-24.2	21	184	2.4	191	3.8	26	0600	-8.7	-24.8	26	174	2.2	156	3.8	17	
0900	-5.3	-26.5	17	181	1.9	163	3.8	59	0900	-3.1	-25.4	16	187	2.0	187	3.8	59	0900	-2.5	-26.4	14	198	1.5	207	3.2	59	
1200	-8	-26.7	12	196	1.5	144	3.8	72	1200	.6	-24.7	13	195	1.8	168	3.2	71	1200	-1.0	-26.0	13	207	1.9	193	3.2	72	
1500	1.3	-24.2	13	201	2.1	210	3.2	53	1500	.3	-23.4	15	206	2.6	211	3.8	52	1500	-.6	-23.4	16	206	2.1	207	3.2	45	
1800	-1.1	-20.7	21	195	2.5	202	3.8	17	1800	-1.1	-20.2	22	207	2.5	213	3.8	13	1800	-.9	-19.5	23	183	1.8	183	3.8	16	
2100	-4.6	-21.7	25	178	3.0	160	4.4	2	2100	-5.1	-19.4	32	189	2.6	189	4.4	2	2100	-2.8	*****	66	347	1.0	016	3.2	1	
2400	-6.5	-22.1	28	184	2.3	183	4.4	2	2400	-7.7	-21.3	33	174	2.3	181	3.8	2	2400	-4.2	-9.0	69	207	1.4	189	3.2	1	

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-7.1	-14.2	57	196	2.3	188	3.8	1	0300	-9.4	-19.0	46	178	1.9	143	4.4	1	0300	-5.1	-17.7	37	191	2.3	159	4.4	1	
0600	-7.3	-18.4	41	201	1.7	209	3.2	16	0600	-8.2	-21.8	33	192	2.2	193	4.4	29	0600	-2.7	-20.6	24	182	2.6	175	4.4	26	
0900	-1.8	-16.8	31	192	1.4	218	3.8	43	0900	-3.3	-21.6	23	195	2.1	187	3.8	57	0900	1.7	-23.0	14	226	1.9	186	4.4	62	
1200	-.9	-20.0	22	214	1.4	215	2.5	71	1200	.4	-24.9	13	211	1.7	202	3.2	72	1200	2.8	-22.1	14	220	2.3	229	3.8	68	
1500	-.9	-19.5	23	221	2.2	226	3.2	53	1500	.5	-24.8	13	195	2.1	200	3.2	31	1500	2.6	-19.4	18	189	2.7	183	4.4	53	
1800	-1.9	-15.8	34	202	2.1	221	3.2	17	1800	.7	-16.3	27	190	2.4	195	3.8	18	1800	1.1	-17.3	24	187	3.0	160	4.4	17	
2100	-6.4	-16.7	44	176	2.8	169	4.4	1	2100	-1.5	-16.6	31	181	2.2	183	3.8	2	2100	.2	-15.5	30	170	2.6	186	4.4	2	
2400	-7.4	-17.4	45	182	2.5	180	4.4	1	2400	-2.9	-15.1	39	173	2.1	178	3.8	2	2400	3.2	-12.9	30	167	2.0	145	3.8	2	

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	1.8	-10.5	40	074	1.4	118	3.8	1	0300	.9	-6.2	59	033	1.8	016	4.4	1	0300	1.8	-7.0	52	068	2.0	010	7.6	1	
0600	1.0	-6.3	58	063	.2	146	2.5	8	0600	1.6	-8.3	48	023	2.2	023	4.4	17	0600	.9	-7.9	52	098	4.6	087	8.3	11	
0900	2.5	-10.5	38	216	1.3	203	2.5	40	0900	3.2	-13.3	29	293	.1	092	3.8	39	0900	1.8	-9.0	45	107	3.6	112	7.0	34	
1200	5.1	-13.4	25	220	1.4	204	3.2	65	1200	4.0	-15.9	22	210	1.5	256	3.8	58	1200	2.6	-10.4	38	122	3.4	087	6.3	39	
1500	4.3	-12.7	28	204	1.9	231	3.2	39	1500	3.5	-15.3	24	229	1.7	213	3.2	39	1500	3.4	-13.5	28	213	1.3	145	3.8	38	
1800	2.6	-9.8	40	189	1.9	194	3.2	13	1800	2.3	-11.4	36	222	1.4	217	2.5	11	1800	2.4	-11.3	36	237	1.5	222	2.5	12	
2100	2.4	*****	47	190	1.6	196	3.2	1	2100	2.5	-7.5	48	183	1.6	194	3.8	1	2100	1.7	*****	49	201	1.2	232	1.9	1	
2400	1.6	-4.																									

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	1.7	-7.1	52	183	1.2	143	2.5	1 0300	-7	-4.4	76	357	1.1	002	2.5	1 0300	-2.6	-13.0	45	138	1.3	143	3.8	1
0600	1.6	-7.0	53	183	1.7	206	3.2	9 0600	0.0	-7.0	59	011	1.8	028	3.2	7 0600	-4	*****	19	151	1.1	135	3.2	35
0900	4.3	-12.7	28	198	1.5	184	2.5	47 0900	1.6	-9.1	45	017	2.1	029	4.4	36 0900	2.2	-19.7	18	151	1.2	158	3.2	57
1200	4.4	-14.5	24	240	2.0	237	3.2	70 1200	1.8	-14.1	30	347	1.9	339	6.3	47 1200	2.9	-22.0	14	217	2.4	227	4.4	72
1500	3.8	-13.2	28	237	2.5	237	3.8	41 1500	7.6	*****	9	165	1.3	155	3.8	62 1500	4.7	*****	11	197	1.3	233	3.8	55
1800	1.3	-6.5	56	194	1.7	213	2.5	12 1800	3.0	-18.4	19	117	1.3	015	5.7	22 1800	1.8	-20.7	17	238	2.5	202	3.8	24
2100	.1	*****	75	188	.9	189	1.9	1 2100	-2.0	-14.2	39	174	2.1	186	5.1	2 2100	-1.5	-16.2	32	212	2.1	182	4.4	2
2400	-1.6	-4.3	76	355	.7	000	1.9	1 2400	-2.8	-14.6	40	164	2.3	168	5.7	1 2400	-1.9	*****	31	186	1.9	190	3.8	2

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	-1.8	-12.8	43	125	.7	124	3.2	1 0300	-4.6	-18.9	32	187	1.6	198	3.8	2 0300	-3.6	-20.0	27	191	3.0	182	4.4	3
0600	-1.1	-16.2	31	119	.3	098	3.2	21 0600	-5	*****	12	169	.9	174	2.5	31 0600	-3	-25.4	13	207	1.4	210	3.8	31
0900	2.9	*****	12	124	.5	203	3.2	43 0900	2.6	-22.3	14	111	.3	032	3.8	63 0900	4.9	*****	10	178	.5	122	2.5	63
1200	3.5	-24.3	11	290	.8	307	5.1	55 1200	4.3	-24.8	10	215	2.1	225	4.4	76 1200	5.2	-24.1	10	206	1.9	218	3.8	76
1500	3.3	-24.5	11	249	2.9	253	5.1	53 1500	4.3	-23.7	11	232	4.3	234	6.3	57 1500	5.3	-24.0	10	230	4.2	230	5.7	56
1800	3.4	-24.4	11	273	2.4	253	4.4	21 1800	2.9	-23.8	12	237	4.1	237	6.3	22 1800	3.9	-24.0	11	241	4.4	237	6.3	23
2100	-1.0	-19.6	23	208	2.2	214	3.8	2 2100	.4	-19.4	21	219	3.6	237	6.3	2 2100	.2	-20.2	20	219	2.3	246	5.1	3
2400	-2.4	-19.4	26	182	3.2	178	5.1	3 2400	-2.0	-20.0	24	178	2.6	202	5.1	3 2400	-1.3	-20.4	22	191	3.0	203	4.4	2

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	-3.4	-20.3	26	200	3.1	198	4.4	3 0300	.3	*****	23	186	1.3	194	2.5	3 0300	-2.6	*****	53	221	.9	189	1.9	1
0600	.3	-25.0	13	180	1.6	199	3.2	31 0600	2.3	*****	18	186	.4	188	2.5	21 0600	-.4	-9.9	49	213	1.2	204	2.5	8
0900	3.4	-24.4	11	185	1.1	161	3.2	64 0900	3.7	-21.4	14	216	1.6	219	3.8	62 0900	1.4	*****	38	212	.2	163	1.9	29
1200	4.6	-24.6	10	240	2.3	238	4.4	75 1200	4.3	-21.8	13	218	2.3	220	4.4	68 1200	4.3	-16.2	21	152	1.8	125	5.7	45
1500	4.7	-23.4	11	244	3.5	248	5.1	57 1500	4.9	-24.3	10	147	2.6	144	6.3	49 1500	4.0	-14.8	24	201	3.2	213	6.3	44
1800	4.7	-23.4	11	241	3.3	243	5.1	24 1800	3.0	-18.4	19	130	3.4	105	6.3	15 1800	4.1	-13.4	27	250	.8	218	5.1	21
2100	1.6	-19.6	19	216	1.5	237	3.2	3 2100	1.3	-14.1	31	111	1.9	114	5.7	2 2100	1.7	-10.9	39	349	2.7	340	6.3	1
2400	.2	-18.1	24	207	1.4	213	3.2	1 2400	-.7	-8.4	56	147	2.1	138	4.4	1 2400	-.1	-7.6	57	004	1.8	014	5.7	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S

0300	-1.0	-5.7	70	007	2.2	012	4.4	1	0300	-1.1	-15.5	33	192	2.3	194	4.4	2	0300	-1.1	-7.4	62	207	.5	287	2.5	1
0600	1.3	*****	32	005	1.2	010	3.2	40	0600	.2	-14.7	32	176	1.0	177	2.5	8	0600	.2	*****	58	235	.7	230	1.9	12
0900	2.8	-18.6	19	193	1.2	153	3.8	36	0900	1.9	*****	45	194	.8	129	3.2	27	0900	1.3	-8.8	47	086	.4	001	4.4	48
1200	4.6	-20.7	14	153	2.4	133	6.3	76	1200	2.0	-7.6	49	246	1.1	230	3.2	29	1200	4.9	-17.5	18	012	.3	344	3.8	49
1500	6.0	-23.5	10	235	3.0	236	5.7	58	1500	1.8	-6.5	54	214	1.1	183	3.8	18	1500	4.9	-24.3	10	329	1.4	250	5.1	59
1800	4.1	-21.1	14	246	2.8	255	4.4	13	1800	2.1	-6.5	53	007	1.9	017	4.4	8	1800	4.6	-20.7	14	239	3.7	241	5.7	25
2100	.5	-16.9	26	226	2.4	237	4.4	3	2100	0.0	-5.2	68	021	2.6	028	5.1	1	2100	-1.1	-16.6	28	223	2.7	231	5.1	3
2400	-.8	-16.4	30	188	2.7	190	3.8	2	2400	-.5	-5.3	70	293	.2	186	2.5	1	2400	-2.5	-17.5	31	197	3.0	196	3.8	2

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S

0300	-3.2	-18.1	31	193	2.9	193	4.4	3	0300	-1.6	-14.9	36	217	2.0	224	3.8	2	0300	-.1	-8.8	52	175	2.0	162	3.2	2
0600	.8	-20.3	19	199	2.0	197	3.8	24	0600	2.8	*****	21	195	1.5	190	3.2	32	0600	3.1	-9.6	39	164	1.7	157	3.2	20
0900	4.3	-24.8	10	230	.6	264	2.5	38	0900	4.3	-17.3	19	167	.9	177	3.8	57	0900	2.6	-8.8	43	123	.3	236	3.2	11
1200	6.1	-23.4	10	237	2.2	210	5.1	77	1200	7.2	-23.8	9	165	2.1	199	5.1	55	1200	7.0	-15.8	18	210	1.2	229	7.6	75
1500	6.8	-22.9	10	154	2.9	236	5.7	55	1500	7.6	-23.5	9	235	3.1	246	7.6	63	1500	8.2	-15.5	17	249	6.8	248	10.2	57
1800	5.4	-17.8	17	142	3.6	116	6.3	24	1800	7.6	-23.5	9	040	1.3	247	5.7	15	1800	6.4	-16.3	18	247	6.3	248	9.5	20
2100	2.1	-18.6	20	156	1.9	117	6.3	3	2100	3.1	-10.7	36	068	4.1	067	10.2	2	2100	3.7	-13.3	28	249	4.9	246	9.5	3
2400	-2.9	-14.4	41	203	1.6	208	3.2	1	2400	2.1	-8.1	47	197	1.2	175	3.8	1	2400	1.3	-9.7	44	128	.3	222	4.4	1

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S	NDNG TEMP, POINT RH DIR, SPD, DIR, GUST RAD	DEG C	DEG C	% DEG. M/S

0300	.6	-7.4	55	096	1.2	135	3.2	2	0300	0.0	-8.7	52	178	1.5	160	3.2	2	0300	2.9	-11.6	34	101	3.1	109	7.6	2
0600	3.9	-9.6	37	062	.9	109	3.2	24	0600	1.3	*****	48	185	1.0	241	2.5	16	0600	4.3	-11.9	30	102	3.7	084	8.9	22
0900	5.5	-10.4	31	016	2.7	023	5.1	25	0900	5.5	*****	34	341	.7	342	2.5	34	0900	6.9	-14.6	20	104	4.6	101	8.3	64
1200	6.6	-11.2	27	014	3.5	005	5.7	24	1200	8.1	-15.5	17	232	.6	038	5.1	32	1200	9.4	-18.7	12	119	2.6	096	6.3	78
1500	3.4	-7.8	44	334	2.6	356	5.7	6	1500	8.6	-15.1	17	119	.6	009	6.3	40	1500	9.5	-18.6	12	243	3.2	233	5.7	35
1800	4.4	-6.3	46	016	2.6	027	5.1	14	1800	6.7	-13.1	23	359	3.0	011	5.7	11	1800	8.7	-15.8	16	252	3.9	248	7.0	30
2100	2.8	*****	54	026	2.0	039	5.1	2	2100	4.2	-10.4	34	013	3.4	005	5.7	2	2100	3.4	-8.4	42	023	4.3	010	7.6	1
2400	.9	-7.4	54	195	1.3	146	3.2	1	2400	2.6	-6.8	50	000	2.1	011	4.4	1	2400	2.0	-7.6	49	023	3.1	023	7.0	1

R & M CONSULTANTS, INC.

SUNGITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW
0300	1.2	-6.4	57	308	.7	355	3.2	2	0300	-2.5	-12.6	46
0600	3.0	-6.7	49	001	1.4	006	3.8	21	0600	3.4	-12.7	30
0900	5.1	-10.8	31	013	3.2	025	7.0	34	0900	6.6	-16.8	17
1200	4.8	-11.5	30	017	3.2	009	8.3	24	1200	8.2	-23.0	9
1500	6.2	-15.8	19	249	3.5	244	7.6	45	1500	6.9	-16.5	17
1800	6.1	-15.9	19	311	2.4	333	7.6	32	1800	5.5	-13.6	24
2100	2.5	-10.5	38	344	2.2	309	5.7	2	2100	3.4	-10.1	37
2400	-.8	-10.5	48	091	.8	031	5.1	1	2400	1.5	-4.5	64
										018	2.7	025
										5.1	1	2400
											1.8	-12.9
											33	191
											1.6	182
											3.8	2

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.			
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	
0300	.2	-13.3	36	188	2.0	185
0600	7.6	****	16	184	1.3	210
0900	10.4	-21.3	9	065	1.2	054
1200	13.0	-22.2	7	100	1.6	060
1500	14.3	-21.2	7	223	2.9	145
1800	13.6	-21.8	7	245	4.5	251
2100	8.1	-21.9	10	237	3.4	237
2400	4.1	-14.3	25	178	2.6	176

B
E
R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

DAY	MAX. TEMP.			RES. WIND			AVG. WIND			MAX. GUST P'VAL			MAX. MEAN DP			DAY'S SOLAR ENERGY	
	DEG C	DEG C	DEG C	DIR.	SPD. M/S	DIR.	SPD. M/S	DIR.	SPD. M/S	DIR.	RH %	MEAN DEG C	MM DP	PRECIP MM	WH/SGM		
1	1.3	-11.2	-5.0	182	2.3	2.4	145	5.7	S	20	-24.8	0.0	6930	1			
2	.9	-8.9	-4.0	191	2.2	2.3	169	4.4	SSW	23	-22.3	0.0	6850	2			
3	.4	-10.3	-5.0	196	1.5	1.9	183	3.8	SSW	30	-21.1	0.0	6623	3			
4	-2	-8.4	-4.3	196	2.0	2.1	169	4.4	S	38	-17.1	.4	6018	4			
5	1.8	-9.8	-4.0	189	2.0	2.2	143	4.4	SSW	28	-19.8	0.0	6805	5			
6	3.7	-5.6	-1.0	190	2.3	2.5	159	4.4	S	24	-18.6	0.0	6988	6			
7	5.8	1.0	3.4	188	.8	1.5	118	3.8	SSW	40	-10.4	0.0	5370	7			
8	6.8	.5	3.7	210	.4	1.7	016	4.4	SW	40	-10.6	0.0	5383	8			
9	5.6	.7	3.2	127	1.6	2.7	087	8.3	E	44	-9.3	.2	4735	9			
10	4.8	-.6	2.1	210	1.2	1.6	237	3.8	SSW	48	-9.6	.6	5055	10			
11	7.6	-3.3	2.2	076	.4	2.0	339	6.3	N	42	-12.4	10.4	5025	11			
12	5.7	-3.3	1.2	196	1.4	1.9	227	4.4	S	25	-18.6	0.0	7163	12			
13	7.0	-2.6	2.2	221	1.1	2.0	307	5.1	S	22	-20.7	.2	6708	13			
14	4.6	-4.6	0.0	214	2.2	2.6	234	6.3	SW	17	-21.7	0.0	7700	14			
15	5.8	-3.6	1.1	215	2.4	2.7	237	6.3	SSW	15	-22.5	0.0	7845	15			
16	5.2	-3.4	.9	221	2.0	2.3	248	5.1	WSW	15	-22.9	0.0	7840	16			
17	5.3	-.8	2.3	159	1.6	2.1	144	6.3	SE	22	-19.1	0.0	6615	17			
18	5.8	-2.9	1.5	230	.5	2.0	213	6.3	SW	37	-12.4	0.0	4875	18			
19	6.1	-1.5	2.3	219	1.2	2.4	133	6.3	WSW	30	-16.5	.2	7078	19			
20	3.2	-2.1	.6	230	.2	1.7	028	5.1	S	48	-9.5	3.8	3160	20			
21	5.9	-2.5	1.7	229	1.2	2.1	241	5.7	WSW	35	-15.6	0.0	5788	21			
22	7.7	-3.8	2.0	180	1.9	2.4	116	6.3	SW	19	-20.3	0.0	7550	22			
23	8.6	-3.3	2.7	172	.8	2.5	067	10.2	WSW	22	-18.2	0.0	7128	23			
24	8.5	-.1	4.2	234	2.5	3.6	248	10.2	WSW	32	-12.1	1.8	6063	24			
25	7.1	-.6	3.3	018	1.5	2.3	005	5.7	NNE	43	-8.4	.8	4488	25			
26	9.6	-2.4	3.6	004	.7	2.0	009	6.3	N	35	-12.0	0.0	4675	26			
27	11.1	1.5	6.3	087	1.2	3.7	084	8.9	ESE	27	-13.6	0.0	6583	27			
28	6.5	-.8	2.9	340	1.4	2.5	009	8.3	N	37	-11.4	0.0	4385	28			
29	9.4	-2.5	3.5	360	1.3	2.8	358	7.6	NNE	29	-14.4	0.0	5703	29			
30	11.0	.9	6.0	349	1.6	2.5	030	5.7	NNE	33	-12.4	.2	5470	30			
31	14.4	-.7	6.9	209	1.6	2.7	145	7.6	WSW	15	-18.8	0.0	8200	31			
MONTH	14.4	-11.2	1.5	201	.9	2.3	067	10.2	SSW	30	-16.0	18.6	190796				

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 3.8

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 8.9

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 6.3

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 5.1

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

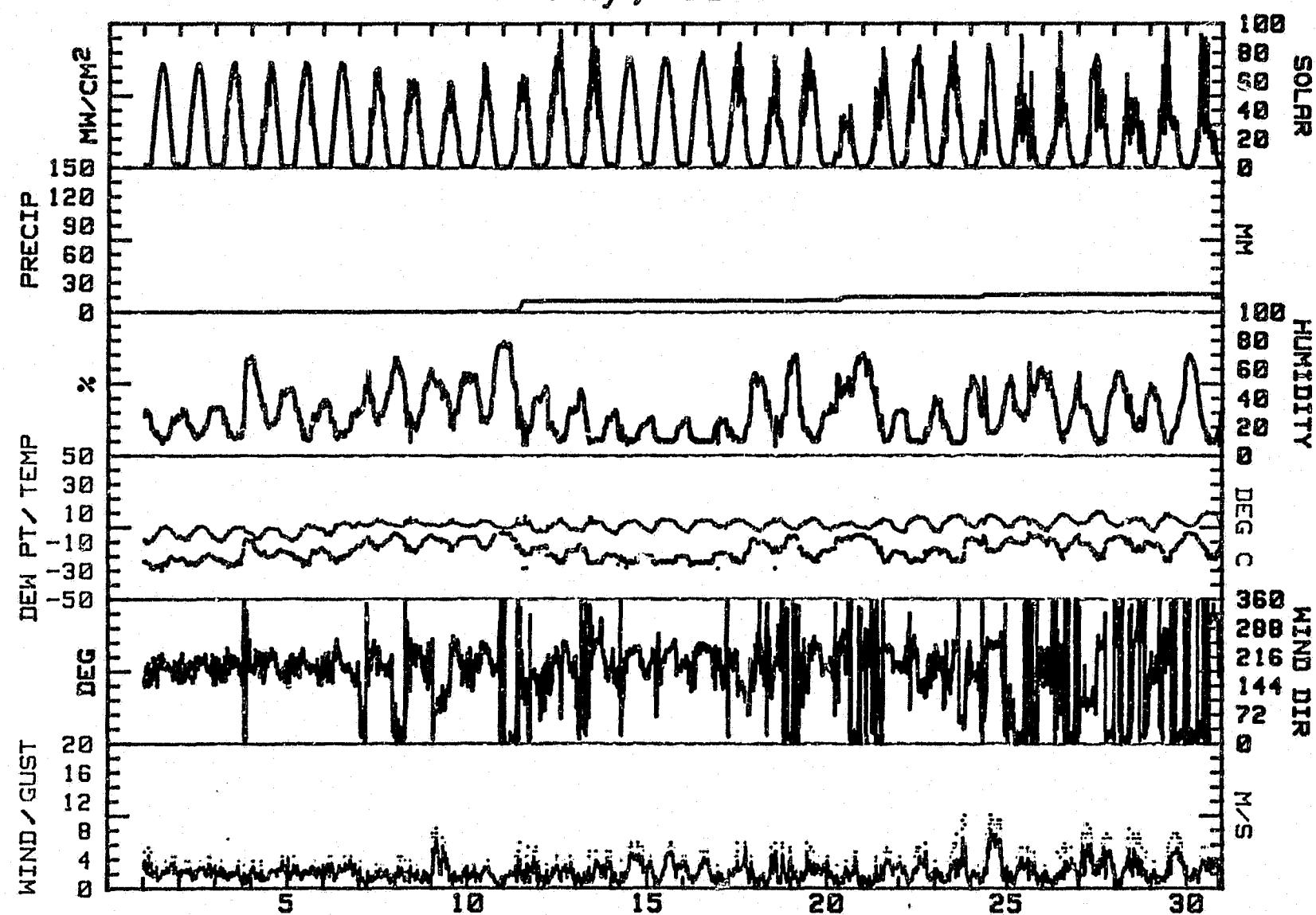
R & M CONSULTANTS, INC.
SUSITTNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING May, 1982

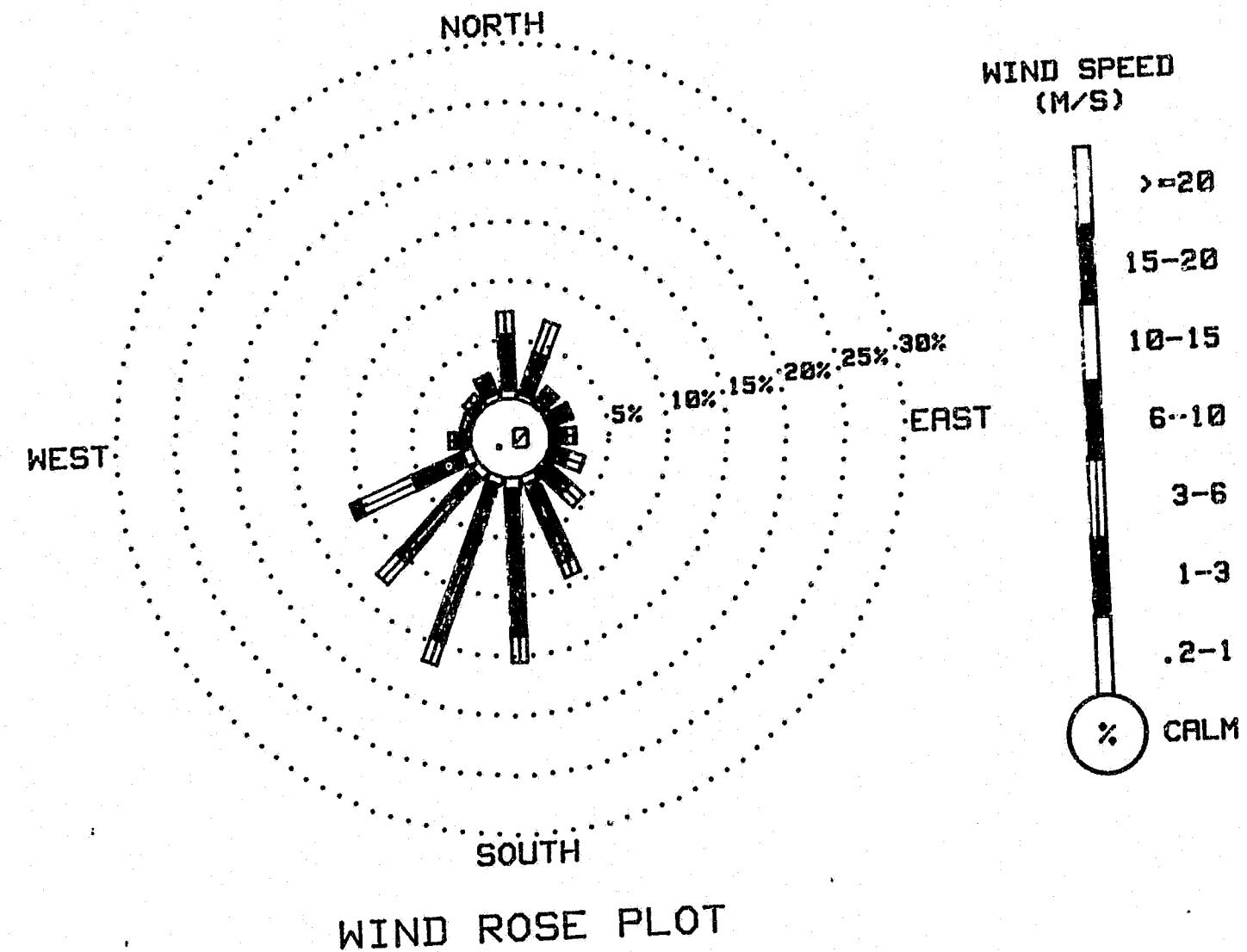
DIRECTION	VELOCITY (M/S)							TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER	
N	.74	4.67	1.92	0.00	0.00	0.00	0.00	7.33
NNE	.44	3.70	2.82	0.00	0.00	0.00	0.00	6.96
NE	.20	1.31	.40	0.00	0.00	0.00	0.00	1.92
ENE	.27	1.44	.44	.03	0.00	0.00	0.00	2.18
E	.20	1.18	.71	.13	0.00	0.00	0.00	2.22
ESE	.34	1.38	1.38	.03	0.00	0.00	0.00	3.13
SE	.44	2.59	1.44	0.00	0.00	0.00	0.00	4.47
SSE	.74	7.22	1.24	0.00	0.00	0.00	0.00	9.21
S	.94	12.30	2.22	0.00	0.00	0.00	0.00	15.46
SSW	.71	13.94	1.98	0.00	0.00	0.00	0.00	16.63
SW	.81	9.44	2.39	0.00	0.00	0.00	0.00	12.63
WSW	.91	4.64	4.87	.84	0.00	0.00	0.00	11.26
W	.30	1.04	.50	0.00	0.00	0.00	0.00	1.85
WNW	.57	.50	.07	0.00	0.00	0.00	0.00	.94
NW	.13	.67	.64	0.00	0.00	0.00	0.00	1.44
NNW	.57	1.34	.44	0.00	0.00	0.00	0.00	2.35
CALM	-----	-----	-----	-----	-----	-----	-----	.03
TOTAL	8.10	67.37	23.45	1.04	0.00	0.00	0.00	100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2976 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
May, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
May, 1982



R & M CONSULTANTS, INC.

SUSTINA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSTNA WEATHER STATION
 DATA TAKEN DURING June, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

R & M CONSULTANTS, INC.

SUSSETNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING June, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW

0300	3.7	-15.1	24	180	2.2	162	3.8	5	0300	3.9	-2.7	62	018	.8	002	5.1	1	0300	.2	-5.2	67	348	1.1	000	2.5	1
0600	9.7	****	9	204	1.1	182	3.2	38	0600	4.7	****	59	356	1.3	002	3.2	11	0600	3.9	****	29	180	1.1	190	3.8	33
0900	13.5	-21.8	7	009	1.8	024	3.8	67	0900	5.2	-2.6	57	007	1.7	012	4.4	22	0900	6.8	-16.6	17	003	1.8	023	6.3	83
1200	14.4	-21.2	7	174	2.4	143	8.3	71	1200	4.5	-2.8	59	010	3.3	006	5.1	20	1200	7.8	-23.3	9	273	2.3	231	7.0	79
1500	14.3	-21.2	7	246	4.3	249	7.6	36	1500	5.4	-2.9	55	014	3.9	002	8.3	30	1500	10.5	-22.6	8	265	3.2	239	7.6	35
1800	11.9	-21.5	8	267	4.7	268	8.3	15	1800	2.3	-5.8	55	338	4.9	004	9.5	3	1800	9.4	-22.1	9	272	4.0	277	7.6	27
2100	9.2	-18.9	12	263	3.9	267	7.6	3	2100	2.3	-5.8	55	284	2.5	333	6.3	1	2100	5.9	-22.5	11	251	2.4	273	5.7	4
2400	6.5	****	19	035	1.7	034	6.3	3	2400	.7	-4.5	68	299	.7	213	3.8	1	2400	1.5	-15.2	28	175	2.0	184	3.2	2

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW

0300	-2.0	-15.2	36	169	2.5	140	4.4	4	0300	3.1	****	45	356	.7	008	3.2	2	0300	5.1	-10.4	32	026	2.2	075	5.7	4
0600	5.7	****	16	204	1.3	192	2.5	22	0600	5.5	-8.9	35	188	.7	208	2.5	16	0600	7.6	-14.0	20	065	.7	120	6.3	37
0900	10.0	-23.0	8	113	1.6	098	5.7	49	0900	10.0	-14.7	16	087	1.1	047	4.4	75	0900	10.8	-14.1	16	104	4.6	105	8.9	50
1200	11.4	-21.9	8	191	1.4	254	8.3	44	1200	8.1	-9.4	28	000	3.8	003	6.3	54	1200	12.8	-15.0	13	126	4.7	104	10.2	29
1500	13.0	-22.2	7	257	1.8	262	5.7	69	1500	13.2	-22.1	7	042	2.3	143	8.9	37	1500	13.1	-12.2	16	166	2.1	085	6.3	34
1800	11.7	-21.7	8	227	2.0	126	7.6	17	1800	12.5	-19.7	9	147	4.4	149	8.9	10	1800	9.8	-6.7	31	005	3.4	053	7.6	17
2100	6.2	-14.6	21	340	1.7	247	6.3	3	2100	9.4	-14.5	17	055	2.6	083	8.9	4	2100	6.7	-0.6	62	007	3.8	001	6.3	2
2400	4.1	-10.9	33	017	3.0	039	6.3	2	2400	5.0	-7.6	40	034	2.5	082	8.9	1	2400	5.1	-1.1	64	009	2.8	021	5.1	1

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S DEG. M/S MW

0300	4.3	-1.9	64	014	2.1	020	3.8	1	0300	2.4	-4.5	60	200	.6	206	3.2	2	0300	2.7	-8.1	45	202	1.2	220	2.5	4
0600	4.4	-2.7	60	015	1.8	016	3.2	5	0600	4.3	-6.1	47	200	1.9	175	3.2	15	0600	6.4	****	36	178	.8	209	2.5	10
0900	6.1	****	56	001	1.1	015	2.5	16	0900	10.2	-15.4	15	241	.3	218	3.2	58	0900	7.2	-6.3	38	098	2.7	095	6.3	21
1200	9.0	-1.8	47	240	1.2	208	3.8	24	1200	11.3	-18.3	11	016	1.3	000	4.4	38	1200	8.6	-4.7	39	105	2.5	092	5.1	48
1500	6.3	-1.8	56	016	3.3	023	8.3	3	1500	12.6	-22.5	7	288	1.2	006	4.4	29	1500	12.4	-26.1	5	106	3.7	111	7.0	30
1800	6.6	-3.1	50	033	4.0	074	8.9	8	1800	12.8	-22.4	7	003	2.6	358	5.1	27	1800	12.9	-12.4	16	105	4.4	113	7.0	15
2100	4.7	-4.3	52	033	2.3	016	5.1	2	2100	8.1	-11.9	23	002	3.0	330	6.3	3	2100	10.0	-14.7	16	104	4.4	102	8.3	3
2400	2.4	-3.7	64	004	1.3	328	3.8	1	2400	3.6	-8.2	42	118	1.3	026	3.8	1	2400	6.0	-10.4	30	103	2.2	117	7.6	2

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
ATA TAKEN DURING June, 1982

DAY 10

DAY 11

DAY 12

HR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.		
NG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD
DEG C	DEG C	%	DEG C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	DIR.	GUST	RAD
			M/S	M/S	M/S	MW							MW

00	5.6	-6.1	43	160	1.5	130	3.8	2 0300	2.2	-6.9	51	041	.5	211	3.8	2 0300	4.3	-13.2	27	097	2.4	089	8.3	4
00	7.1	-6.7	37	112	2.6	103	6.3	15 0600	3.8	-6.5	47	215	1.3	241	2.5	14 0600	5.5	-14.1	23	105	.8	057	5.1	13
00	7.9	-5.3	39	110	4.4	103	7.6	10 0900	8.6	-13.2	20	106	1.1	096	7.0	49 0900	9.6	-17.6	13	095	3.0	110	7.0	36
00	10.9	-7.0	28	208	.8	336	5.1	12 1200	11.1	-20.8	9	110	4.3	112	8.9	41 1200	13.1	-22.1	7	120	4.5	107	10.2	46
00	12.7	-18.3	10	105	5.5	106	8.9	22 1500	11.1	-22.1	8	110	5.2	103	9.5	17 1500	5.2	-11.1	30	137	5.1	131	12.7	16
00	10.7	-18.7	11	106	7.3	106	10.2	11 1800	9.4	-13.1	19	052	2.3	025	8.3	10 1800	4.2	-8.7	39	020	6.9	020	10.2	15
00	8.3	-16.9	15	098	7.1	101	10.8	4 2100	7.9	-15.7	17	038	3.6	054	7.6	3 2100	2.5	-5.1	57	049	1.9	016	7.6	2
00	3.9	-5.9	49	356	2.8	351	5.7	1 2400	6.0	-14.7	21	072	4.6	082	8.3	2 2400	1.4	-5.7	59	183	1.0	150	3.2	1

DAY 13

DAY 14

DAY 15

HR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.		
NG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD
DEG C	DEG C	%	DEG C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	DIR.	GUST	RAD
			M/S	M/S	M/S	MW							MW

300	.5	-7.5	55	187	1.4	177	3.2	3 0300	2.9	*****	29	121	1.4	139	3.2	3 0300	3.4	-4.5	56	048	1.5	044	3.8	1
600	2.4	-6.2	53	208	.7	185	2.5	19 0600	5.0	-12.1	28	033	1.6	026	3.8	20 0600	1.8	-4.9	61	004	2.7	353	5.1	8
900	5.9	-11.4	28	295	.8	324	4.4	27 0900	10.7	-18.7	11	013	2.9	311	7.6	64 0900	2.5	-4.5	60	017	3.5	015	5.7	13
200	8.4	-18.5	13	293	1.1	294	4.4	32 1200	11.5	-21.8	8	016	4.2	005	8.3	45 1200	2.2	-5.0	59	015	3.6	023	5.7	23
500	10.4	-22.7	8	288	.8	244	3.2	36 1500	11.4	-21.9	8	273	1.1	207	5.1	25 1500	3.4	-3.4	61	008	3.3	008	5.1	17
800	10.0	-21.6	9	346	1.5	337	5.1	15 1800	9.4	-11.9	21	138	2.7	106	8.3	11 1800	2.9	-3.9	61	005	3.4	002	5.1	6
100	7.2	*****	16	355	1.9	013	5.1	6 2100	7.0	-7.2	36	231	1.8	238	5.7	2 2100	3.2	-4.0	59	031	2.9	016	5.1	1
400	4.0	-16.4	21	134	2.2	138	3.8	3 2400	4.9	-4.4	51	052	1.5	032	3.8	1 2400	3.4	*****	56	059	1.9	063	5.1	1

DAY 16

DAY 17

DAY 18

HR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HR	DEW	WIND	WIND GUST MAX.		
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD
DEG C	DEG C	%	DEG C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	DIR.	GUST	RAD
			M/S	M/S	M/S	MW							MW

0300	4.1	-5.2	51	006	1.1	330	3.2	2 0300	3.4	-3.8	59	012	.5	036	6.3	2 0300	2.4	-11.0	37	199	1.8	207	3.8	4
0600	3.8	-4.4	55	313	1.9	288	5.7	12 0600	4.6	-5.0	50	035	3.2	032	5.1	15 0600	8.0	*****	24	194	1.2	198	2.5	26
0900	4.9	-3.9	53	031	3.1	042	5.1	24 0900	8.8	-9.3	27	020	3.2	025	5.7	41 0900	10.5	-14.3	16	011	.9	359	3.2	16
1200	5.3	-4.3	50	025	3.9	028	6.3	34 1200	10.8	-11.3	20	022	4.4	030	8.9	79 1200	8.7	-3.6	42	069	3.0	063	8.9	15
1500	5.1	-2.2	59	030	4.3	030	6.3	24 1500	13.1	-20.6	8	009	3.4	018	7.6	87 1500	8.5	-3.5	43	074	5.3	084	12.1	22
1800	6.1	-3.9	49	033	3.7	026	6.3	17 1800	12.3	-16.4	12	358	3.3	357	9.5	29 1800	8.2	-3.5	55	058	3.0	073	6.3	6
2100	4.2	-2.6	61	036	3.6	031	6.3	2 2100	9.2	-15.4	16	352	1.4	355	4.4	6 2100	7.2	1.9	69	360	1.8	012	3.2	1
2400	4.8	-4.5	51	039	2.0	060	5.1	1 2400	4.0	-9.5	37	198	.9	155	3.2	2 2400	6.1	1.5	72	257	.2	330	2.5	1

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING June, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW

0300	5.4	.6	71	349	1.2	003	4.4	1	0300	5.1	-5.1	48	252	4.5	247	13.3	1	0300	3.3	-3.3	62	006	1.0	356	2.5	1
0600	6.0	-0	65	046	.2	241	1.9	16	0600	2.6	-3.5	64	008	2.6	306	8.3	5	0600	4.0	-3.3	59	008	1.5	010	2.5	15
0900	11.1	-7.8	26	020	1.4	035	3.8	26	0900	2.9	-5.3	55	024	3.5	027	5.7	34	0900	6.7	-6.4	39	013	2.2	014	5.1	39
1200	13.4	-20.4	8	007	2.1	021	5.7	45	1200	4.7	-5.2	49	004	2.9	011	4.4	48	1200	9.2	-9.0	27	001	3.8	007	6.3	108
1500	11.0	-8.4	25	287	.4	086	11.4	21	1500	5.4	-5.7	45	011	4.6	026	7.6	34	1500	10.1	-11.9	20	359	3.8	357	6.3	26
1800	11.9	-12.4	17	102	4.7	086	12.1	12	1800	6.5	-5.3	43	032	5.0	030	7.6	17	1800	10.8	-12.6	18	355	2.7	006	6.3	21
2100	8.5	-5.1	38	176	2.7	199	5.7	2	2100	4.4	-5.7	48	031	4.3	030	7.0	2	2100	7.7	-9.4	29	009	2.5	354	5.7	2
2400	7.0	-5.5	41	208	3.6	228	10.2	1	2400	3.4	-4.5	56	031	2.5	035	5.1	1	2400	5.7	-7.0	40	030	2.7	037	6.3	1

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW

0300	4.6	*****	51	328	.9	024	2.5	1	0300	3.4	-8.7	41	172	1.3	185	2.5	5	0300	7.7	-8.9	30	181	2.3	171	3.8	5
0600	6.3	*****	42	192	.6	182	1.9	11	0600	9.3	-9.3	26	041	.6	018	3.8	36	0600	12.7	*****	11	201	.7	199	3.2	37
0900	9.9	-12.7	19	018	1.2	002	2.5	35	0900	14.0	-14.1	13	014	2.3	010	4.4	51	0900	16.9	-19.3	7	009	2.0	013	3.8	70
1200	12.5	-16.3	12	318	.7	260	3.8	34	1200	17.7	-20.4	6	232	.6	241	3.8	83	1200	21.4	-21.8	4	303	1.3	228	4.4	85
1500	13.3	-17.9	10	136	1.3	120	6.3	26	1500	19.3	-21.2	5	295	1.7	325	5.1	72	1500	20.4	-20.4	5	315	1.7	260	5.1	17
1800	13.1	-16.9	11	343	2.5	311	5.7	9	1800	17.2	-20.8	6	286	2.0	271	5.7	10	1800	18.2	-21.9	5	334	2.7	326	6.3	10
2100	10.5	-12.9	18	018	2.3	021	4.4	4	2100	13.3	-20.5	8	149	.5	306	3.2	6	2100	14.4	-21.2	7	204	2.2	211	5.1	6
2400	7.0	*****	37	348	.6	306	2.5	2	2400	8.4	-10.1	26	162	1.9	174	3.8	2	2400	9.4	-14.5	17	192	3.2	177	5.1	3

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW

0300	9.4	-14.5	17	186	2.3	188	3.8	7	0300	5.5	-8.2	37	211	1.8	209	3.2	4	0300	5.3	-10.6	31	192	2.0	212	3.8	5
0600	14.2	-19.8	8	214	1.1	206	3.2	36	0600	11.7	-7.3	2	213	1.3	216	3.2	18	0600	14.3	-19.7	8	178	1.4	177	3.8	36
0900	19.8	-20.8	5	003	1.8	005	3.2	68	0900	18.6	-21.7	5	133	1.5	121	5.1	62	0900	18.2	-21.9	5	065	1.5	100	4.4	54
1200	22.0	-19.2	5	112	2.0	127	7.0	84	1200	21.4	-21.8	4	110	1.9	084	5.1	94	1200	20.5	-20.3	5	091	4.7	096	7.6	60
1500	23.7	-20.2	4	140	3.0	142	6.3	72	1500	21.7	-21.6	4	228	.7	188	7.0	29	1500	23.0	-20.7	4	098	6.1	091	11.4	82
1800	22.3	-21.1	4	157	1.9	129	6.3	13	1800	21.6	*****	4	247	2.9	251	7.0	21	1800	17.6	-20.5	6	116	6.5	128	10.2	8
2100	17.6	-20.5	6	028	1.2	008	4.4	6	2100	16.5	-21.3	6	019	3.3	027	7.6	5	2100	15.4	-22.1	6	103	4.2	111	10.8	3
2400	10.7	-9.7	23	210	1.3	228	3.2	2	2400	8.5	-11.0	24	225	1.0	008	3.8	2	2400	13.7	-20.2	8	108	7.6	110	11.4	3

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING June, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	11.9	-20.2	9	124	6.2	126	13.3	3	0300	3.9	*****	59	.077	.7	027	3.2	1	0300	5.9	-6.5	41	119	1.8	103	5.1	3
0600	11.9	-21.5	8	119	7.4	124	12.7	36	0600	4.9	*****	53	.053	.6	002	1.9	7	0600	8.5	-7.8	31	130	2.4	139	4.4	13
0900	15.6	-22.0	6	124	7.6	110	11.4	67	0900	7.7	*****	36	.064	.4	042	3.2	26	0900	9.8	-6.7	31	080	3.4	067	6.3	29
1200	17.4	-20.7	6	161	4.3	141	8.9	64	1200	9.9	-10.4	23	.008	1.1	353	3.2	41	1200	13.9	-11.6	16	091	4.1	071	9.5	93
1500	11.6	-12.7	17	035	2.6	026	8.3	21	1500	13.5	-21.8	7	.347	.9	267	5.1	67	1500	11.9	-8.1	24	103	6.2	101	10.8	34
1800	9.3	-12.0	21	022	4.5	019	7.0	7	1800	14.4	-21.2	7	.013	.9	027	6.3	32	1800	11.5	-8.5	24	093	7.6	.099	11.4	12
2100	6.9	-5.6	41	016	2.9	356	6.3	2	2100	10.8	-21.0	9	.117	2.8	136	8.9	4	2100	6.9	-5.6	41	072	5.5	.064	11.4	2
2400	5.5	-5.0	47	323	.8	243	5.7	1	2400	7.3	-7.3	35	.167	2.5	158	10.2	1	2400	5.6	-3.8	51	019	4.7	.023	8.9	1

R & M CONSULTANTS, INC.
SUSTAINA HYDRO ELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING JUNE, 1982

DAY	RES.			RES.			AVG.	MAX.	MAX.	DAY'S		
	MAX. TEMP. DEG C	MIN. TEMP. DEG C	MEAN TEMP. DEG C	WIND DIR.	WIND SPD. M/S	WIND SPD. M/S	GUST DIR. DEG	GUST P'VAL SPD. M/S	P'VAL DIR. Z	MEAN RH %	MEAN DP DEG C	SOLAR ENERGY WH/SQM
										PRECIP MM		
1	15.3	1.3	8.3	247	1.6	3.1	143	8.3	W	12	-19.8	0.0
2	8.4	.5	4.5	350	2.1	2.8	004	9.5	N	54	-4.6	4.2
3	10.5	.2	5.4	265	1.5	2.5	239	7.6	W	25	-17.5	0.0
4	14.3	-2.0	6.2	211	.4	2.6	254	8.3	SSW	16	-18.8	0.0
5	14.0	2.6	8.3	057	1.3	3.0	143	8.9	N	24	-13.7	0.0
6	15.4	4.3	9.9	062	1.6	3.5	104	10.2	N	31	-9.5	0.0
7	9.3	1.4	5.4	017	1.8	2.3	074	8.9	NNE	57	-2.3	5.2
8	13.7	.8	7.3	352	.5	1.9	330	6.3	N	28	-14.1	0.0
9	13.1	2.6	7.9	110	2.5	2.9	102	8.3	ESE	29	-9.7	.6
10	13.3	3.9	8.6	103	3.3	4.3	101	10.8	ESE	29	-10.6	0.0
11	11.4	.6	6.0	085	2.3	3.5	103	9.5	ESE	25	-14.3	0.0
12	13.1	1.2	7.2	090	2.1	3.9	131	12.7	ESE	29	-13.5	.6
13	10.4	.1	5.3	295	.3	1.8	337	5.1	SE	27	-15.6	0.0
14	12.0	2.7	7.4	039	.9	2.7	005	8.3	NNE	23	-14.7	.2
15	4.5	1.7	3.1	019	2.7	2.9	015	5.7	NNE	59	-4.4	6.8
16	6.7	3.1	4.9	026	2.8	3.1	028	6.3	NNE	54	-3.8	2.8
17	13.8	3.2	8.5	015	2.2	2.9	357	9.5	NNE	30	-10.3	0.0
18	11.6	1.6	6.6	068	1.3	2.5	084	12.1	N	43	-5.1	4.8
19	13.8	4.2	9.0	122	.5	2.6	086	12.1	NNE	38	-8.1	2.0
20	7.2	1.8	4.5	012	2.8	3.9	247	13.3	NNE	50	-5.1	5.6
21	11.8	3.2	7.5	007	2.5	2.7	007	6.3	N	37	-8.1	.2
22	13.8	4.0	8.9	000	.7	1.6	120	6.3	NNE	25	-13.3	0.0
23	20.3	2.8	11.6	271	.2	1.8	271	5.7	SSE	17	-15.5	0.0
24	22.0	5.7	13.9	249	.7	2.3	326	6.3	S	12	-17.9	0.0
25	24.5	7.9	16.2	150	.9	2.2	127	7.0	S	9	-18.8	0.0
26	23.3	5.5	14.4	204	.5	2.2	027	7.6	SW	12	-17.5	0.0
27	23.0	5.1	14.1	109	3.8	4.4	091	11.4	ESE	10	-18.9	0.0
28	18.4	5.1	11.8	104	2.9	4.9	126	13.3	NNE	16	-16.4	1.8
29	15.2	3.9	9.6	093	.6	1.8	158	10.2	NE	30	-13.4	2.4
30	13.9	5.6	9.8	085	3.9	4.8	099	11.4	E	31	-7.5	0.0
MONTH	24.5	-2.0	8.4	060	1.0	2.9	247	13.3	NNE	29	-12.1	37.2
												154737

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 11.4
 GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 12.1
 GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 12.1
 GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 12.1

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

R & M CONSULTANTS, INC.

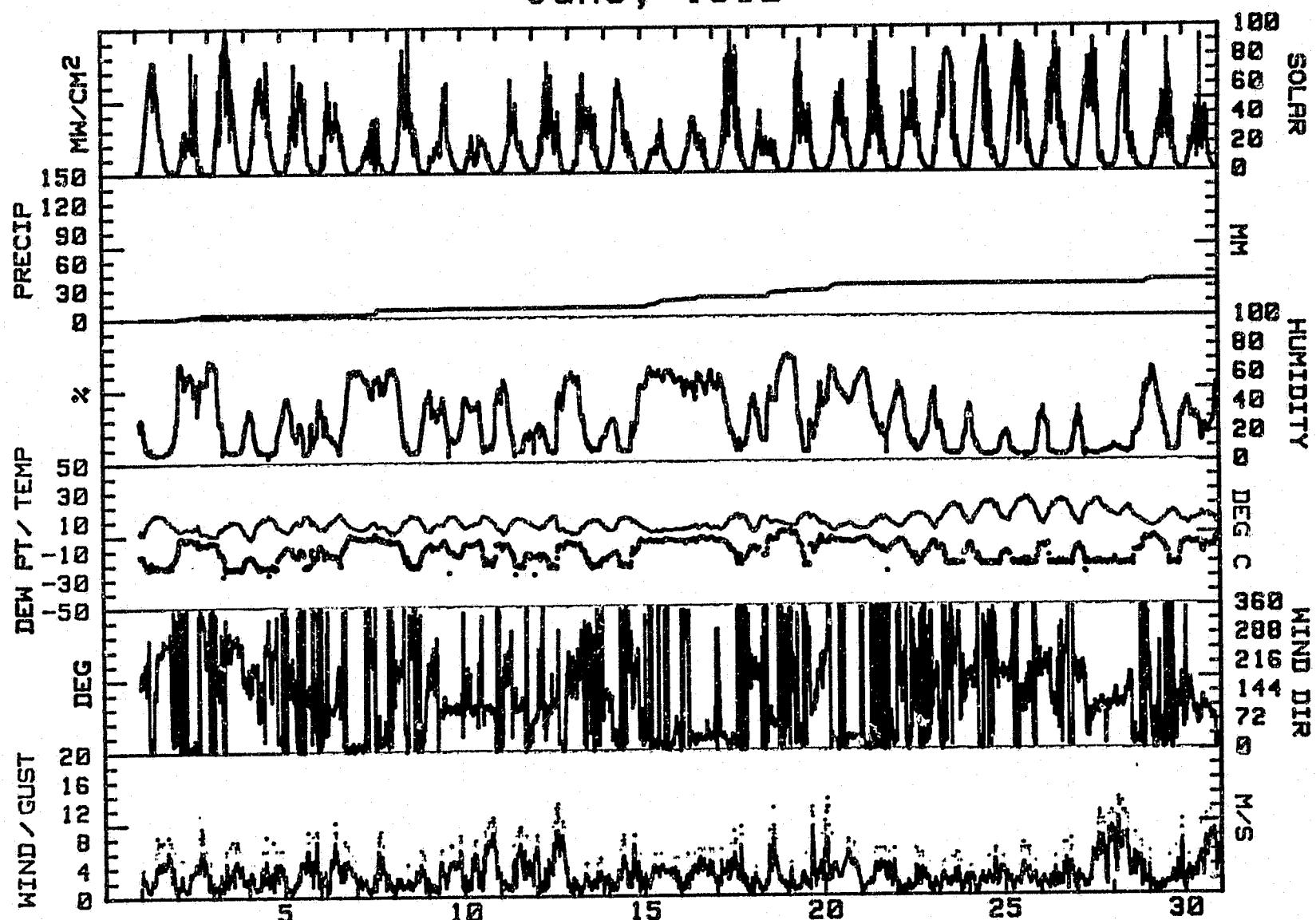
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING June, 1982

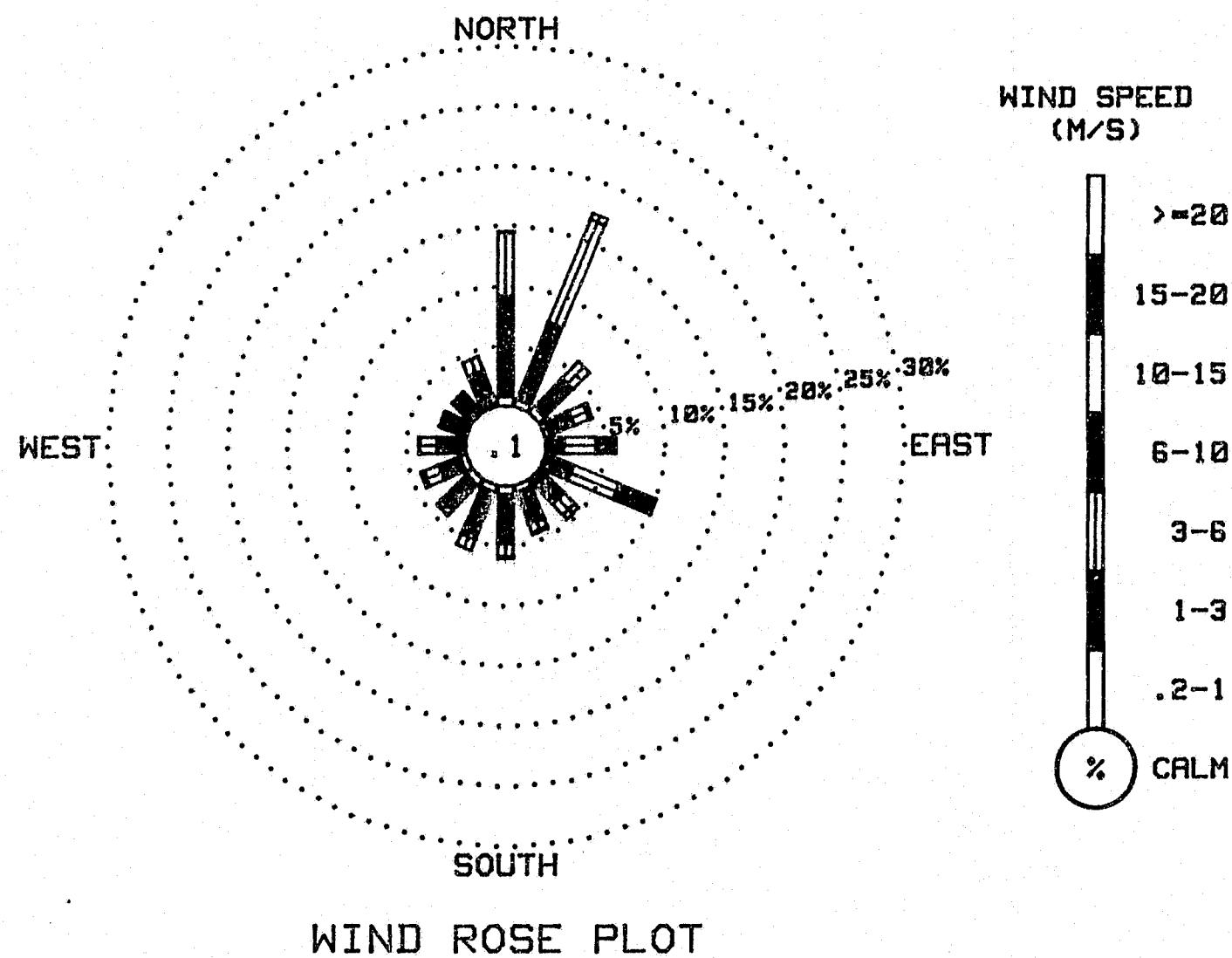
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.76	8.40	5.21	.10	0.00	0.00	0.00	14.48	
NNE	.59	6.94	9.17	.52	0.00	0.00	0.00	17.22	
NE	.66	3.30	1.94	0.00	0.00	0.00	0.00	5.90	
ENE	.42	2.19	1.39	.24	0.00	0.00	0.00	4.24	
E	.28	1.25	2.71	1.63	0.00	0.00	0.00	5.87	
ESE	.35	2.19	4.13	3.26	.07	0.00	0.00	10.00	
SE	.38	2.47	1.25	.52	0.00	0.00	0.00	4.62	
SSE	.59	2.85	.73	.17	0.00	0.00	0.00	4.34	
S	.69	4.10	1.08	.14	0.00	0.00	0.00	6.01	
SSW	.59	4.20	.97	0.00	0.00	0.00	0.00	5.76	
SW	.66	2.95	.49	.07	0.00	0.00	0.00	4.17	
WSW	.59	1.88	1.39	.24	0.00	0.00	0.00	4.10	
W	.28	2.15	1.46	.07	0.00	0.00	0.00	3.96	
WNW	.35	1.81	.31	0.00	0.00	0.00	0.00	2.47	
NW	.17	1.67	.45	.07	0.00	0.00	0.00	2.36	
NNW	.31	2.92	1.22	0.00	0.00	0.00	0.00	4.44	
CALM	-----	-----	-----	-----	-----	-----	-----	.07	
TOTAL	7.67	51.25	33.89	7.05	.07	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2880 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
June, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
June, 1982



R & M CONSULTANTS, INC.

SUSTAINA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

R & M CONSULTANTS, INC.

SUNGITINA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD			
	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW
0300	4.3	-4.5	53	015	1.1	009	5.1	1	0300	3.5	*****	62	345	.7	356	2.5	1	0300	-6	-12.3	41	178	2.0	178	3.8	5				
0600	3.9	-4.6	54	253	.3	211	5.1	8	0600	5.1	-6.2	44	334	.6	335	2.5	41	0600	5.8	-14.9	21	187	1.5	196	3.2	34				
0900	5.1	-5.1	48	203	2.6	214	5.1	12	0900	8.5	-13.2	20	008	1.7	346	4.4	49	0900	11.6	-21.8	8	099	1.7	082	5.7	48				
1200	7.9	-7.9	32	025	1.5	013	4.4	49	1200	11.3	-20.6	9	098	2.7	094	6.3	84	1200	15.3	-22.2	6	101	3.7	106	7.6	78				
1500	8.4	-8.7	29	259	.4	234	5.1	41	1500	12.7	-20.9	8	094	3.3	100	7.0	36	1500	17.6	-20.5	6	107	3.6	111	7.6	62				
1800	6.1	-3.0	52	009	3.5	017	7.0	25	1800	12.2	-20.0	9	332	.9	357	5.1	13	1800	17.1	-20.9	6	124	4.1	110	8.3	29				
2100	5.4	-6.0	44	018	3.4	020	5.7	2	2100	8.5	-12.7	21	013	3.1	026	6.3	4	2100	12.1	-21.4	8	113	1.6	143	5.7	5				
2400	4.2	*****	57	004	1.3	018	5.7	1	2400	3.4	*****	39	282	.5	014	3.2	1	2400	5.6	-10.4	31	271	1.0	002	3.8	1				

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD			
	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW
0300	5.9	-10.1	31	222	.9	194	3.2	6	0300	4.3	-6.7	45	003	1.2	027	5.1	2	0300	3.8	-7.4	44	212	1.2	167	2.5	2				
0600	8.5	-12.1	22	006	1.3	341	3.8	40	0600	7.2	-3.1	33	015	.3	017	3.8	36	0600	7.0	*****	37	224	1.1	225	2.5	15				
0900	14.2	-19.8	8	357	1.3	014	3.8	54	0900	11.7	-15.0	14	028	2.8	032	5.7	43	0900	15.7	-20.2	7	010	1.8	012	3.8	66				
1200	16.5	-21.3	6	070	3.1	084	8.3	40	1200	13.6	-21.8	7	008	2.1	000	5.7	38	1200	17.7	-20.4	6	071	1.6	087	6.3	53				
1500	16.5	-21.3	6	094	5.0	090	8.9	27	1500	16.2	-21.5	6	104	4.7	082	9.5	77	1500	18.9	-21.4	5	107	4.0	122	8.3	71				
1800	16.1	-21.6	6	098	5.2	102	8.3	17	1800	14.1	-19.9	8	041	3.0	032	8.3	36	1800	17.2	-20.8	6	101	5.5	117	8.9	17				
2100	12.1	-21.4	8	137	4.0	142	8.3	3	2100	10.2	-16.2	14	017	2.7	357	5.7	3	2100	12.4	-17.4	11	089	3.4	105	7.0	4				
2400	6.3	-7.8	36	000	2.8	350	6.3	1	2400	6.5	*****	33	218	.4	238	2.5	2	2400	5.3	-9.8	33	166	.4	192	3.8	2				

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD			
	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW
0300	4.7	-9.2	36	190	2.0	187	3.2	4	0300	11.7	-11.2	19	193	1.7	176	3.2	5	0300	8.4	-1.4	50	063	2.3	039	4.4	1				
0600	12.1	*****	15	203	1.6	211	3.2	34	0600	13.2	-7.0	24	200	1.3	228	2.5	7	0600	10.6	-4.0	36	039	2.8	036	5.1	29				
0900	17.3	-20.7	6	030	1.0	029	3.2	65	0900	15.6	-10.2	16	013	.1	014	6.3	25	0900	12.8	-7.4	24	037	3.1	036	5.1	27				
1200	22.3	-21.1	4	293	1.0	356	3.8	76	1200	16.9	-10.9	14	026	6.2	028	8.9	46	1200	14.0	-10.7	17	044	1.9	050	6.3	24				
1500	25.2	-21.5	3	035	2.7	036	8.3	75	1500	16.0	-11.6	14	026	6.3	029	11.4	30	1500	14.0	-10.0	18	016	3.7	024	5.7	10				
1800	23.6	-20.2	4	030	3.9	035	8.3	17	1800	13.3	-12.9	15	245	6.0	251	11.4	5	1800</												

R & M CONSULTANTS, INC.

SUSTINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

DAY 10

DAY 11

DAY 12

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	10.2	-2.6	41	066	1.2	132	3.2	1	0300	7.4	-5	57	039	3.0	044	5.7	1	0300	7.8	*****	85	084	.7	082	1.9	1
0600	9.4	*****	60	025	.5	029	3.2	4	0600	7.8	-1	58	038	2.4	042	4.4	5	0600	8.5	1.2	60	047	.8	019	3.8	10
0900	12.1	-5	45	057	.2	085	1.9	12	0900	10.1	-2.0	43	040	2.4	024	4.4	28	0900	9.5	,9	55	029	2.5	032	4.4	21
1200	12.9	-5	40	055	.8	041	1.9	10	1200	12.4	-4.8	30	043	2.3	063	5.7	31	1200	11.9	-2.8	36	029	3.3	030	5.1	48
1500	12.5	1.5	47	117	1.4	179	3.2	14	1500	13.2	-9.3	20	008	1.1	012	3.8	20	1500	12.8	-6.3	26	356	2.3	263	8.3	57
1800	9.2	2.1	61	029	2.5	016	5.1	3	1800	12.6	-7.5	24	245	2.3	231	5.7	11	1800	11.4	-6.1	29	266	6.0	257	10.2	10
2100	8.0	.5	59	033	2.9	052	5.1	1	2100	10.5	-4.8	34	050	.7	236	5.1	2	2100	8.7	-1.5	49	005	1.6	053	7.0	1
2400	7.5	1.2	64	051	3.1	055	8.3	1	2400	9.8	*****	53	097	1.2	085	3.2	1	2400	7.6	-3.3	46	033	2.5	046	7.0	1

DAY 13

DAY 14

DAY 15

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	6.6	-6.6	60	038	3.0	055	7.6	1	0300	6.2	-2.4	54	195	1.6	190	3.2	2	0300	6.9	*****	54	074	1.1	098	3.8	1
0600	7.4	-5.5	57	026	3.0	032	4.4	9	0600	9.4	-2.0	45	197	1.3	152	3.8	20	0600	7.7	*****	52	035	1.4	079	3.8	8
0900	10.8	-3.4	37	022	2.8	029	4.4	57	0900	11.9	-2.1	38	356	.3	023	2.5	18	0900	9.9	-5.0	35	016	1.9	012	5.1	29
1200	13.9	-7.0	23	025	3.4	026	6.3	29	1200	11.6	1.2	49	258	1.2	231	4.4	15	1200	10.3	-7.1	29	012	2.7	018	5.1	25
1500	14.4	-12.0	15	005	1.7	062	7.0	13	1500	11.5	1.7	51	245	.5	359	3.8	32	1500	10.5	-6.1	31	019	3.5	030	6.3	21
1800	13.9	-8.7	20	087	1.6	095	3.8	9	1800	11.7	-1.2	41	018	3.2	023	5.7	10	1800	9.9	-7.0	30	005	2.5	027	5.1	6
2100	11.1	-1.1	46	359	.7	037	2.5	1	2100	10.6	-3.4	47	025	2.3	039	5.1	2	2100	7.7	-3.9	44	019	2.5	034	5.1	2
2400	6.4	-1.7	56	219	1.4	175	3.8	1	2400	8.6	-3.4	43	070	1.3	108	3.8	1	2400	6.2	-1.4	58	001	1.5	014	3.8	1

DAY 16

DAY 17

DAY 19

HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX. HOUR DEW WIND WIND GUST MAX.
 NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD
 DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW DEG C DEG C % DEG. M/S DEG. M/S MW

0300	6.4	-4.7	45	130	.5	063	5.7	1	0300	5.2	-2.4	58	063	1.8	045	4.4	1	0300	6.9	-1.5	55	027	.9	006	4.4	1
0600	6.8	-4.7	44	096	1.2	104	5.7	8	0600	5.8	-2.3	56	030	1.9	056	3.8	12	0600	6.4	-2.0	55	015	2.4	345	4.4	10
0900	7.8	-3.5	45	090	2.3	132	4.4	21	0900	8.4	-3.2	44	022	2.3	027	3.8	25	0900	7.9	-1.4	52	022	2.7	029	4.4	28
1200	9.4	-6.2	33	075	2.9	078	5.7	18	1200	11.9	-7.6	25	014	3.1	348	6.3	55	1200	10.4	-3.8	37	019	3.2	024	5.7	40
1500	9.5	-4.6	37	006	2.8	003	4.4	23	1500	11.8	-11.1	19	346	4.1	017	9.3	20	1500	12.5	-5.2	29	007	3.5	341	6.3	29
1800	8.9	-5.1	37	076	1.1	026	4.4	6	1800	11.8	-11.1	19	336	3.8	336	7.0	13	1800	13.7	-6.6	24	329	4.7	335	7.6	25
2100	6.3	-3.7	49	050	1.7	052	5.7	1	2100	8.5	-2.5	46	356	1.9	342	5.1	1	2100	11.8	-7.2	26	310	4.2	308	7.6	3
2400	5.2	-1.2	63	087	1.8	099	5.1	1	2400	7.2	*****	57	022	1.2	021	3.2	1	2400	10.2	*****	27	266	.6	282	5.1	2

R & M CONSULTANTS, INC.

SUSITTNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW	
0300	7.8	-8.0	32	158	1.7	132	3.8	2	0300	7.2	-8.1	33	199	1.7	169	3.2	2	0300	7.3	-4.9	42	147	1.9	100	3.8	1		
0600	13.7	-11.7	16	174	1.9	183	5.1	31	0600	13.3	*****	14	199	1.1	156	3.2	30	0600	9.6	*****	41	205	1.6	189	3.2	15		
0900	16.1	-15.7	10	018	2.7	008	5.7	62	0900	16.8	-15.2	10	012	2.2	008	4.4	61	0900	13.5	-6.2	25	007	1.7	355	3.8	36		
1200	18.9	-21.4	5	037	1.8	011	5.1	76	1200	19.9	-18.8	6	021	3.5	025	6.3	54	1200	12.5	-1.6	38	000	3.2	000	6.3	15		
1500	21.4	-21.8	4	341	2.2	003	5.1	59	1500	19.9	-18.8	6	358	3.1	014	5.7	22	1500	12.1	.1	44	024	4.3	034	6.3	22		
1800	21.1	-22.0	4	303	2.5	298	5.7	26	1800	18.0	-20.2	6	294	3.1	274	7.0	12	1800	12.6	-1.1	39	023	3.6	022	6.3	10		
2100	15.1	-20.7	7	306	1.1	290	4.4	4	2100	15.6	-13.8	12	270	2.7	270	8.3	3	2100	9.3	-.3	51	034	3.5	032	7.0	1		
2400	7.6	-11.8	24	181	2.1	167	3.8	2	2400	10.8	-9.1	24	151	1.9	183	5.1	2	2400	7.1	-2.1	52	031	2.8	032	6.3	1		

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW	
0300	6.5	-.9	59	061	1.7	037	3.8	1	0300	6.5	2.8	77	186	.8	176	1.9	1	0300	7.7	3.9	77	020	1.9	022	3.2	1		
0600	7.7	-2.4	49	359	.7	329	1.9	14	0600	8.0	.7	60	166	1.0	139	2.5	4	0600	8.3	3.6	72	021	2.1	020	3.8	13		
0900	8.9	-4.1	40	033	3.4	035	5.7	36	0900	9.0	*****	59	291	.3	182	1.9	11	0900	10.6	-4.8	34	013	2.6	027	4.4	50		
1200	10.2	-4.7	35	021	5.0	023	8.9	32	1200	11.0	.4	48	349	1.4	358	3.2	36	1200	9.7	-2.4	43	014	4.1	013	6.3	16		
1500	10.5	-6.9	29	023	4.8	021	7.6	11	1500	10.3	.9	52	007	3.1	022	5.1	13	1500	9.4	.6	54	022	3.9	019	5.7	16		
1800	9.4	-5.1	36	022	4.9	023	7.6	10	1800	10.1	3.4	63	009	2.7	015	5.1	6	1800	8.8	-.3	53	013	3.1	021	5.1	8		
2100	7.5	.7	62	020	3.4	020	5.7	1	2100	8.6	4.1	73	019	2.9	021	4.4	1	2100	8.1	1.5	63	013	1.6	018	3.8	1		
2400	6.8	2.9	76	010	1.8	010	3.2	1	2400	8.2	6.5	89	021	2.4	020	4.4	1	2400	7.6	1.5	65	014	1.6	024	3.8	1		

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW		DEG C	DEG C	%	DEG	M/S	MW	
0300	7.4	*****	67	002	.6	006	2.5	1	0300	4.9	7	58	191	1.4	182	3.2	1	0300	8.0	*****	54	228	.7	207	1.9	1		
0600	8.1	*****	61	185	.8	236	1.9	9	0600	7.2	-2.8	49	211	1.6	237	3.2	12	0600	10.1	*****	42	244	.5	191	1.9	13		
0900	10.2	-.7	47	170	.2	223	1.9	25	0900	11.9	-8.7	23	235	.6	297	3.2	68	0900	12.7	-5.9	27	008	1.6	009	4.4	47		
1200	9.7	.6	53	008	2.3	021	5.7	31	1200	15.3	-13.1	13	006	1.8	013	5.7	73	1200	13.4	-6.3	25	006	4.0	359	7.6	27		
1500	12.8	-2.0	36	021	4.1	020	7.0	41	1500	14.6	-12.7	14	004	4.5	019	7.0	39	1500	15.2	-7.0	21	007	5.0	018	7.6	54		
1800	11.1	-6.4	29	312	3.1	018	8.3	13	1800	13.2	-9.3	20	003	4.7	007	7.0	19	1800	14.0	-6.3	24	007	4.6	012	7.0	22		
2100	9.0	-3.7	41	023	3.5	022	2.5	1	2100	10.7	-5.9	31	023	7.9	029	7.0	2	2100	10.7	-3.2	38	021	4.0	025	7.6	1		
2400	6.2	-2.9	52	078	1.3	132	3.8	1	2400</td																			

R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD		
	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW		
0300	8.5	.7	58	192	1.1	134	2.5	1	0300	8.9	****	53	004	1.3	009	3.8	1	0300	7.7	-5	56	183	.9	228	2.5	1
0600	10.5	-5.6	32	194	1.5	198	2.5	27	0600	8.8	.8	57	356	1.0	312	2.5	11	0600	8.2	.2	57	192	.5	237	3.2	2
0900	16.2	-15.6	10	248	.8	209	3.2	42	0900	10.2	.5	51	354	2.3	001	3.8	31	0900	9.1	-8	50	031	2.0	024	6.3	17
1200	18.1	-16.9	8	359	2.7	011	5.7	73	1200	10.9	-1.9	41	012	3.2	028	5.1	29	1200	8.6	-2	54	022	4.9	024	7.6	17
1500	18.4	-19.9	6	009	4.7	023	8.3	72	1500	10.0	-5	48	009	3.1	016	4.4	13	1500	9.9	-7.0	30	013	2.4	249	8.9	20
1800	14.4	-12.8	14	352	2.3	289	7.6	13	1800	10.2	-7	47	018	2.8	017	5.1	12	1800	10.2	-8.6	26	255	5.1	269	11.4	9
2100	11.9	-7.1	26	033	3.4	030	8.3	2	2100	8.4	2.0	64	004	.9	009	3.2	1	2100	8.4	-8.3	30	258	4.2	251	10.2	2
2400	8.9	.6	56	034	2.2	030	4.4	1	2400	7.3	-9	56	036	.9	139	3.8	1	2400	5.9	-4.3	48	266	1.1	255	4.4	1

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.	POINT	NDNG TEMP.	DIR.	SPD.	DIR.	GUST	RAD		
	DEG C	DEG C	%	DEG.	M/S	MW	DEG C	DEG C	%	DEG.	M/S	MW
0300	6.8	****	48	011	1.1	348	3.8	1				
0600	6.8	-6.0	40	009	1.8	341	6.3	7				
0900	9.8	-8.9	26	014	2.6	019	7.0	31				
1200	12.3	-13.7	15	003	3.9	009	6.3	47				
1500	12.9	-18.2	10	309	4.1	294	7.0	35				
1800	12.0	-17.7	11	318	4.5	317	7.0	24				
2100	8.5	-16.7	15	319	4.0	313	7.0	3				
2400	7.0	-16.4	17	312	3.1	319	7.0	3				

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

DAY	MAX.	MIN.	MEAN	RES.	RES.	AVG.	MAX.	MAX.	GUST P'VAL	MEAN	MEAN	DAY'S
	TEMP. DEG C	TEMP. DEG C	TEMP. DEG C	WIND DIR. DEG	WIND SPD. M/S	WIND SPD. M/S	WIND DIR. DEG	GUST SPD. M/S	DIR.	RH %	DP DEG C	SOLAR ENERGY WH/SQM
1	8.5	3.9	6.2	007	1.0	2.3	017	7.0	NNE	45	-5.7	8.6
2	13.8	2.6	8.2	041	1.0	2.0	100	7.0	N	28	-14.7	.2
3	18.2	-1.0	8.6	124	1.9	2.8	110	8.3	ESE	16	-18.2	0.0
4	17.8	3.4	10.6	083	1.9	3.2	090	8.9	E	16	-16.4	0.0
5	16.8	2.5	9.7	043	1.6	2.7	082	9.5	NNE	21	-15.3	0.0
6	19.6	3.4	11.5	099	1.7	2.8	117	8.9	E	18	-16.3	0.0
7	25.2	3.5	14.4	026	.7	2.2	036	8.3	NNE	13	-17.5	0.0
8	19.3	8.9	14.1	345	.8	4.0	247	12.1	NNE	21	-9.9	1.2
9	15.0	8.4	11.7	046	1.8	2.6	050	6.3	NNE	33	-5.1	0.0
10	13.7	7.5	10.6	049	1.4	1.8	055	8.3	NE	49	-1.1	9.8
11	14.0	7.2	10.6	038	1.3	2.1	044	5.7	NE	40	-3.7	.6
12	13.6	7.6	10.6	357	1.4	2.9	257	10.2	NNE	48	-2.0	2.4
13	15.2	6.4	10.8	028	1.7	2.4	055	7.6	NNE	38	-4.4	.4
14	13.5	4.9	9.2	017	.3	1.8	023	5.7	NNE	45	-1.3	6.2
15	11.0	6.2	8.6	018	2.0	2.3	030	6.3	NNE	42	-4.2	.2
16	10.3	5.2	7.8	068	1.5	2.1	063	5.7	ENE	45	-3.9	4.8
17	13.6	5.1	9.4	006	2.3	2.6	017	8.3	NNE	40	-5.6	1.0
18	14.7	6.2	10.5	352	2.4	3.0	335	7.6	NNE	40	-4.0	.8
19	21.8	7.4	14.6	340	.3	2.3	008	5.7	N	13	-16.2	0.0
20	21.4	5.4	13.4	325	.8	2.6	270	8.3	N	14	-15.5	0.0
21	15.8	6.1	11.5	026	2.0	2.9	032	7.0	NNE	40	-3.0	1.2
22	11.6	6.5	9.1	024	3.1	3.3	023	8.9	NNE	46	-3.0	0.0
23	11.0	6.3	9.7	012	1.3	2.0	022	5.1	NNE	65	2.5	7.4
24	11.6	7.6	9.6	016	2.6	2.6	013	6.3	NNE	58	.6	4.8
25	15.4	6.2	10.8	010	1.4	2.3	022	9.5	NNE	47	-2.9	2.4
26	15.8	3.4	9.6	001	1.5	2.6	019	7.0	N	33	-7.6	0.0
27	15.7	6.8	11.3	007	2.3	2.8	359	7.6	N	34	-6.3	0.0
28	19.4	6.5	13.0	010	1.5	2.6	023	8.3	NNE	25	-10.2	.2
29	11.1	7.3	9.2	009	1.9	2.2	028	5.1	N	54	.2	1.8
30	11.1	5.4	8.3	305	1.1	3.0	269	11.4	NNE	45	-3.7	6.4
31	13.4	5.9	9.7	334	2.8	3.3	019	7.0	NW	24	-12.5	0.0
MONTH	25.2	-1.0	10.4	021	1.3	2.6	247	12.1	NNE	35	-7.3	60.4
												140600

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 11.4
 GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 10.8
 GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 9.5
 GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 6.3

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

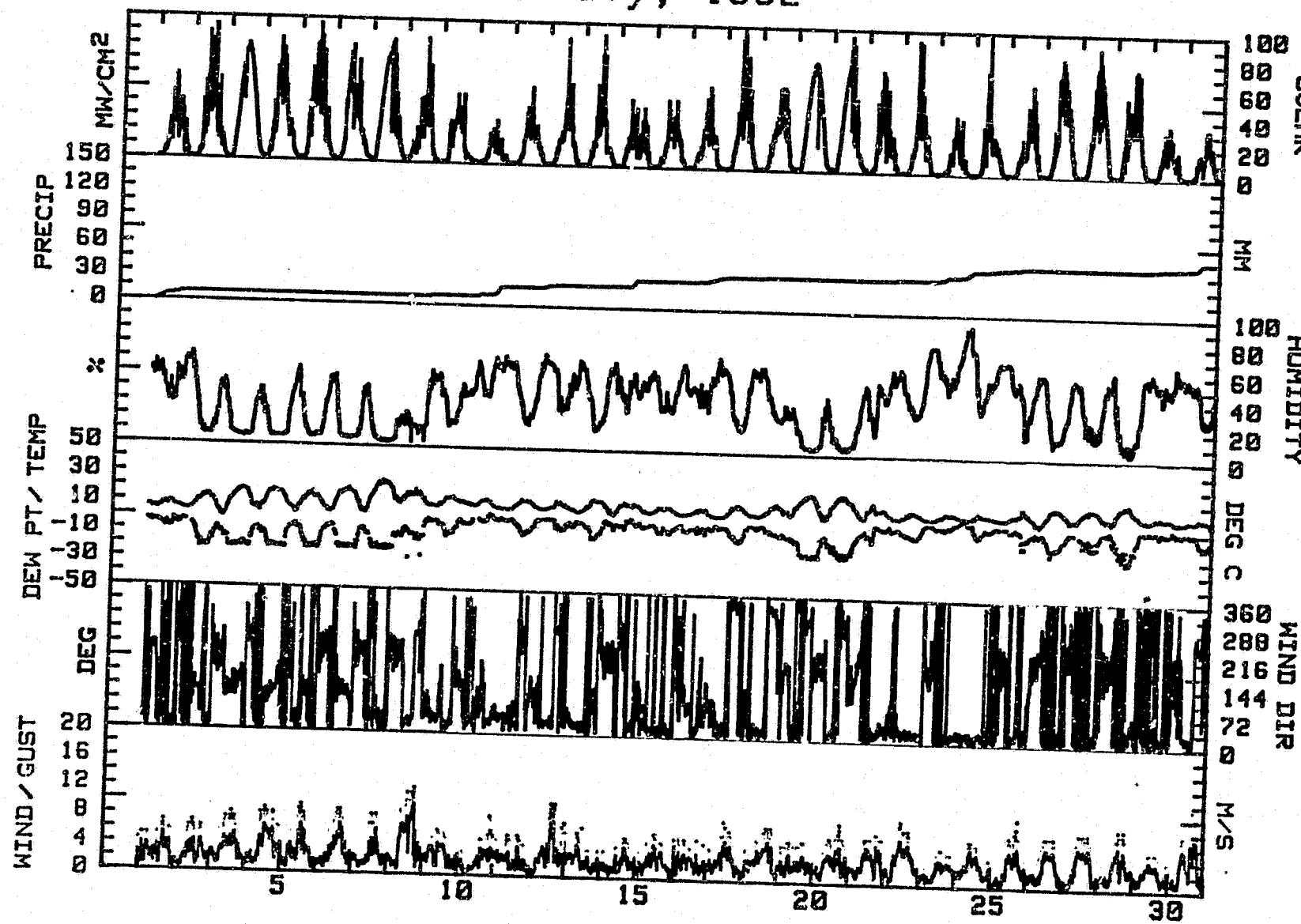
R & M CONSULTANTS, INC.
SUSITTNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING July, 1982

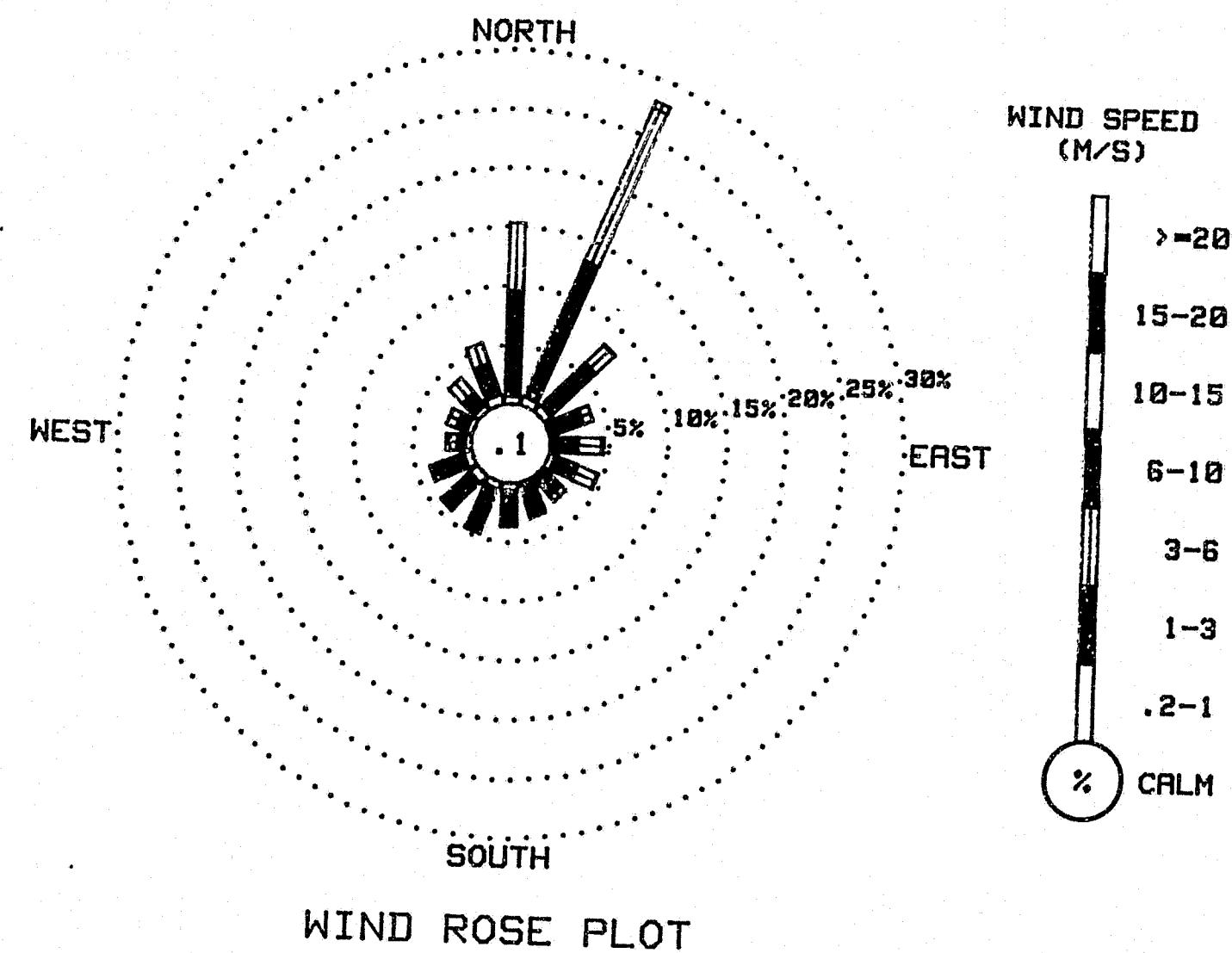
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.64	8.94	5.68	0.00	0.00	0.00	0.00	15.26	
NNE	.74	12.50	14.18	.60	0.00	0.00	0.00	28.02	
NE	.71	5.21	2.18	.07	0.00	0.00	0.00	8.17	
ENE	.40	2.59	.84	0.00	0.00	0.00	0.00	3.83	
E	.40	1.95	2.02	.17	0.00	0.00	0.00	4.54	
ESE	.57	2.02	1.85	.07	0.00	0.00	0.00	4.50	
SE	.30	1.85	.60	0.00	0.00	0.00	0.00	2.76	
SSE	.40	2.45	.27	0.00	0.00	0.00	0.00	3.13	
S	.64	2.86	.13	0.00	0.00	0.00	0.00	3.63	
SSW	.64	3.80	.17	.03	0.00	0.00	0.00	4.64	
SW	.84	3.13	.10	.07	0.00	0.00	0.00	4.13	
WSW	.74	1.81	.44	.74	0.00	0.00	0.00	3.73	
W	.50	.67	.71	.24	0.00	0.00	0.00	2.12	
WNW	.54	.91	.91	0.00	0.00	0.00	0.00	2.35	
NW	.50	1.41	1.71	0.00	0.00	0.00	0.00	3.63	
NNW	.84	2.82	1.81	0.00	0.00	0.00	0.00	5.48	
CALM								,10	
TOTAL	9.41	54.91	33.60	1.98	0.00	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2976 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
July, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
July, 1982



2000 1500 1000 500 0 -500 -1000 -1500 -2000

R & M CONSULTANTS, INC.

SUSSETNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

DATE	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	DATE		
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1		
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2		
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3		
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4		
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6		
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10	
11	0.0	0.0	0.2	0.2	0.2	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13	
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16	
17	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17	
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18	
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19	
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	
23	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23	
24	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
25	0.0	0.4	0.0	0.0	0.6	1.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26	
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28	
29	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29	
30	0.2	0.2	0.0	0.4	0.4	1.2	0.2	0.8	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	
31	0.2	0.0	0.0	0.4	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.0	0.0	0.0	31

R & M CONSULTANTS, INC.

SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	SPD.	DIR.	RAD

0300	7.9	-16.4	16	316	3.0	320	6.3	3 0300	4.3	-11.5	31	193	1.5	158	3.8	2 0300	2.9	-10.9	36	202	2.1	184	3.2	1	1
0600	9.5	-18.6	12	261	.2	304	5.1	28 0600	8.4	****	16	185	1.3	205	2.5	27 0600	6.9	-10.5	28	198	2.1	209	3.8	12	--
0900	10.8	-21.0	9	322	3.2	312	6.3	59 0900	11.9	-21.5	8	024	1.5	022	3.8	58 0900	13.6	-17.6	10	007	1.3	356	3.8	57	
1200	12.6	-22.5	7	316	3.9	323	7.0	71 1200	14.1	-21.4	7	007	2.2	026	7.0	39 1200	16.6	-16.6	9	006	2.5	009	5.1	82	67
1500	13.3	-22.0	7	318	4.6	314	7.6	44 1500	15.3	-22.2	6	072	1.8	045	5.1	43 1500	16.1	-19.9	7	000	2.2	026	5.1	24	42
1800	12.0	-21.5	8	324	4.8	312	7.6	22 1800	14.6	****	7	339	1.4	353	3.8	17 1800	16.1	-21.6	6	331	3.1	330	6.3	19	
2100	7.9	-22.0	10	315	4.9	321	7.0	3 2100	9.2	-18.9	12	184	.5	142	2.5	3 2100	13.2	-22.1	7	324	1.2	309	5.1	3	2
2400	4.4	-12.7	28	246	1.1	299	5.7	2 2400	7.2	-13.7	21	207	1.8	189	3.2	2 2400	6.8	-11.5	26	170	1.8	171	4.4	2	1

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	SPD.	DIR.	RAD

0300	4.1	-9.1	38	183	1.5	189	3.8	2 0300	8.5	-12.1	22	164	1.5	144	3.2	3 0300	4.6	-9.3	36	194	1.7	219	3.2	2	
0600	8.5	****	12	203	1.4	198	2.5	25 0600	10.4	****	22	183	1.0	200	2.5	13 0600	8.8	-21.3	10	193	1.4	204	3.2	25	4
0900	13.2	-16.8	11	018	1.7	021	4.4	53 0900	13.3	-17.9	10	013	1.1	016	3.2	57 0900	14.9	-20.8	7	118	.7	107	5.1	56	28
1200	17.2	-20.8	6	005	2.8	358	5.7	71 1200	15.2	-20.6	7	013	2.3	014	5.1	26 1200	15.2	-20.6	7	109	2.9	068	7.6	30	
1500	17.8	-20.4	6	312	3.2	329	7.0	26 1500	14.3	-19.7	8	004	3.2	018	9.5	51 1500	16.3	-21.4	6	063	1.7	075	5.1	25	27
1800	16.6	-21.2	6	323	4.2	332	6.3	22 1800	11.9	-11.1	19	179	2.9	151	8.3	6 1800	16.3	-21.4	6	101	1.0	066	6.3	19	5
2100	11.9	-13.2	16	259	.9	195	5.7	3 2100	8.7	-9.9	26	167	2.2	167	4.4	2 2100	11.3	-15.3	14	087	2.6	066	5.1	3	4
2400	11.2	-20.7	9	140	.9	141	3.2	3 2400	9.1	-12.7	20	177	2.1	161	3.8	3 2400	6.5	-9.2	32	197	2.2	172	4.4	2	

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C	SPD.	DIR.	RAD

0300	8.2	****	25	192	1.0	194	2.5	2 0300	6.7	-4.5	45	108	.8	089	6.3	1 0300	2.5	-4.5	60	204	.6	045	2.5	1	1
0600	7.9	****	40	350	.8	015	3.8	13 0600	7.1	-4.7	43	195	.9	094	3.2	7 0600	5.3	****	48	213	1.1	208	1.9	12	
0900	11.2	****	31	006	1.3	001	2.5	58 0900	10.2	-14.6	16	108	2.3	129	5.1	20 0900	7.7	-6.6	36	007	1.7	012	4.4	30	--
1200	13.4	-16.6	11	086	2.1	097	6.3	61 1200	10.8	-14.9	15	103	4.0	108	8.9	29 1200	8.1	-9.0	29	023	4.3	017	6.3	34	35
1500	12.2	-17.6	11	110	5.4	107	7.6	22 1500	10.8	-14.1	16	109	5.7	099	8.9	18 1500	9.2	-6.4	33	020	3.5	023	6.3	23	38
1800	10.7	-10.8	21	107	5.1	108	8.9	11 1800	11.4	-10.8	20	090	6.0	106	8.9	13 1800	8.5	-7.8	31	026	3.3	036	5.7	3	
2100	8.6	-9.5	27	090	6.6	090	9.5	2 2100	7.0	-6.8	37	091	4.2	090	7.6	1 2100	7.1	-6.0	39	034	2.4	040	5.1	1	3
2400	6.4	-3.9	48	035	2.6	079	8.3	1 2400	5.2	-4.7	49	015	1.9	359	5.1	1 2400	5.5	-3.1	54	212	.4	040	1.9	1	1

R & M CONSULTANTS, INC.

SUSSEKINA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	% DEG.	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	MW	DEG C

0300	5.5	*****	53	187	1.1	192	2.5	1	0300	4.4	*****	62	002	.4	358	1.9	1	0300	3.4	-9.0	40	189	1.9	192	3.8	1
0600	6.5	*****	53	205	.7	243	1.9	7	0600	4.6	-2.0	62	024	1.0	026	2.5	6	0600	6.3	-11.5	27	181	1.8	205	2.5	22
0900	9.2	-12.7	20	360	.9	011	3.2	39	0900	6.0	-3.7	50	018	1.1	023	2.5	21	0900	12.2	-14.6	14	356	.6	018	3.8	53
1200	10.4	-16.0	14	349	2.5	292	7.6	32	1200	10.0	-10.3	23	012	2.2	003	4.4	25	1200	15.9	-21.7	6	009	2.2	027	4.4	67
1500	8.5	-7.0	33	014	4.0	030	7.6	18	1500	12.4	-19.8	9	005	1.4	007	3.8	49	1500	18.0	-20.2	6	354	1.8	348	4.4	42
1800	6.6	-6.2	40	025	4.1	026	7.0	3	1800	13.3	-20.5	8	310	3.3	305	5.7	18	1800	16.4	-19.7	7	343	2.3	014	3.8	12
2100	5.1	-5.1	48	022	2.9	030	7.6	1	2100	9.7	-18.5	12	322	4.1	331	7.0	3	2100	10.3	-13.0	18	337	.6	324	3.8	2
2400	4.6	*****	56	358	.5	010	2.5	1	2400	5.6	-11.2	29	199	1.3	226	4.4	2	2400	6.1	-7.3	38	230	.7	216	2.5	1

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.		
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD		
DEG C	% DEG.	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	MW

0300	5.5	-7.8	38	201	1.5	216	2.5	1	0300	9.3	*****	39	194	.9	238	2.5	1	0300	6.8	-6.7	38	017	3.2	016	6.3	1
0600	10.2	*****	12	209	1.3	197	2.5	30	0600	12.5	*****	22	194	1.1	223	2.5	27	0600	6.3	-5.1	44	017	2.0	003	4.4	4
0900	13.5	-13.6	14	009	.6	039	3.8	52	0900	15.9	-15.9	10	012	1.0	007	5.7	33	0900	8.3	-6.4	35	026	2.5	020	5.1	28
1200	17.7	-20.4	6	006	2.4	024	5.1	64	1200	13.7	-10.2	18	017	4.6	027	7.0	22	1200	10.8	-10.1	22	011	3.7	019	6.3	28
1500	19.5	-21.0	5	001	3.2	012	5.7	48	1500	10.5	.8	51	014	4.3	020	8.3	9	1500	11.8	-16.8	12	326	4.0	326	7.0	27
1800	17.0	-19.3	7	358	3.9	023	7.0	16	1800	13.3	-11.3	17	030	2.7	020	6.3	12	1800	7.0	-5.8	40	309	2.5	195	8.3	5
2100	11.3	-9.2	23	022	3.6	029	7.0	2	2100	9.3	*****	48	019	2.6	026	5.7	1	2100	4.5	-8.1	40	200	4.1	200	7.0	1
2400	9.4	-5.8	34	252	.5	173	2.5	2	2400	8.5	-6.6	34	025	1.3	343	6.3	1	2400	5.2	-7.4	40	197	1.7	203	4.4	1

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.		
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD		
DEG C	% DEG.	M/S	MW	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	DEG C	% DEG.	M/S	MW

0300	2.8	-4.4	59	147	.7	218	3.2	1	0300	4.6	*****	43	190	1.0	198	2.5	1	0300	2.0	-5.6	57	206	1.3	209	2.5	1
0600	3.0	-3.5	62	195	1.2	190	2.5	10	0600	5.5	-3.6	52	231	.3	248	1.9	5	0600	3.1	*****	41	200	1.1	155	3.2	18
0900	6.8	-7.4	36	001	.6	020	3.2	51	0900	6.9	-2.8	50	011	1.9	012	3.8	21	0900	9.4	-14.5	17	024	1.0	010	3.8	52
1200	12.7	-20.9	8	019	2.5	014	5.7	69	1200	8.1	-4.1	42	022	3.1	028	5.1	17	1200	13.2	-22.1	7	004	2.4	355	5.1	65
1500	14.0	-20.0	8	327	2.4	001	7.6	58	1500	9.8	-5.5	34	022	3.6	032	6.3	23	1500	13.5	-21.8	7	329	2.5	336	5.7	38
1800	11.7	-21.7	8	260	5.6	257	8.9	15	1800	9.9	-13.4	18	023	2.6	016	5.7	9	1800	11.9	-16.7	12	344	3.5	327	6.3	10
2100	6.9	-10.9	27	265	.5	272	7.6	2	2100	6.2	*****	40	034	1.0	039	3.8	1	2100	9.6	-15.8	15	141	.4	358	3.8	3
2400	4.5	-9.1	37	099	1.1	017	4.4	1	2400	3.1	-7.5	46	174	1.2	144	3.8	1	2400	6.9	*****	36	182	.7	177	1.9	1

R & M CONSULTANTS, INC.

SUSITTNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION

DATA TAKEN DURING August, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.						
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD		
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	3.7	-4.5	55	227	1.0	252	2.5	1	0300	8.0	-7.8	32	189	1.0	204	1.9	1	0300	9.6	-8.6	27	207	.9	229	1.9	2
0600	4.1	-9.1	38	207	1.2	190	2.5	16	0600	8.2	*****	35	206	.8	207	1.9	6	0600	8.5	*****	32	207	.6	125	2.5	5
0900	11.8	-11.1	19	001	.4	031	2.5	49	0900	11.9	-13.2	16	005	.4	350	1.9	27	0900	11.9	*****	5	103	.2	158	1.3	24
1200	14.3	-19.7	8	021	3.8	021	6.3	64	1200	14.7	-21.0	7	008	1.6	036	4.4	68	1200	14.5	-15.8	11	002	2.2	359	4.4	47
1500	15.3	-20.5	7	001	3.0	007	6.3	47	1500	17.2	-20.8	6	018	1.5	339	4.4	49	1500	14.9	-19.3	8	005	2.8	007	4.4	19
1800	14.1	-21.4	7	335	2.7	321	5.1	14	1800	14.6	-19.5	8	326	2.2	329	4.4	10	1800	14.0	-17.3	10	020	2.0	025	4.4	5
2100	9.8	-15.7	15	113	.1	307	4.4	3	2100	11.3	-18.3	11	153	1.1	157	3.2	3	2100	11.0	-14.7	15	139	1.1	135	3.2	2
2400	8.2	*****	27	150	1.6	140	3.2	2	2400	8.6	-9.0	28	191	1.2	152	3.2	2	2400	8.8	-10.8	24	199	1.0	214	2.5	3

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.						
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD						
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	4.1	-8.7	39	212	1.1	226	2.5	1	0300	8.5	*****	34	342	.2	233	1.9	1	0300	5.3	-2.3	58	195	1.1	200	2.5	1
0600	5.8	*****	25	196	1.3	179	3.2	17	0600	8.2	-.3	55	348	1.2	320	3.2	4	0600	6.5	*****	51	190	1.5	202	3.8	7
0900	12.8	-17.1	11	032	.6	926	2.5	49	0900	11.0	*****	36	245	.3	328	1.9	21	0900	11.7	*****	18	150	.6	130	2.5	29
1200	17.1	-20.9	6	006	2.9	003	5.1	62	1200	11.1	-3.2	37	005	2.7	005	5.1	24	1200	12.8	-14.1	14	006	2.2	008	3.8	25
1500	17.9	-20.3	6	353	3.1	002	7.0	41	1500	10.9	-1.3	43	020	3.4	030	6.3	16	1500	13.2	-20.6	8	226	.8	157	5.1	22
1800	15.3	-20.5	7	356	2.7	348	5.7	5	1800	10.8	-2.0	41	024	2.9	030	5.7	8	1800	9.5	*****	45	018	2.0	017	5.7	2
2100	12.2	-21.3	8	020	2.7	358	5.7	3	2100	9.9	*****	40	032	1.6	026	5.1	1	2100	8.1	-3.8	43	195	1.4	200	3.8	1
2400	9.6	-13.6	18	003	1.2	009	3.8	3	2400	6.9	-2.8	50	105	.8	100	2.5	1	2400	7.7	-3.6	45	014	.9	014	3.8	1

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.						
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD						
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	6.8	*****	53	063	.6	122	1.9	1	0300	2.3	-4.4	61	171	1.3	162	3.8	1	0300	5.7	-17.5	17	173	1.3	136	4.4	2
0600	6.5	*****	55	028	.2	124	2.5	2	0600	3.4	*****	66	184	1.2	186	2.5	4	0600	5.1	-15.5	21	172	1.8	204	3.8	16
0900	8.0	-2.4	48	013	1.2	357	2.5	21	0900	7.4	-1.0	55	017	.8	034	3.2	21	0900	10.7	-21.1	9	172	.8	111	4.4	48
1200	12.3	-13.7	15	017	2.3	019	5.1	54	1200	12.7	-15.1	13	027	1.5	352	7.0	22	1200	12.2	-21.3	8	117	3.6	113	7.6	17
1500	11.4	-6.6	28	008	3.5	004	6.3	19	1500	15.4	-22.1	6	321	3.5	304	7.0	48	1500	15.0	-20.7	7	113	2.8	091	7.0	43
1800	9.2	-7.6	30	213	1.3	199	7.6	8	1800	13.6	-21.8	7	313	5.6	314	8.3	10	1800	12.8	-20.9	8	130	2.8	094	6.3	10
2100	7.3	-5.5	40	183	2.1	173	5.1	1	2100	10.3	-21.4	9	318	4.8	314	7.6	3	2100	6.0	-20.4	13	143	2.2	089	5.1	3
2400	5.2	-5.8	45	180	1.3	153	2.5	1	2400	7.2	-22.6	10	113	.5	333	5.7	3	2400	2.6	-13.8	29	205	1.4	180	3.8	2

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	%	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	%	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	%
	M/S	M/S	MW		M/S	M/S	MW		M/S	M/S	MW

0300	-1	-12.5	39	188	1.7	216	3.8	1	0300	3.4	-6.6	48	184	1.5	148	3.2	1	0300	5.0	-4.3	51	109	.1	220	3.2	1
0600	2.7	-18.1	20	193	2.0	210	3.8	8	0600	5.1	-8.9	36	173	.7	139	3.2	3	0600	5.1	-5.1	48	104	1.8	196	4.4	3
0900	10.2	-22.8	8	142	.7	027	3.2	48	0900	6.2	-10.2	30	138	.3	305	3.2	14	0900	5.3	-4.6	49	090	2.1	095	5.7	10
1200	11.6	-17.0	12	006	3.2	354	5.7	22	1200	9.0	-15.5	16	095	5.4	093	10.2	41	1200	8.0	-9.1	29	101	2.9	101	7.6	16
1500	12.0	-17.7	11	344	1.6	359	5.1	25	1500	8.5	-7.4	32	080	4.1	094	7.0	13	1500	8.9	-9.2	27	097	2.3	090	5.1	9
1800	9.4	-17.7	13	011	1.4	268	5.7	3	1800	7.1	-1.1	56	347	1.8	050	3.8	2	1800	5.7	****	50	229	.3	014	6.3	1
2100	6.8	-11.5	26	165	1.3	221	3.2	2	2100	6.8	****	36	009	1.1	345	3.2	1	2100	4.3	-1.2	67	006	1.4	005	2.5	1
2400	4.8	-5.6	47	182	1.2	146	2.5	1	2400	5.7	-3.9	50	033	.5	352	2.5	1	2400	3.8	-0	76	020	2.2	027	3.8	1

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	%
	M/S	M/S	MW

0300	3.1	-.9	75	027	2.6	029	3.8	1
0600	3.2	-4.5	57	001	1.2	017	1.9	4
0900	5.8	-7.9	37	353	1.3	357	2.5	17
1200	8.5	-13.2	20	029	1.1	029	3.2	13
1500	8.8	-12.4	21	011	2.5	036	5.7	17
1800	6.9	-10.1	29	015	2.9	027	5.1	4
2100	4.3	-7.0	44	178	1.2	192	3.8	1
2400	3.4	-7.2	46	188	2.1	193	3.8	1

R & M CONSULTANTS, INC.

SALJUS KOSINA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

DAY	MAX. TEMP., DEG C	MIN. TEMP., DEG C	MEAN TEMP., DEG C	RES. WIND DIR. DEG	RES. WIND SFD. M/S	AVG. WIND SPD. M/S	MAX. GUST DIR. DEG	MAX. GUST P'VAL SPD. M/S	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM		
1	14.0	2.6	8.3	316	3.1	3.5	314	7.6	NW	11	-20.0	0.0	7188	1
2	15.3	2.4	8.9	058	.1	1.7	026	7.0	S	16	-17.3	0.0	5383	2
3	17.6	2.3	10.0	323	.6	2.3	330	6.3	N	16	-16.9	0.0	5713	3
4	18.9	2.4	10.7	321	1.0	2.5	329	7.0	SSW	14	-17.5	0.0	6610	4
5	17.8	7.1	12.5	147	.5	2.2	018	9.5	S	17	-14.8	1.0	5555	5
6	18.5	4.0	11.3	129	1.1	2.3	068	7.6	S	14	-17.6	0.0	6018	6
7	13.7	6.0	9.9	090	2.4	3.3	090	9.5	E	25	-10.9	.2	3610	7
8	11.9	5.0	8.5	097	2.9	3.5	108	8.9	E	29	-9.8	.2	3005	8
9	10.2	1.8	6.0	022	1.6	2.3	017	6.3	NNE	40	-6.3	.4	3463	9
10	10.9	4.5	7.7	013	1.6	2.3	292	7.6	NNE	35	-7.4	1.8	3283	10
11	14.3	4.1	9.2	338	1.3	2.0	331	7.0	NW	26	-12.7	1.6	3655	11
12	19.0	2.3	10.7	332	.5	1.8	027	4.4	N	18	-16.0	0.0	6325	12
13	19.5	3.1	11.3	360	1.3	2.4	023	7.0	NNE	19	-14.3	0.0	6098	13
14	16.1	8.4	12.3	020	1.8	2.5	020	8.3	NNE	30	-6.5	.4	3590	14
15	12.7	4.3	8.5	345	1.3	3.2	195	8.3	NNE	33	-8.1	.2	2773	15
16	14.4	2.3	8.4	291	.7	2.5	257	8.9	NNE	28	-13.3	0.0	5568	16
17	10.4	3.1	6.8	025	1.2	2.0	032	6.3	NNE	39	-6.6	2.2	2813	17
18	14.6	.6	7.6	337	.8	1.9	327	6.3	N	24	-14.6	0.0	5193	18
19	15.6	2.2	8.9	359	.8	2.1	021	6.3	NNE	22	-14.4	0.0	5360	19
20	17.3	7.1	12.2	332	.2	1.4	036	4.4	N	14	-16.9	0.0	4615	20
21	15.9	7.9	11.9	014	.5	1.5	359	4.4	N	15	-14.7	0.0	3183	21
22	18.1	2.6	10.4	000	1.3	2.1	002	7.0	N	15	-17.2	0.0	5543	22
23	11.7	6.9	9.3	018	1.4	1.8	030	6.3	NNE	42	-2.4	1.8	2500	23
24	13.8	3.1	8.5	274	.0	1.8	017	5.7	N	35	-8.0	1.2	2925	24
25	12.9	4.6	8.8	026	.4	2.1	199	7.6	N	36	-6.3	2.6	3113	25
26	16.2	2.2	9.2	320	1.6	2.8	314	8.3	NW	28	-13.5	0.0	4410	26
27	15.0	2.1	8.6	141	1.8	2.4	113	7.6	SE	13	-19.5	0.0	5228	27
28	12.8	-.1	6.4	163	.1	2.0	354	5.7	NNE	20	-16.2	1.6	3913	28
29	9.2	3.4	6.3	084	1.2	2.3	093	10.2	E	34	-9.0	4.0	2060	29
30	9.5	3.8	6.7	078	1.3	2.0	101	7.6	E	48	-5.0	12.0	1483	30
31	9.2	2.8	6.0	018	1.0	2.0	036	5.7	N	44	-7.6	7.6	3113	31
MONTH	19.5	-.1	9.1	020	.6	2.3	093	10.2	NNE	26	-12.3	38.8	133283	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 7.6
 GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 8.9
 GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 10.2
 GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 8.9

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

***** SEE NOTES AT THE BACK OF THIS REPORT *****

R & M CONSULTANTS, INC.

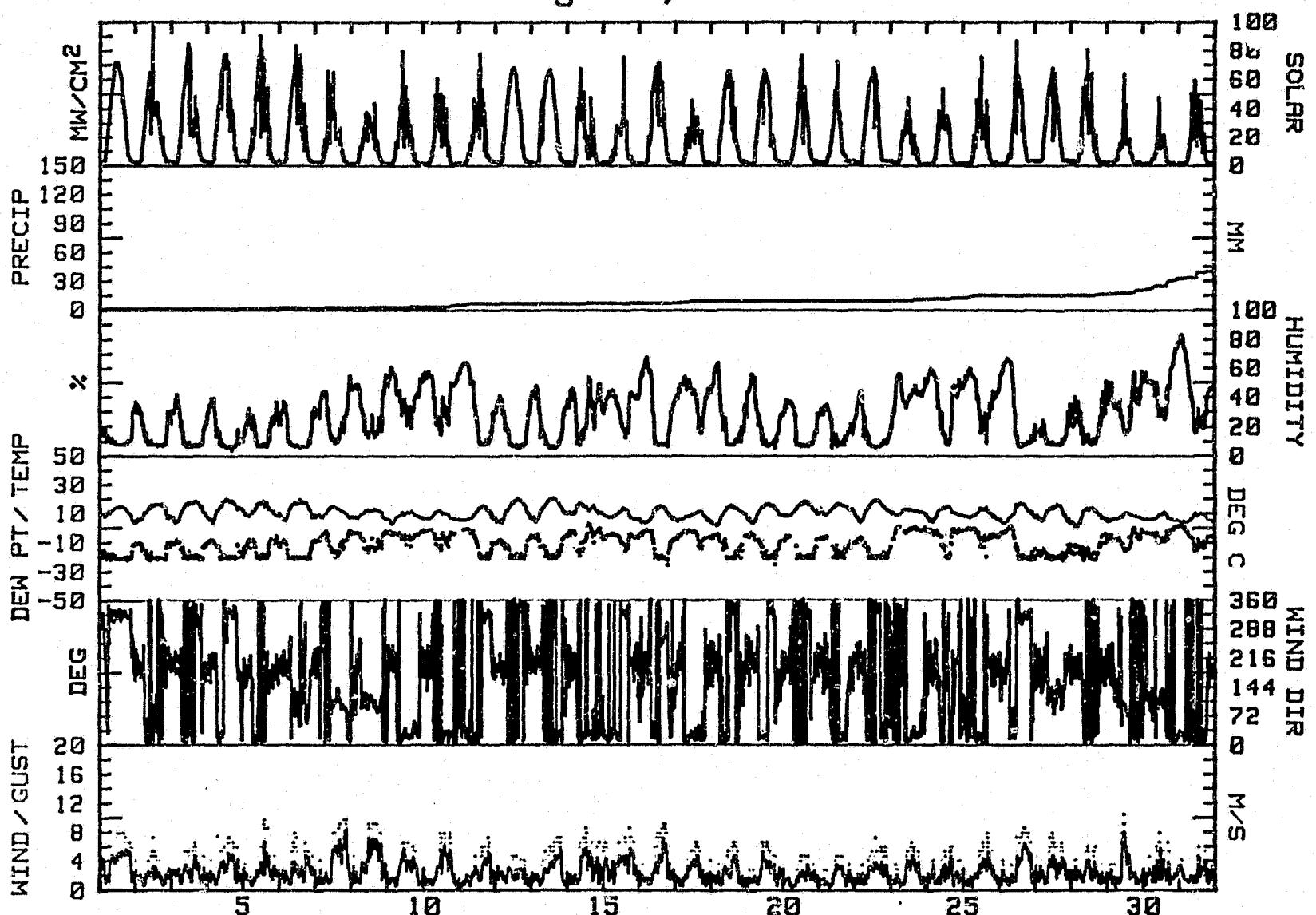
SUSETTNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING August, 1982

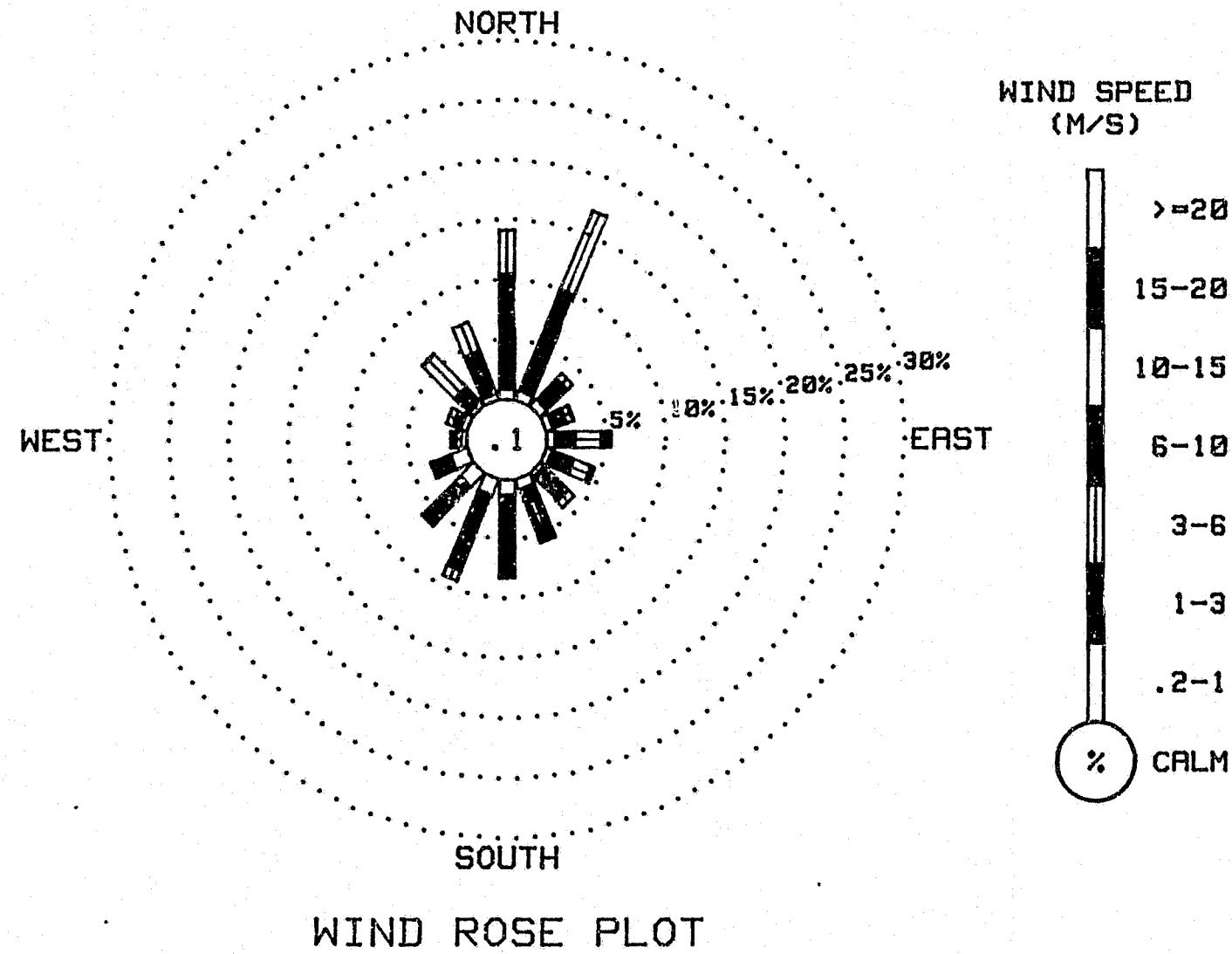
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2	1.0	3.0	6.0	10.0	15.0	20.0	OR GREATER	
	TO	TO	TO	TO	TO	TO	TO		
1.0	3.0	6.0	10.0	15.0	20.0				
N	.87	9.58	3.60	.03	0.00	0.00	0.00	14.08	
NNE	.84	9.07	7.06	.03	0.00	0.00	0.00	17.00	
NE	.81	2.39	.60	0.00	0.00	0.00	0.00	3.80	
ENE	.64	1.21	.57	.07	0.00	0.00	0.00	2.49	
E	.74	1.65	2.22	.81	0.00	0.00	0.00	5.41	
ESE	.57	1.92	1.58	.30	0.00	0.00	0.00	4.37	
SE	.44	2.79	.74	0.00	0.00	0.00	0.00	3.97	
SSE	.91	4.57	.20	0.00	0.00	0.00	0.00	5.68	
S	1.28	6.75	.24	0.00	0.00	0.00	0.00	8.27	
SSW	1.48	6.79	.91	0.00	0.00	0.00	0.00	9.17	
SW	1.61	4.33	.13	0.00	0.00	0.00	0.00	6.08	
WSW	1.55	1.48	.20	.07	0.00	0.00	0.00	3.29	
W	.47	.44	.34	.13	0.00	0.00	0.00	1.38	
WNW	.60	.71	.60	0.00	0.00	0.00	0.00	1.92	
NW	.44	1.75	3.80	.10	0.00	0.00	0.00	6.08	
NNW	.54	3.80	2.62	0.00	0.00	0.00	0.00	6.96	
CALM	-----	-----	-----	-----	-----	-----	-----	.07	
TOTAL	13.78	59.21	25.40	1.55	0.00	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2976 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
August, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
August, 1982



R & M CONSULTANTS, INC.

SUSTAINABLE HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

R & M CONSULTANTS, INC.

SUSIETNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

DAY 01

DAY 02

DAY 03

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	
	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	
0300	3.3	-7.0	47	176	1.4	159	2.5	1	0300	2.6	-9.4	41	199	1.1	147	3.2	1	0300	2.8	-6.1	52	174
0600	3.4	****	47	204	.7	153	2.5	4	0600	2.3	-9.1	43	215	.9	196	2.5	4	0600	2.7	****	53	193
0900	6.3	-7.8	36	313	.5	253	1.9	19	0900	7.8	-16.5	16	309	.3	011	3.2	35	0900	5.0	****	45	280
1200	6.2	-7.6	37	038	1.5	073	5.7	15	1200	6.0	-12.2	26	005	2.2	306	5.7	11	1200	6.9	****	29	258
1500	9.0	-19.0	12	070	1.7	060	5.7	26	1500	8.5	-13.9	19	024	3.3	032	6.3	12	1500	4.7	-6.0	46	334
1800	8.4	-16.0	16	016	1.2	068	7.6	8	1800	5.8	****	30	284	.1	036	5.1	7	1800	4.1	****	42	017
2100	3.2	-11.3	34	182	1.7	219	3.2	1	2100	3.6	-6.2	49	201	1.4	182	3.8	1	2100	1.4	-8.2	49	178
2400	1.4	-11.2	39	182	1.3	166	3.2	1	2400	3.2	-5.7	52	170	1.3	179	2.5	1	2400	1.8	-8.1	48	176

DAY 04

DAY 05

DAY 06

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	
	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	
0300	1.0	-7.3	54	194	1.2	190	2.5	1	0300	3.2	-12.5	31	206	1.2	178	4.4	2	0300	8.3	-22.9	9	103
0600	1.5	****	50	202	1.5	217	2.5	3	0600	3.4	-11.5	33	155	1.4	113	4.4	4	0600	5.4	-11.4	29	101
0900	5.1	****	23	164	.3	072	1.9	24	0900	6.2	-10.7	29	110	2.8	091	7.6	13	0900	10.1	-21.6	9	103
1200	7.7	-22.2	10	045	1.8	102	6.3	32	1200	9.7	-18.5	12	114	3.6	110	8.3	17	1200	12.2	-21.3	8	109
1500	9.3	-22.2	9	116	3.1	105	7.0	23	1500	12.7	-20.9	8	107	8.7	124	14.0	24	1500	12.1	-21.4	8	080
1800	7.4	-22.4	10	095	6.2	094	9.5	6	1800	10.1	-22.9	8	104	10.5	107	14.0	5	1800	9.6	-17.6	13	099
2100	5.1	-16.1	20	115	2.1	094	7.6	3	2100	9.6	-21.9	9	086	6.2	091	17.1	3	2100	7.6	-10.3	27	123
2400	.6	-13.3	35	175	.9	152	3.8	1	2400	9.3	-22.2	9	088	7.1	088	12.1	2	2400	5.8	-1.8	58	166

DAY 07

DAY 08

DAY 09

HOUR	DEW	WIND	WIND GUST MAX.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	
	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	MW	DEG C	DEG C	% DEG. M/S	MW	
0300	5.3	****	64	346	.7	354	2.5	0	0300	5.4	-8.3	37	292	1.7	328	5.1	1	0300	4.3	-5.0	51	169
0600	5.2	****	60	146	.3	348	2.5	2	0600	4.3	-7.6	42	223	1.8	254	5.1	2	0600	4.3	-5.0	51	157
0900	6.7	-5.7	41	034	.9	006	3.2	21	0900	5.5	-5.0	47	193	1.3	189	3.8	15	0900	5.1	-4.8	49	024
1200	9.4	-20.9	10	007	2.1	274	6.3	31	1200	6.0	-5.1	45	027	2.7	023	3.8	16	1200	6.6	-5.5	39	087
1500	9.4	-22.1	9	272	5.1	277	7.6	22	1500	6.4	-5.1	44	036	2.2	029	4.4	7	1500	7.7	-7.7	33	096
1800	7.8	-22.1	10	293	3.3	281	7.0	3	1800	5.4	-5.7	45	063	1.3	047	3.2	1	1800	6.8	-8.5	33	097
2100	5.8	-7.9	37	001	.7	282	8.3	1	2100	5.1	-5.9	45	069	.8	032	1.9	1	2100	5.9	-8.2	36	107
2400	4.8	-6.2	45	350	1.1	359	5.7	1	2400	4.6	-4.7	51	203	.3	345	1.9	1	2400	5.1	-7.2	41	147

R & M CONSULTANTS, INC.

ESLJESI TNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

DAY 10

DAY 11

DAY 12

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	2.5	-9.9	40	133	1.3	140	3.8	1 0300	0.0	-9.8	48	203	1.0	151	2.5	1 0300	-2.4	-14.0	41	087	2.4	087	4.4	1
0600	1.8	-10.5	40	164	1.7	149	3.2	3 0600	.2	-10.4	45	201	1.6	182	3.2	4 0600	-2.5	-15.0	38	087	2.0	087	3.8	4
0900	4.6	-11.2	31	155	1.3	142	2.5	13 0900	3.9	-10.0	36	161	.6	165	2.5	16 0900	1.9	-15.3	27	150	1.2	127	3.2	42
1200	5.8	-15.5	20	145	1.5	135	3.2	24 1200	8.7	-14.4	18	054	.7	085	6.3	25 1200	5.5	-15.7	20	098	3.9	090	8.3	36
1500	7.1	****	21	179	.7	166	3.2	11 1500	1.1	-7.4	53	028	4.7	086	8.3	12 1500	6.2	-22.2	11	098	6.2	093	8.9	17
1800	6.4	****	16	007	.5	011	1.3	4 1800	.9	-7.1	55	032	2.6	042	7.0	3 1800	5.7	-16.2	19	094	5.6	098	8.3	3
2100	4.3	-10.7	33	209	.8	218	1.9	2 2100	1.8	-10.2	41	268	.6	004	4.4	1 2100	2.8	-14.5	27	125	2.2	077	6.3	2
2400	1.4	-9.0	46	202	1.4	178	2.5	1 2400	.1	-13.3	36	039	.9	234	4.4	1 2400	2.1	-9.0	44	129	.4	089	3.8	1

DAY 13

DAY 14

DAY 15

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	1.4	-9.0	46	286	.7	332	3.2	1 0300	4.7	-2.8	58	028	3.3	033	6.3	1 0300	5.0	****	54	167	1.5	152	3.8	1
0600	2.2	-8.3	46	326	.2	124	6.3	1 0600	4.7	-7.6	68	012	1.8	017	3.8	1 0600	5.5	-3.9	51	204	1.9	210	4.4	1
0900	3.9	****	30	204	1.2	170	3.2	4 0900	6.0	-4.5	47	004	1.8	016	3.2	12 0900	12.3	-14.5	14	218	1.7	226	4.4	41
1200	6.9	-5.9	40	013	.8	003	3.8	25 1200	7.5	-9.1	30	011	2.6	011	4.4	22 1200	15.7	-20.2	7	103	2.9	104	10.2	45
1500	10.4	-11.1	21	106	6.5	107	14.6	33 1500	7.4	-6.5	37	011	2.1	096	6.3	6 1500	15.1	-20.7	7	112	9.4	112	14.0	32
1800	3.6	-9.5	27	115	7.0	108	12.7	2 1800	6.2	-5.9	42	102	3.6	091	7.6	1 1800	11.9	-21.5	8	115	8.7	109	14.0	3
2100	7.1	-5.1	42	164	.9	121	7.6	1 2100	6.4	-5.4	43	101	3.3	096	7.6	1 2100	9.0	-8.7	28	109	2.3	114	10.8	2
2400	5.8	-5.3	45	024	2.8	170	5.1	1 2400	6.1	-5.0	45	170	.4	041	2.5	1 2400	8.4	-14.6	18	123	4.8	138	10.2	3

DAY 16

DAY 17

DAY 18

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.
NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	DEG C	% DEG. M/S MW

0300	5.3	-11.4	29	097	8.7	080	14.0	2 0300	****	****	**	***	***	***	***	0300	1.8	-1.1	81	032	1.1	348	4.4	1
0600	2.0	-1.8	76	066	3.0	095	14.0	1 0600	****	****	**	***	***	***	***	0600	.9	-1.2	86	202	.9	206	2.5	2
0900	3.3	****	51	012	2.1	359	7.0	20 0900	****	****	**	***	***	***	***	0900	4.1	.1	75	200	1.2	178	2.5	15
1200	6.7	-16.7	17	040	1.1	013	5.7	30 1200	****	****	**	***	***	***	***	1200	10.4	3.0	60	171	.9	103	7.0	22
1500	8.0	-21.9	10	015	3.6	028	7.0	30 1500	7.4	1.1	64	356	1.9	325	4.4	18 1500	10.0	3.1	62	099	6.2	098	9.5	7
1800	4.5	-17.8	18	020	3.9	020	7.6	4 1800	5.1	-.1	69	024	2.5	029	4.4	1 1800	8.8	2.9	66	100	3.9	108	8.3	1
2100	1.8	****	35	019	1.9	029	5.7	1 2100	1.0	****	78	300	.7	008	3.2	1 2100	7.5	2.6	71	125	6.4	119	12.1	1
2400	2.1	****	39	243	.1	208	1.9	1 2400	2.7	****	78	192	1.2	213	2.5	1 2400	6.8	****	73	136	2.0	112	6.3	1

R. & M CONSULTANTS, INC.
SUSIETNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

DAY 19

DAY 20

DAY 21

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	% DEG. M/S	M/S	MW	DEG C	DEG C	% DEG. M/S	M/S	MW
0300	5.5	2.3	80	358	1.4	010	3.8	1	0300	2.6	1.6	93	213	.5	113	1.9	1	0300	3.3	.0	79	210	1.7	162	5.7	0			
0600	4.3	1.5	82	166	1.0	139	3.2	1	0600	2.0	.4	89	182	1.2	192	3.2	2	0600	4.6	.0	72	115	4.9	115	8.9	1			
0900	5.9	3.2	83	175	1.0	148	2.5	8	0900	3.7	1.2	84	171	1.4	149	3.8	11	0900	6.9	1.2	67	098	7.3	107	11.4	18			
1200	7.9	****	79	181	1.4	195	2.5	18	1200	7.2	2.7	73	084	.5	097	3.8	23	1200	9.4	2.8	63	108	5.7	101	10.2	18			
1500	7.3	4.4	82	016	1.6	029	3.8	8	1500	6.3	2.2	75	001	3.2	007	6.3	8	1500	6.1	2.0	75	096	4.2	023	9.5	4			
1800	5.9	3.9	87	027	1.9	024	3.8	1	1800	4.8	2.0	82	013	2.5	356	5.7	1	1800	3.9	****	88	024	3.9	018	8.9	1			
2100	3.6	1.8	88	003	1.7	009	4.4	1	2100	2.7	.7	87	222	.9	219	3.8	0	2100	2.3	****	95	223	.7	227	2.5	0			
2400	2.5	1.0	90	023	1.8	025	3.8	1	2400	5.0	.8	74	162	1.7	195	4.4	1	2400	1.9	****	94	204	.8	249	2.5	1			

DAY 22

DAY 23

DAY 24

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	% DEG. M/S	M/S	MW	DEG C	DEG C	% DEG. M/S	M/S	MW
0300	1.4	****	97	198	.7	157	2.5	1	0300	-3.9	-5.3	90	176	1.6	146	3.8	1	0300	-4.7	-7.0	84	196	1.6	155	3.2	1			
0600	.3	-1.9	97	164	1.4	142	3.2	1	0600	-2.8	-3.7	94	195	1.2	208	2.5	2	0600	-5.4	-7.7	84	185	1.9	158	3.8	2			
0900	5.1	****	66	176	1.7	159	4.4	33	0900	1.2	-2.9	74	201	.3	197	2.5	35	0900	1.9	-4.2	64	227	1.6	229	3.2	43			
1200	6.0	.4	67	016	2.9	017	5.7	44	1200	5.4	-2.9	55	010	2.1	353	6.3	43	1200	5.6	-1.1	62	088	4.0	086	8.9	43			
1500	5.3	-1.1	68	005	4.4	002	7.6	30	1500	6.0	-3.1	52	006	3.5	021	5.7	24	1500	6.4	-8	60	087	6.2	083	8.9	13			
1800	2.9	-1.1	75	027	3.5	049	7.0	1	1800	3.5	-4.2	57	343	2.1	342	5.1	1	1800	5.0	-2.3	59	098	5.4	097	7.6	1			
2100	1.5	-1.2	82	022	1.8	047	5.1	1	2100	-1.8	-5.8	74	072	.3	158	3.8	1	2100	2.9	-3.0	65	200	.8	112	4.4	1			
2400	-.8	-2.4	89	278	.3	140	2.5	1	2400	-3.7	-6.3	82	189	1.3	169	3.2	1	2400	1.9	-2.2	74	209	1.3	204	2.5	0			

DAY 25

DAY 26

DAY 27

HOUR	DEW	WIND	WIND GUST MAX.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG	TEMP.	POINT	RH	DIR.	SPD.	DIR.	GUST	RAD	
	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	DEG C	M/S	MW	DEG C	DEG C	% DEG. M/S	DEG C	DEG C	% DEG. M/S	M/S	MW	DEG C	DEG C	% DEG. M/S	M/S	MW
0300	1.1	****	79	202	1.0	220	2.5	1	0300	2.9	-3.6	62	190	1.3	223	4.4	1	0300	.3	-1.97	046	.9	057	3.8	1				
0600	-.7	-3.4	82	187	1.4	160	3.2	2	0600	.9	-3.9	70	178	1.2	121	3.8	1	0600	.3	****	95	061	.8	028	3.8	1			
0900	5.7	-1.2	61	177	1.6	145	4.4	31	0900	3.9	-3.6	58	172	1.1	171	3.8	10	0900	4.0	.5	78	024	2.0	014	3.8	38			
1200	8.3	-.5	54	089	4.7	084	8.3	40	1200	5.8	-2.7	54	035	.7	078	4.4	16	1200	7.1	.8	64	025	2.5	006	5.1	39			
1500	8.8	-.5	52	084	5.5	078	8.3	11	1500	5.1	-.7	66	005	1.7	009	7.0	10	1500	5.7	-.1	66	271	3.4	255	8.3	25			
1800	7.3	-1.4	54	096	5.3	091	8.3	1	1800	2.6	-.7	79	016	2.8	026	5.7	1	1800	2.0	****	79	018	1.9	046</					

R & M CONSULTANTS, INC.

SUSSETNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.	HOUR	DEW	WIND	WIND GUST MAX.													
NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST	RAD											
DEG C	DEG C	%	DEG	DEG C	DEG C	%	DEG C	DEG C	DEG	DEG	M/S	M/S	MW											
0300	-3.6	-5.8	85	193	1.8	162	3.8	0 0300	.6	-7	91	095	3.1	102	7.0	1 0300	-2.2	*****	96	145	.0	145	.6	1
0600	0.0	-1.8	88	210	1.7	143	5.7	1 0600	-.1	-1.7	89	158	1.5	110	5.7	1 0600	-1.7	*****	96	156	.0	156	.6	1
0900	.6	-1.3	87	121	3.7	131	7.0	18 0900	.7	-9	89	199	1.4	182	2.5	13 0900	.8	*****	86	224	.1	196	1.3	7
1200	.8	-1.1	87	105	6.2	097	9.5	18 1200	2.4	.1	85	217	1.6	210	3.2	12 1200	2.4	-2	83	000	1.3	006	5.1	21
1500	1.4	-1.0	84	102	6.1	107	9.5	4 1500	1.3	-0	91	124	1.7	102	3.8	4 1500	2.4	-5	81	347	3.0	334	6.3	10
1800	1.0	-1.4	84	095	2.7	104	6.3	0 1800	.1	*****	97	182	.8	213	1.9	0 1800	.8	-1.8	83	353	3.6	337	6.3	0
2100	.2	*****	95	110	2.0	084	6.3	1 2100	.1	*****	98	170	.4	177	1.3	0 2100	.1	-2.0	86	341	1.9	357	5.7	1
2400	.9	-4	91	105	3.2	106	7.0	1 2400	-.9	*****	97	***	0.0	153	.6	1 2400	-2.3	-3.7	90	172	.9	212	2.5	1

R & M CONSULTANTS, INC.

SUSSEKINA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

DAY	MAX. DEG C	MIN. DEG C	MEAN DEG C	RES. DIR. DEG	RES. SPD. M/S	Avg. WIND M/S	Max. WIND M/S	Max. GUST WIND M/S	GUST P'VAL DIR. RH %	Mean DEG C	Mean DP MM	Day's PRECIP MM	Solar Energy WH/SQM	Day
1	10.9	1.4	5.2	130	.4	1.5	.068	7.6 SSE	29	-11.8	2.2	2813	1	
2	9.6	1.1	5.4	001	.1	1.8	.032	6.3 SSW	35	-10.2	12.8	2723	2	
3	6.9	1.1	4.0	198	.3	1.1	.190	4.4 S	46	-7.3	10.4	1485	3	
4	9.9	.6	5.3	115	1.6	2.4	.094	9.5 E	26	-15.8	0.0	2968	4	
5	13.3	1.2	7.3	103	4.9	5.4	.091	17.1 E	18	-17.2	0.0	2148	5	
6	13.6	4.7	9.2	103	3.5	3.9	.091	12.1 ESE	14	-18.5	1.8	3130	6	
7	9.9	4.8	7.4	311	1.2	2.3	.282	8.3 W	30	-12.0	3.4	2270	7	
8	6.4	4.3	5.4	024	.4	1.7	.328	5.1 NNE	43	-6.4	5.6	1280	8	
9	7.7	4.0	5.9	102	2.3	2.8	.097	9.5 E	40	-6.8	1.2	1505	9	
10	7.2	1.4	4.3	165	.9	1.3	.140	3.8 SSE	33	-11.4	0.0	1915	10	
11	9.6	-1.5	4.1	037	.7	2.2	.086	8.3 NNE	43	-10.0	4.6	1693	11	
12	6.3	-4.0	1.2	100	2.9	3.2	.093	8.9 E	29	-15.1	3.0	3360	12	
13	11.1	.7	5.9	104	1.7	3.1	.107	14.6 ESE	37	-8.3	11.8	1970	13	
14	7.5	4.6	6.1	046	1.7	2.5	.091	7.6 N	47	-4.9	4.0	1338	14	
15	16.3	4.7	10.5	123	3.6	4.8	.112	14.0 ESE	22	-14.2	1.0	3788	15	
16	8.1	1.2	4.7	052	2.4	3.6	.080	14.0 NNE	29	-13.9	2.2	2763	16	
17	7.7	.9	4.3	002	.8	1.8	.325	4.4 NNE	71	-3	0.0	1499	17	
18	11.1	.1	5.6	118	2.3	3.2	.119	12.1 ESE	71	1.5	0.0	1735	18	
19	8.3	2.5	5.4	027	.6	1.7	.009	4.4 NNE	84	2.8	3.0	1225	19	
20	7.6	2.0	4.8	063	.1	1.8	.007	6.3 N	82	1.7	0.0	1655	20	
21	11.3	.4	5.9	102	2.7	3.9	.107	11.4 ESE	75	1.2	.6	1613	21	
22	6.7	-2.1	2.3	023	1.1	2.4	.002	7.6 NNE	81	-1	0.0	3033	22	
23	6.2	-4.2	1.0	358	.4	2.0	.353	6.3 NNE	72	-4.0	0.0	3133	23	
24	6.7	-5.6	.6	118	1.8	3.1	.086	8.9 E	70	-3.7	0.0	2903	24	
25	9.4	-1.1	4.2	111	2.1	3.0	.084	8.3 E	63	-1.7	0.0	2705	25	
26	8.0	.1	4.1	035	.4	1.8	.009	7.0 NNE	70	-2.0	1.6	1898	26	
27	7.1	-4.0	1.6	350	.5	2.1	.255	8.3 NNE	81	-1.0	0.0	2603	27	
28	1.4	-4.1	-1.4	115	2.9	3.6	.097	9.5 ESE	87	-2.0	0.0	1185	28	
29	2.5	-1.0	.8	150	.9	1.5	.102	7.0 SSE	90	-8	1.2	1078	29	
30	3.1	-2.3	.4	349	1.1	1.5	.334	6.3 N	85	-1.2	5.0	1311	30	
MONTH	16.3	-5.6	4.4	096	1.2	2.6	.091	17.1 E	53	-6.4	75.4	64718		

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 9.5

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.0

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.6

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 14.0

NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

**** SEE NOTES AT THE BACK OF THIS REPORT ****

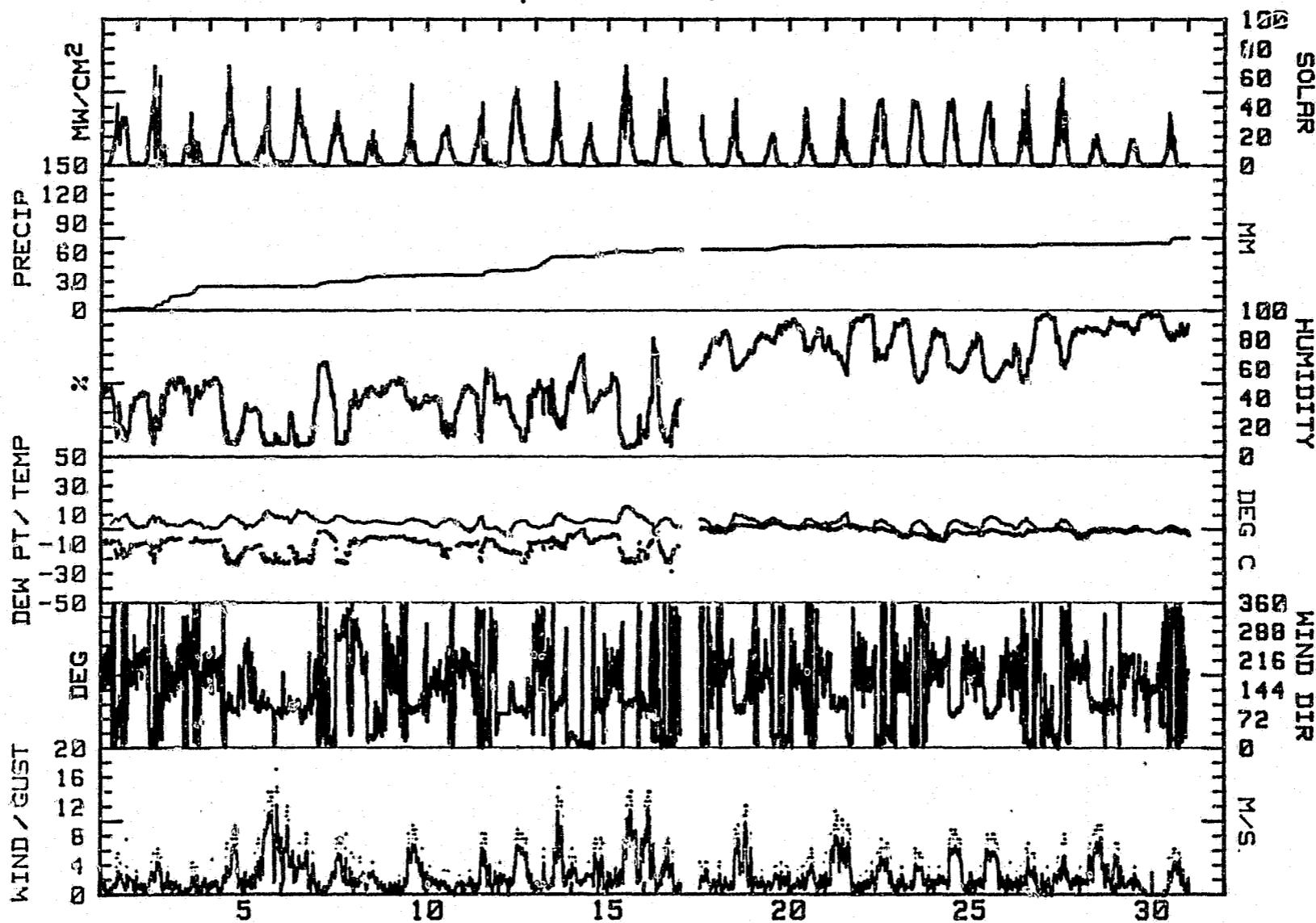
R & M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR KOSINA WEATHER STATION
DATA TAKEN DURING September, 1982

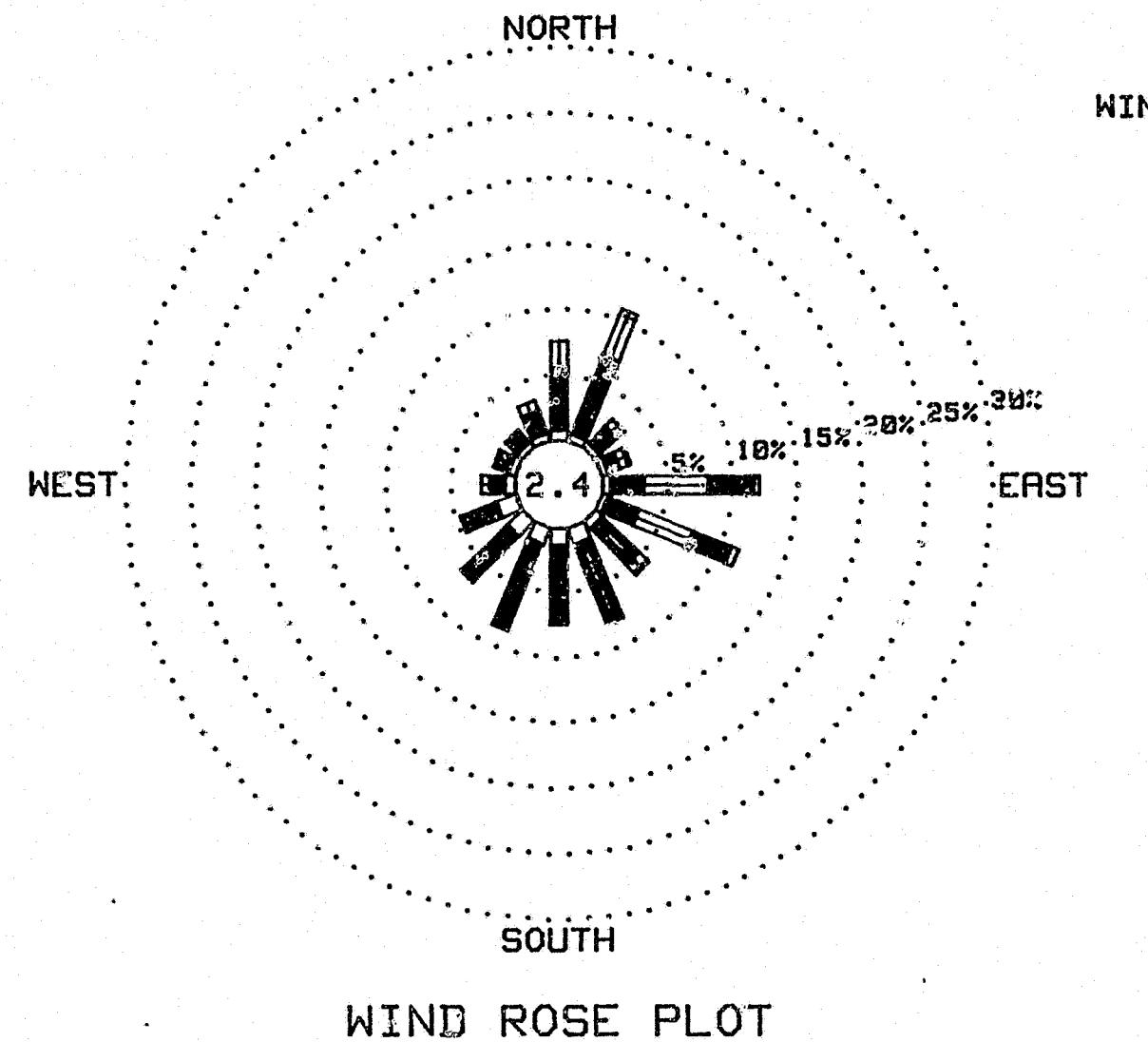
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	.78	4.73	2.05	0.00	0.00	0.00	0.00	7.56	
NNE	.57	6.54	3.32	.39	0.00	0.00	0.00	10.81	
NE	.46	1.87	.71	.04	0.00	0.00	0.00	3.07	
ENE	.49	.99	.67	.14	.04	0.00	0.00	2.5	
E	.64	2.54	4.91	3.53	.42	0.00	0.00	12.05	
ESE	.49	2.58	4.49	3.14	.64	0.00	0.00	11.34	
SE	.74	3.92	.88	.21	0.00	0.00	0.00	5.76	
SSE	1.38	6.47	.11	0.00	0.00	0.00	0.00	7.95	
S	1.31	5.94	.14	0.00	0.00	0.00	0.00	7.39	
SSW	1.38	7.07	.04	0.00	0.00	0.00	0.00	8.48	
SW	1.63	4.91	.07	0.00	0.00	0.00	0.00	6.61	
WSW	1.63	2.72	.25	0.00	0.00	0.00	0.00	4.59	
W	.81	1.20	.64	0.00	0.00	0.00	0.00	2.65	
WNW	.64	.95	.28	0.00	0.00	0.00	0.00	1.87	
NW	.49	1.20	.14	0.00	0.00	0.00	0.00	1.84	
NNW	.60	1.87	.85	0.00	0.00	0.00	0.00	3.32	
CALM	-----	-----	-----	-----	-----	-----	-----	2.37	
TOTAL	14.03	55.51	19.54	7.46	1.10	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2830 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
September, 1982



R&M CONSULTANTS, INC.
SUSITNA HYDROELECTRIC PROJECT
KOSINA WEATHER STATION
September, 1982



** Missing or bad data that has been deleted for various reasons (see STATION HISTORY, DATA COMPUTATION STANDARDS, or INTERPRETING DATA for an explanation).