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# **SUSITNA HYDROELECTRIC PROJECT**

**PROCESSED CLIMATIC DATA**

**OCTOBER 1981 THRU SEPTEMBER 1982**

**VOLUME 2**

**0620 - DENALI STATION**

**DECEMBER 1982**

**PREPARED BY:**



**PREPARED FOR:**



**ALASKA POWER AUTHORITY**

DCN044  
s8/q1

ALASKA POWER AUTHORITY  
SUSITNA HYDROELECTRIC PROJECT

TASK 3 - HYDROLOGY

PROCESSED CLIMATIC DATA

VOLUME 2  
0620 DENALI 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

VOLUME INDEX

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ALASKA POWER AUTHORITY  
SUSITNA HYDROELECTRIC PROJECT

DENALI 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 DENALI STATION (0620)

The Denali climate site was chosen to represent the high plateau at the base of the Alaska range. The station is on the left bank of the Susitna River within one mile of the river. It is also near the Susitna Lodge and the Denali Highway making Denali the only project climate station accessible by auto (summer months only). Denali Station is at Susitna River Mile 289.5.

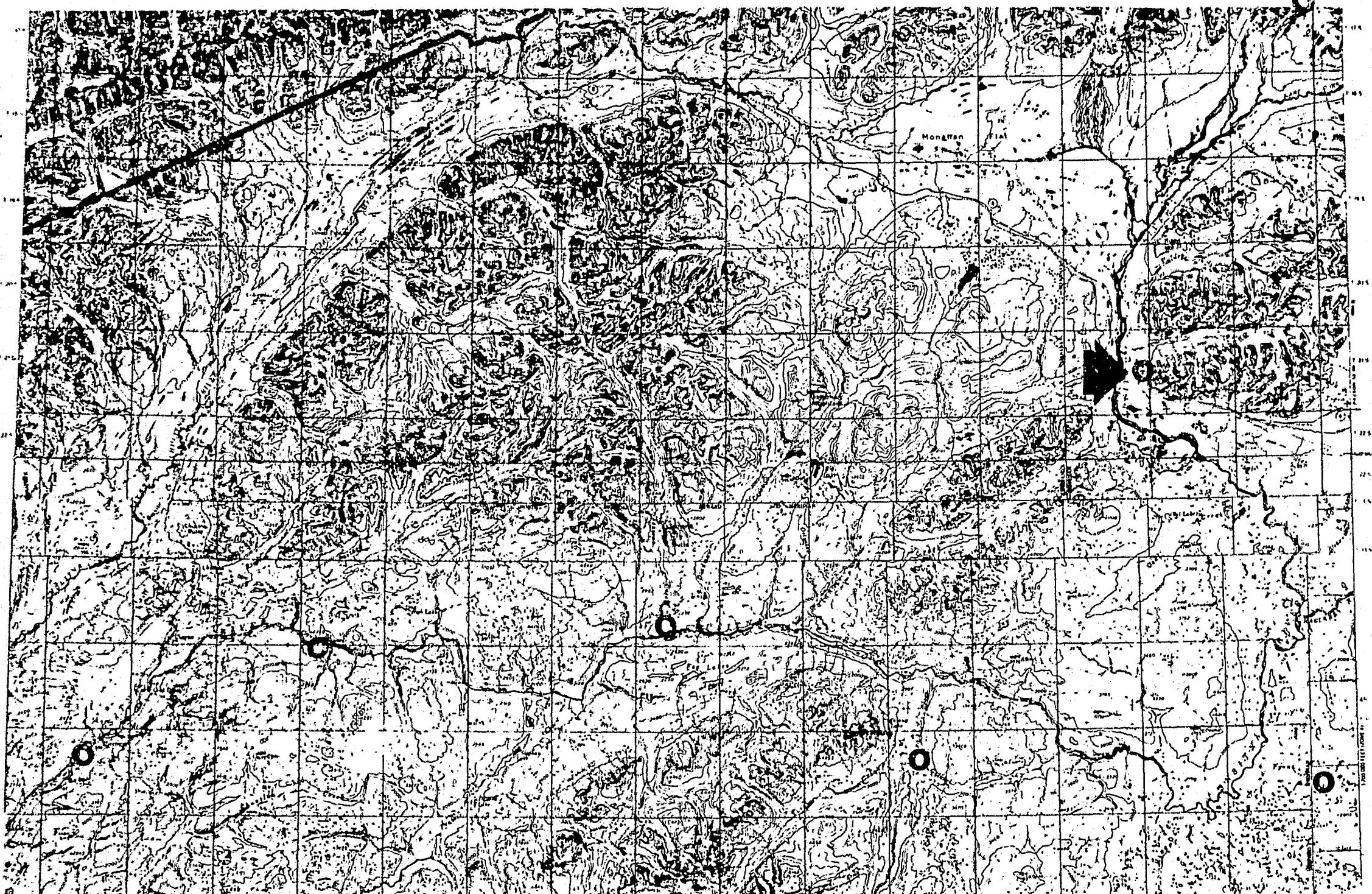
Winds at Denali blow primarily north and south due to its location in a corridor formed by the Clearwater Mountains to the east and the buttes to the west. The station lies on an open tundra area. The elevation of the Denali climate station is 2,700 feet above mean sea level.

The station was installed on July 17, 1980. Solar data are missing from June 10 through 29, 1982, but the remaining data are fairly clear for the 1982 water year (October - September).

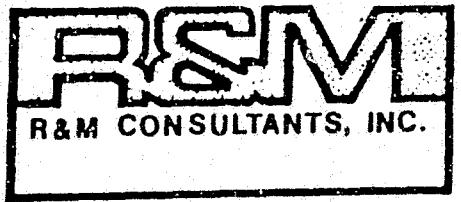
It was necessary to temporarily pull the Denali recorder station on June 29, 1982. Therefore there is no data for July, August, and September of 1982. The Denali Station was reinstalled in December of 1982.

Previous data reports of this station are:

Processed Climatic Data  
Volume 2  
Denali Station  
March 1982  
For the period: July 1980 thru September 1981



PREPARED BY USGS TALKEETNA MT8, AND HEALY QUADRANGLES APPROX. SCALE 1" = 1 MILE PREPARED FOR:



## DENALI 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 150 milliwatts/cm

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:  $\pm 1^\circ\text{C}$

Wind Speed:  $\pm 0.5$  meters per second

Wind Direction:  $\pm 1\%$  of full scale

Relative Humidity:  $\pm 6\%$

Precipitation:  $\pm 1\%$  up to 76.2 mm/hr,  $\pm 5\%$  from 76.2 mm/hr to 254 mm/hr

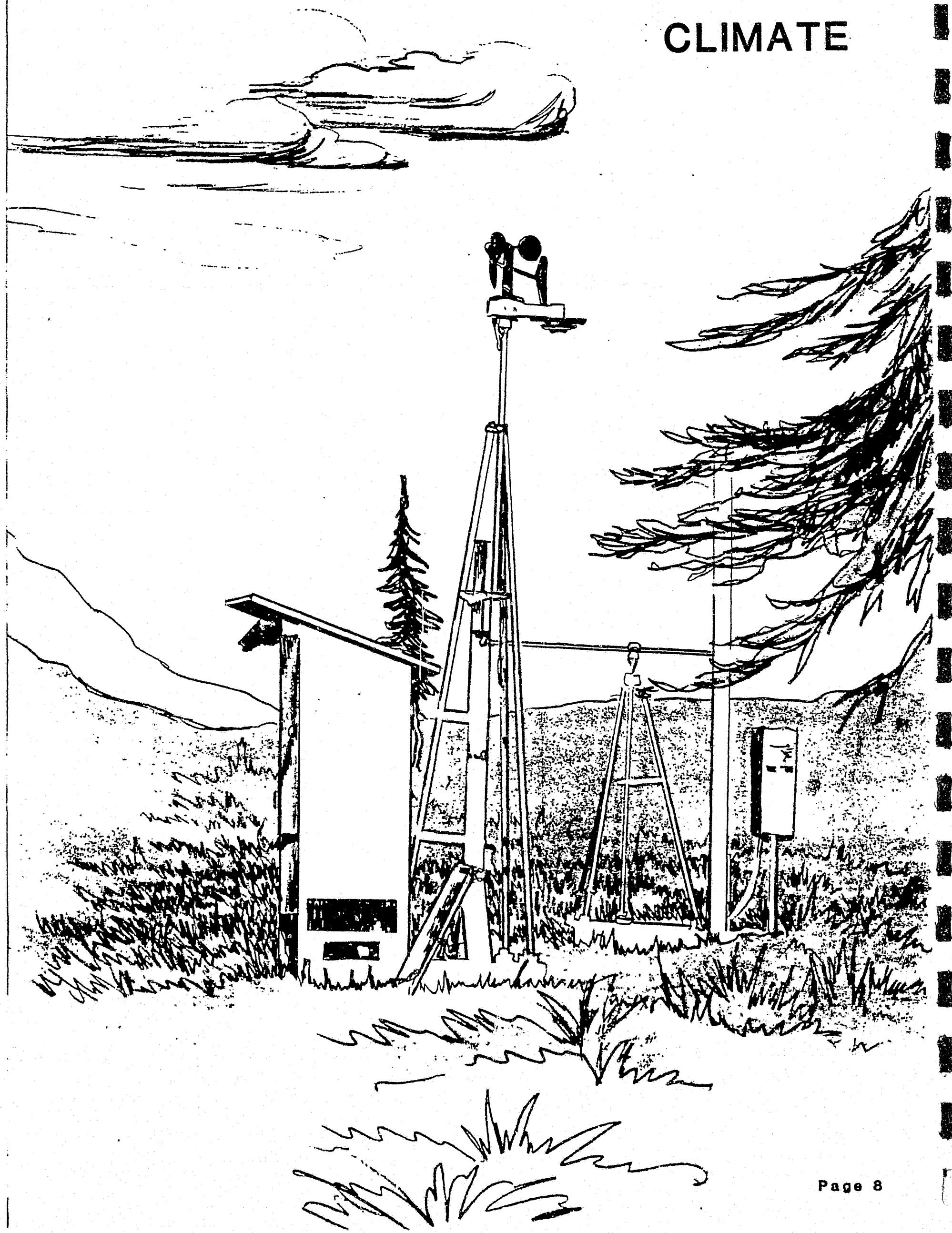
Solar Radiation:  $\pm 5\text{mw cm}^{-2}$

Tape Recorder Error Rate: 1 bit in  $10^7$

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



No precipitation data for October  
(See INTERPRETING DATA).

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 1981

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	MW		DEG C	DEG C	%	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	MW	

0300	-3.0	-13.6	44	011	5.7	006	10.2	1	0300	-6.7	-15.9	48	019	3.9	016	6.3	1	0300	-9.8	****	70	306	.2	321	2.5	1
0600	-2.3	-13.3	43	012	5.3	007	9.5	2	0600	-8.4	-17.8	47	024	4.0	026	5.7	2	0600	-12.7	****	69	178	.7	185	2.5	2
0900	-1.3	-13.6	39	019	4.8	017	9.5	29	0900	-4.6	-17.2	37	027	3.3	039	5.7	28	0900	-10.1	****	62	097	.2	027	1.9	10
1200	0.0	-13.4	36	014	6.2	357	10.2	41	1200	-3.8	-16.2	38	001	4.0	359	7.0	40	1200	-3.3	-14.5	42	328	.1	236	3.2	25
1500	-1.6	-14.2	38	002	6.8	356	11.4	7	1500	-2.7	-16.5	34	359	3.8	358	6.3	22	1500	-1.6	-11.8	46	027	1.5	029	3.8	10
1800	-3.3	-15.4	39	031	4.5	032	8.9	2	1800	-6.8	-16.6	46	011	3.1	000	4.4	1	1800	-4.2	****	51	336	.7	004	2.5	1
2100	-5.1	-17.3	38	003	5.0	000	10.2	1	2100	-9.2	-17.0	53	001	3.3	006	5.7	1	2100	-3.9	-26.8	15	198	.9	197	3.8	1
2400	-6.4	-17.0	43	010	5.5	015	8.9	1	2400	-8.9	****	56	013	2.0	357	5.1	1	2400	-4.3	-5.3	93	199	2.6	209	6.3	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 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	

0300	-4.9	-11.7	59	197	4.3	205	7.6	1	0300	-3.0	-6.8	75	007	3.9	009	7.0	1	0300	-4.2	-11.9	55	000	5.9	355	10.8	1
0600	-4.6	-9.4	69	194	3.2	196	7.0	1	0600	-3.8	-8.1	72	003	4.8	001	8.3	2	0600	-3.3	-12.3	50	006	3.6	002	8.3	1
0900	-2.9	****	64	210	1.8	193	4.4	10	0900	-3.2	-0.1	59	354	1.6	006	4.4	16	0900	-2.1	-12.5	45	002	3.5	002	6.3	12
1200	-2.8	-8.6	63	360	2.6	355	5.1	11	1200	-.8	-10.8	47	350	4.1	358	7.0	43	1200	-2.4	-11.5	50	001	3.4	005	5.1	21
1500	-1.4	-8.4	59	002	4.5	352	8.9	13	1500	-1.5	-9.6	54	357	5.9	354	7.6	17	1500	-2.4	-10.2	55	004	2.8	359	5.1	10
1800	-1.1	-9.5	53	002	5.1	006	7.6	1	1800	-3.1	-9.3	62	358	6.2	359	8.9	1	1800	-3.4	-9.0	65	001	2.7	355	5.1	1
2100	-2.0	-9.6	56	360	6.0	357	9.5	1	2100	-3.8	-11.3	56	005	5.5	359	9.5	1	2100	-4.1	-9.7	65	010	2.2	007	5.1	1
2400	-2.8	-8.0	67	003	4.8	002	8.9	1	2400	-3.7	-11.4	55	005	5.3	009	8.3	1	2400	-5.0	-11.3	61	010	3.6	005	5.7	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	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	

0300	-6.5	-12.6	62	015	2.8	007	5.1	1	0300	-6.0	-13.1	57	003	6.0	001	8.9	1	0300	-4.7	-7.2	83	360	3.7	008	6.3	1
0600	-6.6	-13.1	60	014	3.0	009	5.7	1	0600	-5.8	-13.0	57	005	4.6	003	7.0	1	0600	-6.0	****	1	349	1.8	007	7.0	1
0900	-5.2	-12.9	59	00	4.7	000	7.6	20	0900	-5.3	-12.7	56	007	3.9	005	6.3	11	0900	-2.9	-12.7	47	347	.9	025	4.4	25
1200	-4.2	-15.0	43	008	4.1	002	7.6	36	1200	-4.3	-12.0	55	007	2.8	009	5.7	24	1200	-.5	-7.3	56	343	.9	186	7.0	27
1500	-4.5	-13.7	49	003	4.3	354	8.3	10	1500	-4.3	-10.5	62	358	2.5	357	3.8	12	1500	-.1	-6.7	60	194	4.3	202	7.0	11
1800	-5.5	-13.6	53	357	6.2	357	8.9	1	1800	-5.5	-5.8	98	360	1.8	357	3.2	1	1800	-1.0	-5.6	71	204	2.3	195	5.1	1
2100	-5.7	-14.8	49	001	6.8	004	9.5	1	2100	-5.5	-19.4	33	359	1.9	355	3.2	1	2100	-1.7	****	74	267	.1	358	3.2	1
2400	-5.3	-14.7	48	001	7.1	002	10.2	1	2400	-6.1	-6.7	96	002	2.8	358	4.4	1	2400	-2.4	****	4	357	.3	008	1.3	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 1981

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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW												
0300	-2.9	****	57	029	.3	228	2.5	1 0300	-4.2	-9.6	66	198	2.7	207	8.3	1 0300	-.6	-17.4	27	186	4.1	181	7.6	1
0600	-3.5	-12.7	49	196	.6	208	2.5	1 0600	-3.4	-37.4	5	202	3.3	200	7.0	1 0600	.1	-18.7	23	185	4.3	187	7.0	1
0900	-2.5	-8.3	64	202	1.5	213	3.8	10 0900	.1	-9.1	50	144	6.1	145	15.2	7 0900	.2	-2.7	81	195	5.0	189	7.6	10
1200	-.7	-8.4	56	207	1.1	009	3.8	22 1200	1.1	-8.5	49	145	5.5	140	14.0	23 1200	1.5	.2	91	192	4.9	205	8.9	24
1500	.1	-12.3	39	165	2.3	146	5.7	18 1500	.2	-6.4	61	154	3.4	143	11.4	6 1500	1.2	-25.2	12	196	5.1	196	7.6	6
1800	-2.3	****	57	195	.8	177	4.4	1 1800	-1.0	-35.7	5	295	.1	016	5.1	1 1800	.9	-11.0	41	210	3.4	205	7.0	1
2100	-4.2	****	67	328	.8	341	3.2	1 2100	-1.1	****	7	159	.8	194	3.2	1 2100	.4	-31.6	7	199	2.1	223	6.3	1
2400	-4.3	-10.3	63	203	2.5	215	5.7	1 2400	-.5	-16.9	28	188	3.2	177	7.6	1 2400	.7	-6.8	57	207	1.5	227	4.4	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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW												
0300	.6	-14.7	31	211	2.3	214	6.3	1 0300	1.6	1.0	96	021	.1	168	3.2	1 0300	.2	****	80	155	.3	243	3.2	1
0600	.8	-1.3	86	180	1.5	172	2.5	1 0600	1.6	-1.6	79	180	1.2	208	3.8	1 0600	-.4	****	82	353	.3	234	1.3	1
0900	1.5	-3.3	70	190	1.3	186	3.8	7 0900	1.6	-2.9	72	245	.6	169	3.2	21 0900	-1.7	****	67	***	***	***	***	8
1200	2.6	-3.5	64	199	2.9	183	7.0	30 1200	3.5	-4.2	57	358	.7	049	2.5	32 1200	.8	-5.4	63	355	2.2	355	3.8	18
1500	2.6	-2.9	67	177	1.7	180	5.7	8 1500	1.6	-.8	84	358	2.1	359	3.2	6 1500	.7	****	65	355	1.5	357	3.2	10
1800	1.2	-31.0	7	038	.8	040	1.9	1 1800	1.2	****	29	006	.3	353	1.9	1 1800	1.7	-5.9	57	154	.6	150	5.7	1
2100	1.2	-1.1	85	033	.7	055	1.9	1 2100	1.4	-40.0	2	211	1.3	211	3.2	1 2100	-.7	****	95	192	3.3	182	5.7	1
2400	.9	-3.0	75	345	.7	328	1.9	1 2400	.4	-3.7	74	206	2.6	195	5.1	1 2400	-1.8	****	66	***	***	***	***	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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW												
0300	0.0	****	67	***	***	***	***	1 0300	3.0	-10.8	36	145	6.6	150	15.2	2 0300	-3.1	-9.8	60	004	4.4	001	7.6	1
0600	-.4	****	71	***	0.0	***	0.0	1 0600	.2	-6.4	61	140	2.3	131	10.8	1 0600	-2.6	-12.4	47	014	4.5	005	7.6	1
0900	-.4	****	64	***	0.0	047	.6	6 0900	.3	-6.5	60	011	1.0	002	4.4	15 0900	-1.9	-13.2	42	022	4.4	024	7.0	10
1200	2.1	-5.5	57	196	3.4	188	6.3	24 1200	2.3	-9.1	43	002	4.9	003	7.6	18 1200	-1.6	-13.6	40	005	5.6	010	8.3	22
1500	2.6	-5.5	55	207	3.5	204	7.6	6 1500	1.6	-9.4	44	001	5.1	003	7.6	5 1500	-2.4	-13.7	42	000	7.0	352	10.8	10
1800	2.0	-4.3	63	226	1.2	197	7.0	1 1800	1.1	-9.5	44	010	3.5	012	7.0	2 1800	-3.3	-14.2	43	017	6.3	012	10.2	1
2100	1.1	-4.3	67	166	2.9	152	9.5	1 2100	-.1	-9.6	49	018	3.1	011	5.7	1 2100	-3.8	-14.9	42	008	5.7	004	11.4	2
2400	4.1	-8.7	39	154	3.7	152	16.5	1 2400	-1.8	-9.4	56	004	3.7	354	7.0	1 2400	-5.4	-16.1	43	019	3.3	003	8.3	2

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 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 RAD
DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW	DEG C	%	DEG. M/S	MW

0300	-6.7	-17.0	44	019	2.9	020	5.1	2	0300	-3.9	-13.1	49	174	2.2	182	5.1	1	0300	2.2	-5.4	57	134	7.6	146	15.2	1
0600	-11.9	-17.9	61	351	1.5	015	3.2	1	0600	-5.2	-13.3	53	179	3.0	179	5.7	1	0600	2.7	-3.6	63	141	8.1	140	17.1	1
0900	-9.6	****	45	021	.7	359	3.2	17	0900	-4.2	-11.4	57	180	4.3	188	7.6	10	0900	3.7	-2.2	65	146	7.3	140	15.2	6
1200	-2.9	****	32	199	.8	197	3.2	31	1200	-1.6	-10.0	53	202	4.4	202	8.3	16	1200	5.9	-6.1	42	142	8.3	150	19.7	16
1500	-3.3	-16.1	37	223	.8	176	5.7	6	1500	-.6	-10.0	49	210	3.8	222	8.3	5	1500	6.5	-6.3	40	141	7.1	136	19.0	6
1800	-6.2	-16.0	46	182	2.9	185	6.3	1	1800	.4	-8.9	50	139	4.3	139	14.6	1	1800	5.1	-4.5	50	142	6.9	138	14.6	1
2100	-5.8	-12.5	59	154	.8	158	5.1	1	2100	1.6	-9.4	44	203	2.9	191	15.9	1	2100	4.1	-3.9	56	158	6.6	152	10.8	1
2400	-4.6	-12.5	54	179	2.3	186	5.7	1	2400	1.4	-8.2	49	133	7.6	137	15.9	1	2400	.9	-13.3	34	171	3.4	159	10.2	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	.9	****	16	195	1.1	164	4.4	1	0300	2.8	-3.9	61	152	8.5	153	12.7	1	0300	2.4	.4	87	348	.8	356	3.8	1
0600	.9	-1.0	87	179	.5	046	2.5	1	0600	3.9	-4.1	56	154	7.2	157	12.1	1	0600	3.1	-3.2	63	046	1.1	035	3.8	1
0900	.7	-3.9	71	205	1.0	177	3.8	8	0900	1.4	-1.3	82	188	3.7	176	10.8	7	0900	1.9	-4.8	61	016	.7	054	5.7	8
1200	1.8	-3.6	67	215	1.6	192	3.2	10	1200	3.0	-2.9	65	184	2.3	198	5.1	11	1200	2.1	-6.8	52	338	1.8	357	7.0	27
1500	2.0	****	70	202	.3	188	1.9	3	1500	2.5	-.4	81	193	2.7	204	5.1	4	1500	.9	-11.0	41	334	2.4	306	5.1	7
1800	1.4	****	98	190	.6	200	5.1	1	1800	2.0	-12.4	34	189	2.2	179	3.8	1	1800	-.2	-9.9	48	359	2.7	006	7.0	1
2100	3.3	-4.2	58	162	1.4	156	9.5	1	2100	2.3	.3	87	168	1.2	186	2.5	1	2100	-1.1	-8.3	58	344	1.7	354	3.8	1
2400	3.5	-2.8	63	150	8.2	151	15.9	1	2400	1.8	-14.5	29	302	.4	195	2.5	1	2400	-2.1	-6.4	72	000	1.5	311	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	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	-1.8	-6.5	70	***	****	***	****	1	0300	-4.6	-8.7	73	***	****	***	****	1	0300	-5.0	****	73	***	****	***	****	1
0600	-3.1	-21.9	22	***	****	***	****	1	0600	-4.2	-12.4	53	***	****	***	****	1	0600	-4.2	-10.4	62	***	****	***	****	1
0900	-3.0	-8.8	64	***	****	***	****	16	0900	-3.6	-12.8	49	***	****	***	****	7	0900	-4.7	-10.8	62	***	****	***	****	4
1200	-.9	-8.8	55	006	3.0	359	5.7	20	1200	-2.9	-12.2	49	***	****	***	****	15	1200	-3.8	-10.9	58	***	****	***	****	10
1500	-1.6	-9.0	57	356	3.6	010	5.7	4	1500	-2.6	-12.4	47	***	****	***	****	3	1500	-3.9	-12.1	53	***	****	***	****	3
1800	-3.0	-8.8	64	353	2.0	349	4.4	1	1800	-3.6	-13.1	48	***	****	***	****	1	1800	-7.6	-13.4	63	***	****	***	****	1
2100	-4.3	-11.3	58	006	2.1	003	3.2	1	2100	-4.2	-13.4	49	***	****	***	****	1	2100	-6.7	****	61	***	****	***	****	1
2400	-3.9	-10.5	60	***	****	***	****	1	2400	-4.2	****	53	***	****	***	****	1	2400	-8.7	****	65	***	****	***	****	1

R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 1981

DAY 28

DAY 29

DAY 30

HOUR	DEW	WIND	WIND GUST MAX.	POINT	DEW	WIND	WIND GUST MAX.	POINT	DEW	WIND	WIND GUST MAX.						
NDNG TEMP.	DEG C	RH %	DIR. DEG	SPD. M/S	NDNG TEMP.	DEG C	RH %	DIR. DEG	SPD. M/S	NDNG TEMP.	DEG C	RH %	DIR. DEG	SPD. M/S	GUST RAD MW		
0300	-10.8	66	*** ****	*** ****	1	0300	-13.9	-19.2	64	327	.5	357	2.5	1	0300 -13.6 **** 63		
0600	-11.9	66	*** ****	*** ****	1	0600	-12.6	**** 64	323	.2	013	1.9	1	0600 -12.8 **** 64			
0900	-10.7	64	*** ****	*** ****	6	0900	-10.0	-15.9	62	187	1.8	181	7.0	4	0900 -12.7 -18.1 64		
1200	-5.6	-13.9	52	*** ****	30	1200	-7.1	-14.4	56	185	5.1	174	7.6	35	1200 -5.2 **** 53		
1500	-4.4	44	295	.5	239	2.5	4	1500	-7.0	-14.1	57	184	4.3	190	8.3	4 1500 -6.6 -14.4 54	
1800	-9.6	-16.1	59	352	1.3	321	2.5	1	1800	-11.4	**** 69	095	.2	162	3.2	1	1800 -10.1 -16.0 62
2100	-10.6	62	007	1.3	354	2.5	1	2100	-11.1	**** 64	032	.8	024	2.5	1	2100 -11.2 **** 68	
2400	-11.8	66	166	.4	189	2.5	1	2400	-12.8	-18.2	64	198	.2	176	1.9	1	2400 -13.4 **** 64

DAY 31

HOUR	DEW	WIND	WIND GUST MAX.	POINT
NDNG TEMP.	DEG C	RH %	DIR. DEG	SPD. M/S
0300	-13.0	66	180	.8
0600	-13.5	64	135	.2
0900	-10.8	65	013	.7
1200	-8.4	-14.8	60	169
1500	-9.2	-15.9	58	188
1800	-11.2	-16.6	64	171
2100	-14.6	-20.3	62	015
2400	-14.3	-19.8	63	016

143	2.5	1
210	1.9	1
356	1.9	4
178	7.0	21
185	7.6	3
193	5.7	1
121	3.2	1
011	4.4	1

## R &amp; M CONSULTANTS, INC.

## SUBSTITUTIONAL HYDRO ELECTRIC PROJECT

MONTHLY SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 1981

DAY	MAX. TEMP. DEG C			RES. WIND DIR.			RES. WIND SPD.			AVG. WIND M/S			MAX. GUST SPD.			MAX. P'VAL RH			DAY'S SOLAR ENERGY WH/50H		
	MIN. TEMP. DEG C	MEAN TEMP. DEG C	DEG	M/S	M/S	DIR.	M/S	M/S	DIR.	M/S	DIR.	M/S	%	DEG C	MH	DP	PRECIP				
1	0.0	-6.4	-3.2	012	5.4	5.5	356	11.4	NNE	40	-14.6	****	2575	1							
2	-2.5	-10.9	-6.7	012	3.4	3.5	359	7.0	N	44	-16.7	****	2583	2							
3	-1.4	-12.7	-7.1	201	.3	1.2	209	6.3	NNE	55	-13.8	****	1617	3							
4	-.8	-4.9	-2.9	351	1.8	4.1	357	9.5	N	64	-9.2	****	1453	4							
5	-.5	-4.2	-2.4	001	4.7	4.7	359	9.5	N	60	-9.4	****	2415	5							
6	-1.7	-5.1	-3.4	004	3.5	3.5	355	10.8	N	56	-10.9	****	1630	6							
7	-3.6	-6.8	-5.2	004	4.9	4.9	002	10.2	N	54	-13.6	****	2253	7							
8	-4.2	-6.2	-5.2	003	3.3	3.3	001	8.9	N	51	-15.2	****	1400	8							
9	1.0	-6.9	-3.0	293	.4	2.3	007	7.0	N	61	-9.8	****	1635	9							
10	2.3	-5.2	-1.5	196	1.0	1.7	146	5.7	SSW	54	-10.9	****	1768	10							
11	1.4	-4.3	-1.5	165	2.8	3.5	145	15.2	SSW	55	-10.4	****	1193	11							
12	2.2	-.7	.8	195	3.8	3.8	205	8.9	SSW	50	-10.7	****	1333	12							
13	4.0	.4	2.2	192	.9	1.6	183	7.0	S	61	-6.9	****	1410	13							
14	3.5	.4	2.0	234	.4	1.4	195	5.1	N	60	-7.9	****	1535	14							
15	1.7	-2.0	-.2	358	.4	.9	150	5.7	N	68	-4.6	****	1148	15							
16	4.1	-1.6	1.3	185	2.5	2.1	152	16.5	SSW	60	-5.1	****	1345	16							
17	4.2	-1.8	1.2	029	2.0	3.9	150	15.2	N	50	-8.6	****	1268	17							
18	-1.6	-5.5	-3.6	011	5.1	5.2	004	11.4	N	46	-13.0	****	1230	18							
19	-1.1	-12.4	-6.8	168	.3	1.9	185	6.3	S	49	-15.9	****	1831	19							
20	1.8	-5.2	-1.7	172	3.5	4.5	191	15.9	S	51	-10.7	****	1090	20							
21	6.8	.9	3.9	145	6.8	7.0	150	19.7	SE	54	-4.8	****	803	21							
22	3.6	.6	2.1	168	1.7	2.1	151	15.9	SSE	62	-7.9	****	835	22							
23	3.9	1.0	2.5	168	3.3	3.7	155	12.7	SSE	64	-4.5	****	790	23							
24	4.0	-2.1	1.0	353	1.5	2.0	357	7.0	N	58	-6.8	****	953	24							
25	-.8	-5.2	-3.0	359	2.8	2.7	359	5.7	N	65	-8.6	****	1238	25							
26	-2.4	-4.6	-3.5	***	****	2.9	***	****	***	52	-12.2	****	880	26							
27	-3.7	-9.0	-6.4	***	****	1.5	***	****	***	59	-11.5	****	688	27							
28	-1.6	-12.4	-7.0	352	.6	1.2	239	2.5	N	59	-15.6	****	1793	28							
29	-6.0	-14.2	-10.1	185	1.3	2.1	190	8.3	S	60	-15.9	****	1575	29							
30	-3.8	-13.8	-8.8	360	.6	.9	356	3.2	N	58	-16.3	****	1945	30							
31	-7.4	-16.1	-11.8	173	.9	1.9	185	7.6	S	62	-17.5	****	1150	31							
MONTH	6.8	-16.1	-2.8	037	.5	2.9	150	19.7	N	55	-11.0	****	45347								

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 17.8

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.6

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 13.3

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 14.6

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 &amp; M CONSULTANTS, INC.

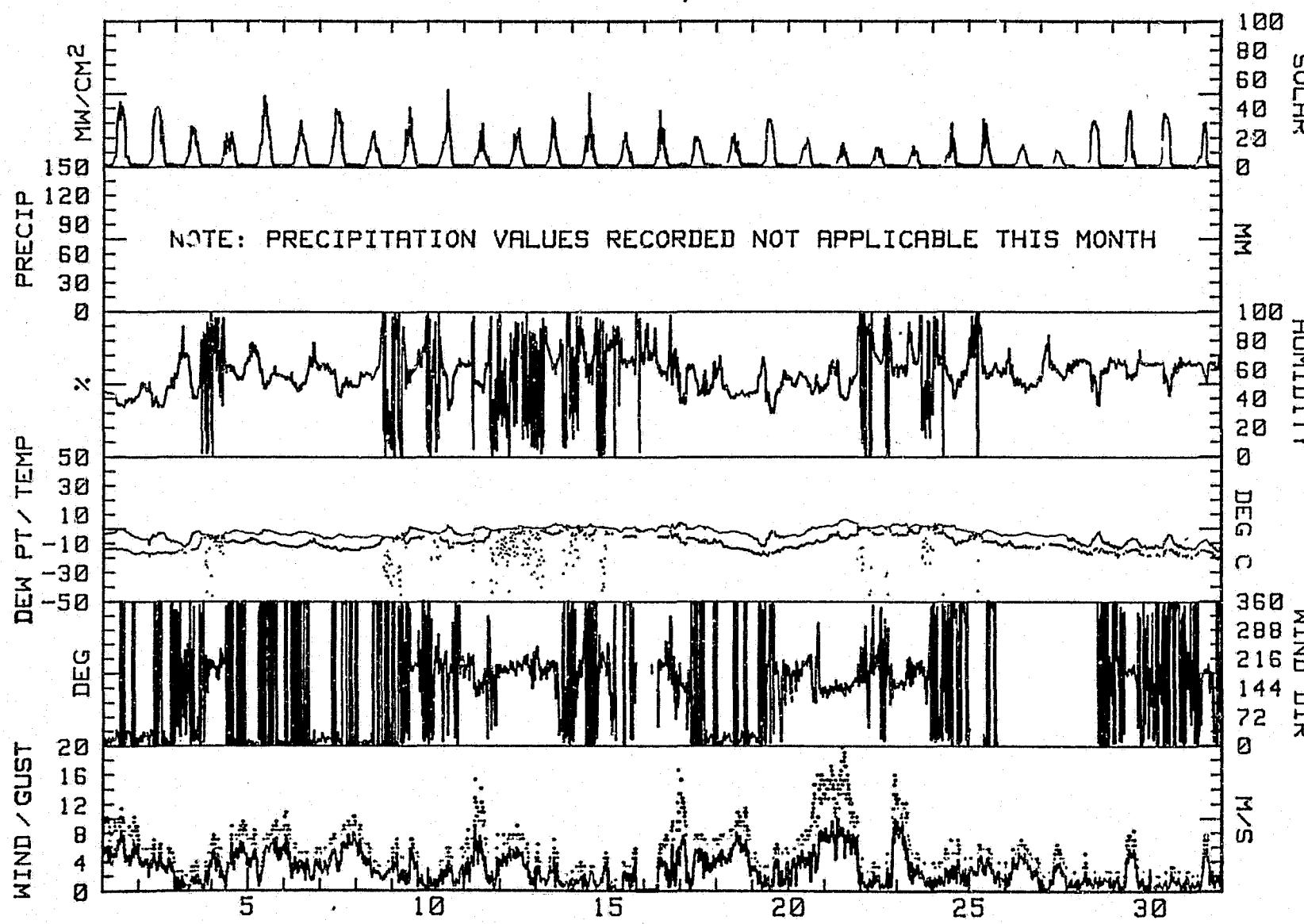
## SUBSTITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING October, 1981

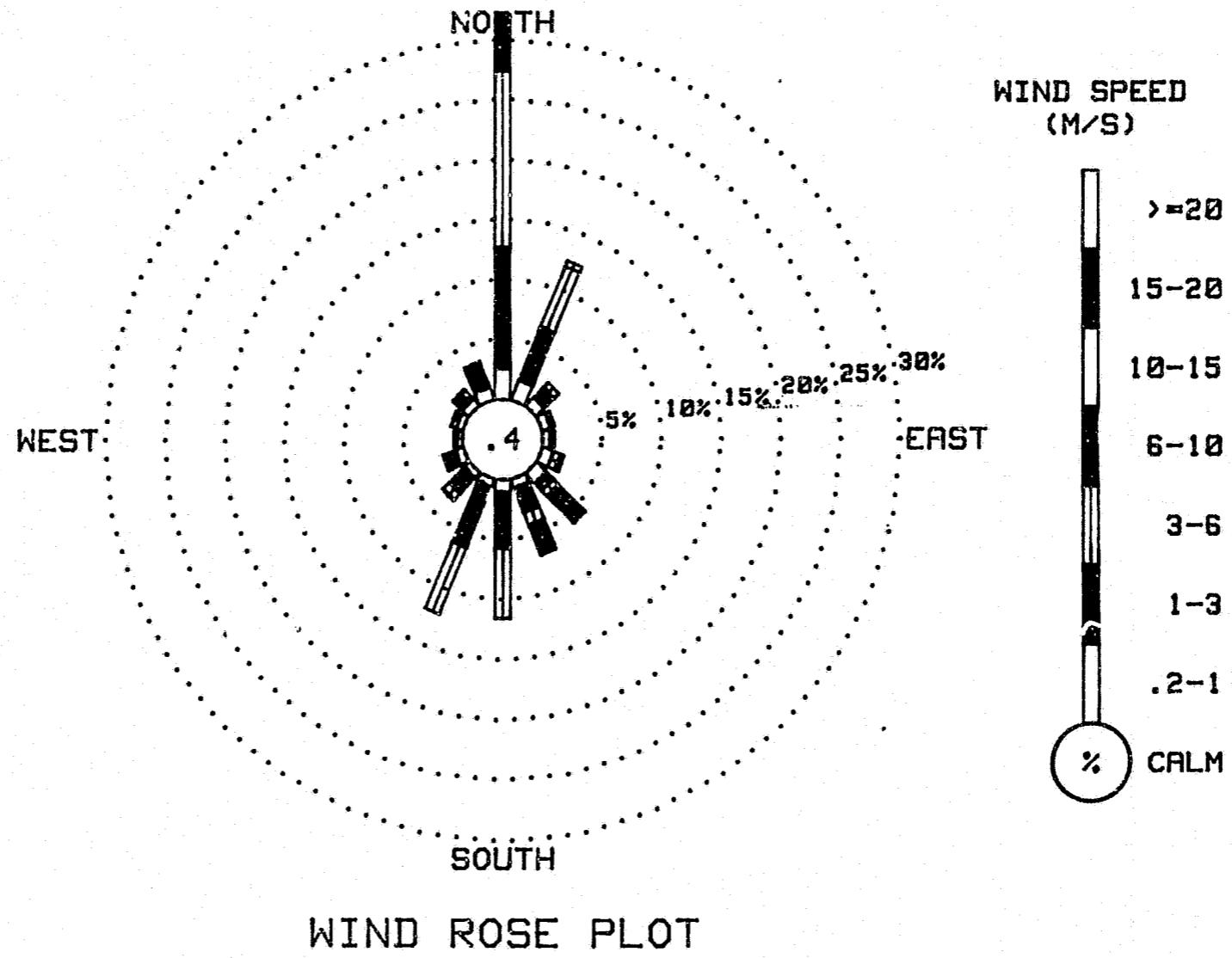
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2	1.0	3.0	6.0	10.0	15.0	20.0	OR GREATER	
	TO	TO	TO	TO	TO	TO	TO		
1.0	3.0	6.0	10.0	15.0	20.0	20.0	20.0	GREATER	
N	2.57	10.11	14.60	4.73	0.00	0.00	0.00	0.00	32.01
NNE	1.77	4.73	5.50	.46	0.00	0.00	0.00	0.00	12.45
NE	1.00	1.15	.54	0.00	0.00	0.00	0.00	0.00	2.69
ENE	.77	.35	0.00	0.00	0.00	0.00	0.00	0.00	1.11
E	.65	.35	.04	0.00	0.00	0.00	0.00	0.00	1.04
ESE	1.04	.61	.23	.12	0.00	0.00	0.00	0.00	2.00
SE	1.15	.85	.61	3.11	.08	0.00	0.00	0.00	5.80
SSE	.77	2.19	1.15	2.61	.04	0.00	0.00	0.00	6.76
S	1.00	4.73	5.76	.04	0.00	0.00	0.00	0.00	11.53
SSW	.65	5.46	5.96	0.00	0.00	0.00	0.00	0.00	12.07
SW	.54	1.81	.73	.04	0.00	0.00	0.00	0.00	3.11
WSW	.73	1.04	.04	0.00	0.00	0.00	0.00	0.00	1.81
W	.46	.23	.04	0.00	0.00	0.00	0.00	0.00	.73
WNW	.61	.46	.08	0.00	0.00	0.00	0.00	0.00	1.15
NW	.77	.96	.19	0.00	0.00	0.00	0.00	0.00	1.92
NNW	1.11	2.11	.19	0.00	0.00	0.00	0.00	0.00	3.42
CALM	—	—	—	—	—	—	—	—	.38
TOTAL	15.60	37.13	35.66	11.11	.12	0.00	0.00	0.00	100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2602 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT  
DENALI WEATHER STATION  
October, 1981



R&M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT  
DENALI WEATHER STATION  
October, 1981



No Precipitation data for November  
(See INTERPRETING DATA).

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

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
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	-20.3	62	000	3.2	000	6.3	1	0300	-9.8	-14.9	66	206	1.7	228	5.1	1	0300	-12.7	-19.4	57	185	2.2	165	4.4	1
0600	-16.1	****	61	358	1.8	337	4.4	1	0600	-7.9	****	62	028	1.2	008	19.0	1	0600	-13.9	****	57	094	.3	151	4.4	1
0900	-15.8	****	62	200	.3	008	1.9	6	0900	-6.4	-14.7	52	356	1.8	011	6.3	3	0900	-12.9	-18.9	61	013	1.4	010	3.2	5
1200	-10.7	-15.8	66	189	1.5	178	7.0	18	1200	-3.9	-11.4	56	200	1.7	178	6.3	6	1200	-12.2	-19.6	54	316	1.1	349	3.2	15
1500	-10.4	-15.9	64	185	5.1	188	8.3	2	1500	-2.3	-12.4	46	137	2.3	159	14.6	2	1500	-12.1	****	56	338	2.3	000	5.7	3
1800	-10.3	-16.2	62	188	5.8	188	9.9	1	1800	-5.9	-11.6	64	180	6.3	202	18.4	1	1800	-12.5	-18.8	59	000	2.1	357	4.4	1
2100	-10.0	-16.1	61	185	3.2	191	6.3	1	2100	-10.3	-16.8	59	171	4.8	153	10.2	1	2100	-11.5	-18.1	58	012	2.3	017	5.1	1
2400	-10.1	-15.4	65	205	1.4	166	4.4	1	2400	-12.7	-19.2	58	179	1.6	157	3.8	1	2400	-10.3	-17.0	58	007	4.1	008	9.3	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	RAD
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	

0300	-11.0	-17.0	61	002	3.0	008	7.6	1	0300	-19.1	-25.7	56	002	2.3	354	4.4	1	0300	-21.9	-29.5	50	010	3.6	007	5.1	1
0600	-8.6	-15.6	57	003	3.9	000	6.3	1	0600	-14.4	-23.5	46	019	2.2	022	4.4	1	0600	-20.4	-28.4	49	005	3.3	000	5.1	1
0900	-10.2	-16.9	58	001	6.2	003	10.2	4	0900	-13.5	-23.8	42	012	3.4	006	6.3	11	0900	-20.8	-29.0	48	357	2.8	004	4.4	4
1200	-10.6	-19.1	50	006	5.5	359	8.9	9	1200	****	****	**	003	5.0	000	7.6	***	1200	-18.5	****	41	250	.7	350	2.5	20
1500	-11.6	-18.4	57	005	3.9	007	7.6	2	1500	-15.5	-25.6	42	005	5.4	003	8.9	3	1500	-18.6	****	49	255	.4	244	1.9	2
1800	-11.8	-18.6	57	357	4.6	353	7.0	1	1800	-15.9	-24.9	46	009	4.6	005	8.3	2	1800	-16.8	-24.1	53	169	.5	201	1.9	1
2100	-12.0	-18.8	57	001	3.3	354	5.7	1	2100	-16.6	-26.1	44	012	4.1	006	7.6	2	2100	-15.1	-22.1	55	346	.3	160	3.8	1
2400	-16.2	-22.0	61	359	3.2	001	6.3	1	2400	-17.8	-27.2	44	017	4.1	014	7.0	1	2400	-14.0	-20.5	58	188	3.4	192	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	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	

0300	-10.8	-17.0	60	194	2.9	204	5.1	1	0300	-10.3	****	57	320	.5	294	3.2	1	0300	-13.2	-19.1	61	004	1.0	353	2.5	1
0600	-8.3	-15.5	56	179	2.2	176	6.3	1	0600	-8.5	****	53	232	.2	151	3.2	1	0600	-10.2	****	63	000	.6	358	2.5	1
0900	-6.7	-14.5	54	309	.6	242	4.4	3	0900	-7.7	-14.5	58	160	1.0	157	7.0	8	0900	-5.0	-10.3	66	202	.7	173	5.7	5
1200	-2.5	-14.4	40	171	2.5	136	13.3	8	1200	-6.1	-13.5	56	188	6.3	183	9.5	12	1200	-6.7	****	54	333	.5	196	4.4	9
1500	-4.2	-15.0	43	210	2.0	151	12.7	2	1500	-6.7	-13.8	57	190	6.0	188	10.9	2	1500	-7.3	****	64	345	.7	010	2.5	2
1800	-6.3	****	46	017	.7	321	3.8	1	1800	-7.9	-14.1	61	176	2.1	187	7.6	1	1800	-5.8	-11.7	63	269	.4	256	5.1	1
2100	-4.9	-15.9	42	062	1.1	060	2.5	2	2100	-12.6	-18.2	63	005	.6	012	3.2	1	2100	-2.6	-9.1	61	197	.8	174	7.5	1
2400	-10.9	-19.8	48	013	.7	043	2.5	1	2400	-12.9	****	62	014	.4	194	2.5	1	2400	-1.9	-10.6	51	225	.8	231	5.1	1

R & M CONSULTANTS, INC.  
SUSITNA HYDRO ELECTRIC PROJECT

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

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
0300	-1	-9.9	48	178	4.9	186	10.8	1	0300	-3.3	-12.3	50	352	1.9	000	5.7	1	0300	-5.3	-11.0	64	120	.6	167	5.1	1	
0600	,1	-10.5	45	182	3.9	183	9.5	1	0600	-5.6	*****	63	197	1.0	229	3.8	1	0600	-5.3	*****	62	018	1.2	037	3.8	1	
0900	5.1	-9.3	35	159	6.9	134	22.2	7	0900	-5.4	*****	62	066	,4	033	3.8	4	0900	-3.4	-12.9	48	017	1.0	347	4.4	3	
1200	5.8	-10.6	30	132	8.5	124	21.6	21	1200	-2.6	-12.7	46	298	,5	212	6.3	7	1200	-2.2	-14.4	39	151	,7	213	4.4	17	
1500	3.6	-9.9	37	147	8.0	130	23.5	2	1500	-1.1	-11.6	45	200	3.0	175	10.8	2	1500	-4.7	-16.1	41	200	1.4	164	5.7	2	
1800	2.0	-8.8	45	184	4.1	169	12.7	1	1800	,4	-11.1	42	125	1.1	185	13.3	1	1800	-4.4	-14.9	44	126	,7	200	3.8	1	
2100	,6	-9.3	52	318	,5	230	5.1	1	2100	-1.2	-9.1	55	171	8.2	142	17.1	1	2100	-9.9	-15.8	57	094	,7	121	2.5	1	
2400	-1.0	-11.8	44	053	,7	036	2.5	2	2400	-2.8	-10.1	57	192	1.6	195	8.3	1	2400	-12.7	-18.6	61	040	,6	030	1.9	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
0300	-11.6	*****	62	242	,2	309	2.5	1	0300	-19.0	*****	58	347	,2	003	1.9	1	0300	-22.0	-29.6	55	002	,7	353	2.5	1	
0600	-15.2	*****	59	226	,4	277	1.9	1	0600	-18.3	*****	57	014	,2	024	1.3	1	0600	-21.2	*****	56	225	,6	348	2.5	1	
0900	-16.0	*****	60	013	,8	017	1.9	3	0900	-19.4	-26.0	56	350	,2	088	1.9	3	0900	-19.9	-26.8	54	241	,1	031	1.9	4	
1200	-10.8	*****	51	347	,6	355	1.9	24	1200	-11.6	*****	44	177	,1	197	1.3	24	1200	-13.3	*****	44	352	,4	244	1.9	22	
1500	-14.3	-20.5	59	323	,5	352	2.5	2	1500	-16.9	*****	57	320	,5	336	1.9	2	1500	-17.1	*****	54	230	,4	198	1.9	2	
1800	-14.6	*****	61	167	,5	191	1.9	1	1800	-18.2	-24.0	60	072	,4	020	1.9	1	1800	-18.1	-24.5	57	005	,9	010	2.5	1	
2100	-16.8	-22.5	61	324	,2	008	2.5	1	2100	-19.4	-26.0	56	350	,7	000	2.5	2	2100	-20.2	-26.9	55	357	,9	353	2.5	1	
2400	-16.8	*****	62	323	,3	031	1.9	1	2400	-19.9	*****	58	275	,3	286	3.2	1	2400	-20.2	*****	59	161	,1	027	1.9	1	

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
0300	-20.6	-27.3	55	231	,2	263	1.9	1	0300	-23.6	*****	51	353	,8	358	1.9	1	0300	-26.1	-33.4	50	025	,1	009	1.9	1	
0600	-22.4	-29.6	52	025	,1	339	1.9	1	0600	-23.8	*****	53	252	,3	222	1.9	1	0600	-25.8	*****	49	345	,1	337	1.9	1	
0900	-24.1	*****	52	180	,6	206	1.9	3	0900	-24.1	*****	50	018	,3	067	1.9	3	0900	-25.2	*****	51	181	,6	179	1.9	3	
1200	-18.3	*****	46	019	,5	350	1.9	23	1200	-17.9	*****	42	170	,1	166	1.3	23	1200	-18.8	*****	42	010	,3	169	1.9	21	
1500	-20.3	*****	52	236	,4	347	1.9	2	1500	-21.6	*****	50	340	,2	342	,9	2	1500	-23.0	-31.0	48	340	,6	004	2.5	2	
1800	-21.9	-28.5	55	006	1.1	005	3.2	1	1800	-23.3	-30.4	52	207	,4	164	2.5	1	1800	-22.0	-29.2	52	009	1.3	032	3.8	1	
2100	-22.7	-29.7	53	358	1.0	352	2.5	1	2100	-23.4	*****	52	000	,8	010	2.5	1	2100	-24.4	-31.4	52	043	1.2	096	4.4	1	
2400	-22.7	*****	53	010	,7	017	1.9	1	2400	-20.8	-28.3	51	314	,5	191	2.5	1	2400	-24.3	-31.6	51	002	2.1	005	3.8	1	

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY 19

DAY 20

DAY 21

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	M/S	MW	

0300	-24.7	-31.9	51	020	.3	359	2.5	2	0300	-27.0	*****	49	270	.4	025	2.5	2	0300	-29.0	-37.0	46	324	.9	276	3.2	1
0600	-26.0	*****	49	010	1.0	003	2.5	1	0600	-27.4	-34.9	49	009	1.2	013	3.2	1	0600	-27.9	*****	47	309	.1	208	2.5	1
0900	-25.9	*****	49	005	.3	018	1.9	3	0900	-28.3	*****	48	007	1.0	022	2.5	3	0900	-28.1	*****	46	190	.4	185	2.5	2
1200	-19.5	-29.5	41	011	.5	034	1.9	21	1200	-21.0	*****	41	017	1.0	027	2.5	21	1200	-22.4	*****	42	212	.3	204	2.5	21
1500	-23.2	-31.2	48	341	.5	354	2.5	2	1500	-26.7	-34.6	47	229	.5	267	3.2	2	1500	-22.7	-30.3	50	338	.7	347	2.5	1
1800	-21.9	*****	51	017	.4	013	2.5	1	1800	-27.9	-35.5	48	011	.6	011	1.9	1	1800	-24.9	*****	50	001	.9	328	2.5	1
2100	-25.8	-33.4	49	210	.9	210	2.5	1	2100	-27.4	*****	48	015	.5	017	1.9	1	2100	-23.1	*****	51	015	1.0	028	2.5	1
2400	-25.4	-33.0	49	030	.1	220	1.9	1	2400	-29.4	-37.1	47	313	.2	000	2.5	1	2400	-22.3	-29.5	52	004	.7	007	2.5	1

DAY 22

DAY 23

DAY 24

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	M/S	MW	

0300	-24.7	*****	50	014	1.0	016	3.2	1	0300	-16.2	*****	57	229	.6	202	3.2	1	0300	-12.9	-18.8	61	186	6.7	192	10.8	1
0600	-22.6	*****	50	029	.5	342	2.5	1	0600	-16.1	-22.6	57	327	.3	354	1.9	1	0600	-10.5	-16.4	62	197	4.6	191	9.5	1
0900	-22.9	*****	50	358	.8	355	2.5	2	0900	-14.8	-21.4	57	290	.2	260	2.5	2	0900	-9.4	-15.3	62	196	3.8	184	9.5	1
1200	-18.4	-26.1	51	012	1.7	021	3.8	6	1200	-13.3	-20.0	57	040	.6	032	2.5	5	1200	-7.1	-12.7	64	209	1.7	207	3.8	3
1500	-17.2	-24.3	54	024	1.3	045	3.8	2	1500	-13.2	*****	59	205	1.4	227	2.5	1	1500	-6.5	*****	63	080	.4	210	1.9	1
1800	-16.9	-23.5	56	028	1.7	043	3.8	2	1800	-12.9	-19.0	60	210	.9	198	4.4	1	1800	-8.1	-13.7	64	338	.5	307	2.5	1
2100	-15.9	-22.5	57	024	1.8	016	4.4	1	2100	-13.2	-19.1	61	165	1.1	177	7.6	1	2100	-7.2	*****	64	239	.2	219	1.9	1
2400	-15.8	*****	58	008	1.4	029	3.8	1	2400	-13.0	-18.9	61	192	6.6	192	9.5	1	2400	-6.6	-12.7	62	039	.5	005	3.2	1

DAY 25

DAY 26

DAY 27

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	M/S	MW	

0300	-6.3	*****	59	001	1.0	246	3.8	1	0300	-10.3	-17.8	54	188	4.0	185	7.6	1	0300	-3.9	*****	66	105	.4	155	1.3	1
0600	-13.7	-19.2	63	005	1.0	262	3.2	1	0600	-9.1	-14.8	63	205	3.2	194	6.3	1	0600	-4.6	-10.0	66	011	.7	089	1.3	1
0900	-11.3	-17.1	62	211	.8	219	3.2	1	0900	-7.1	-12.7	64	224	2.0	231	5.7	1	0900	-4.9	-10.4	65	353	2.2	346	4.4	1
1200	-4.9	-14.5	47	186	1.0	235	3.8	10	1200	-5.5	-11.4	63	244	2.9	232	8.3	2	1200	-5.0	-10.9	63	355	2.5	354	5.1	4
1500	-8.7	-16.6	53	007	1.3	306	6.3	2	1500	-2.4	-10.7	53	262	3.4	234	10.8	1	1500	-5.9	-11.2	66	014	1.8	034	5.1	1
1800	-14.0	*****	62	008	.4	068	3.2	1	1800	-3.2	-9.8	60	190	2.3	131	12.7	1	1800	-4.5	-11.3	59	311	1.8	307	7.5	1
2100	-17.0	*****	61	243	.3	262	2.5	1	2100	-3.8	-9.6	64	226	1.4	272	6.3	1	2100	-5.6	-11.7	62	314	2.9	293	9.3	1
2400	-12.8	-18.9	60	171	.5	190	6.3	1	2400	-4.1	-9.7	65	194	1.5	182	3.8	1	2400	-4.9	-13.0	53	358	2.9	348	7.0	1

R & M CONSULTANTS, INC.  
SUBSTITUTION HYDRO ELECTRIC PROJECT

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

DAY 28

DAY 29

DAY 30

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 C	DEG C	DEG	M/S	M/S	MW	DEG C	DEG C	DEG	M/S	M/S	MW	DEG C	DEG C	DEG	M/S	M/S	MW

0300	-6.1	-13.0	58	001	2.4	356	8.3	1	0300	-15.6	****	60	231	.6	215	1.9	1	0300	-9.7	****	44	356	1.1	297	5.7	1
0600	-8.5	-13.9	65	002	2.5	000	5.1	1	0600	-14.3	-20.2	61	318	.6	013	1.9	1	0600	-9.0	-19.7	42	356	1.4	329	5.7	1
0900	-10.2	-17.3	56	001	3.0	341	5.1	2	0900	-11.4	-17.2	62	183	3.3	193	9.5	2	0900	-8.6	-19.0	43	133	.7	199	5.7	2
1200	-10.1	-16.2	61	003	3.6	001	6.3	10	1200	-10.8	-16.4	63	198	7.4	196	10.2	4	1200	-5.8	-18.0	38	064	.3	220	3.2	8
1500	-11.8	-17.6	62	001	2.2	001	5.1	1	1500	-9.5	-18.0	50	193	8.4	193	14.0	1	1500	-7.3	-18.1	42	161	1.2	170	8.9	2
1800	-14.5	-20.5	60	352	2.0	357	5.7	1	1800	-10.9	-16.9	61	194	5.8	182	12.7	1	1800	-9.1	-20.3	40	092	1.3	166	6.3	1
2100	-14.1	****	61	349	1.2	353	3.2	1	2100	-11.5	-17.7	60	201	3.5	193	8.3	1	2100	-7.2	-20.5	34	144	3.7	140	11.4	1
2400	-15.0	****	60	010	.5	011	3.8	1	2400	-12.8	****	59	208	.8	241	3.8	1	2400	-10.9	-20.1	47	162	2.9	169	11.4	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY	RES.			RES.			AVG.	MAX.	MAX.			DAY'S		
	MAX. TEMP. DEG C	MIN. TEMP. DEG C	MEAN TEMP. DEG C	WIND DIR. DEG	WIND SPD. M/S	WIND DIR. DEG	GUST DIR. DEG	GUST SPD. M/S	P/VAL %	MEAN RH	MEAN DP DEG C	PRECIP MM	SOLAR ENERGY WH/SQM	
1	-9.4	-17.2	-13.3	192	1.5	3.1	188	8.9	S	63	-17.4	***	755	1
2	-1.3	-12.7	-7.0	174	1.8	3.1	008	19.0	SSE	56	-14.6	***	528	2
3	-9.9	-15.5	-12.7	003	1.3	2.3	008	8.3	N	57	-19.0	***	801	3
4	-8.3	-16.2	-12.3	002	4.2	4.2	003	10.2	N	57	-17.9	***	640	4
5	-13.5	-19.7	-16.6	010	3.8	3.8	003	8.9	N	46	-24.9	***	792	5
6	-14.0	-21.9	-18.0	353	.7	2.1	007	5.1	N	50	-26.7	***	913	6
7	-2.5	-13.7	-8.1	184	.9	2.1	136	13.3	SSW	51	-16.1	***	590	7
8	-5.8	-14.4	-10.1	187	1.8	2.7	188	10.8	S	59	-15.9	***	710	8
9	-1.5	-14.6	-8.1	291	.2	1.2	174	7.6	N	60	-12.9	***	628	9
10	6.6	-1.4	2.6	157	4.2	5.0	130	23.5	SSE	40	-9.9	***	958	10
11	3.7	-6.8	-1.6	179	1.5	2.9	142	17.1	S	51	-11.2	***	815	11
12	-.8	-12.7	-6.8	093	.3	1.3	164	5.7	NNE	50	-14.3	***	833	12
13	-7.3	-19.1	-13.2	329	.2	.9	309	2.5	N	58	-20.8	***	1230	13
14	-10.7	-21.1	-15.9	347	.2	.6	286	3.2	NNE	56	-25.2	***	1230	14
15	-9.6	-22.6	-16.1	339	.3	.9	353	2.5	N	55	-26.2	***	1025	15
16	-14.3	-25.2	-19.8	358	.3	.8	006	3.2	NNE	54	-28.7	***	1153	16
17	-14.3	-26.2	-20.3	336	.3	.8	164	2.5	N	51	-30.2	***	1148	17
18	-15.9	-27.1	-21.5	011	.6	1.1	096	4.4	N	51	-30.4	***	1080	18
19	-15.1	-27.3	-21.2	359	.3	1.0	359	2.5	NNE	48	-31.2	***	1098	19
20	-18.5	-29.4	-24.0	359	.5	1.0	013	3.2	NNE	47	-34.5	***	1088	20
21	-18.5	-29.0	-23.8	348	.4	1.0	276	3.2	N	48	-33.2	***	1040	21
22	-15.1	-24.8	-20.0	018	1.3	1.4	016	4.4	NNE	53	-25.9	***	530	22
23	-12.8	-17.2	-15.0	195	1.2	1.8	192	9.5	SSW	58	-20.4	***	365	23
24	-5.9	-13.1	-9.5	193	2.0	2.6	192	10.8	S	62	-15.6	***	320	24
25	-4.8	-17.4	-11.1	344	.2	1.4	305	6.3	NNE	57	-16.7	***	438	25
26	-2.0	-11.8	-6.9	217	2.3	3.1	131	12.7	S	60	-12.7	***	280	26
27	-3.3	-6.0	-4.7	347	1.7	2.1	293	8.3	N	62	-11.1	***	343	27
28	-5.0	-15.7	-10.4	000	2.1	2.3	356	8.3	N	59	-16.9	***	545	28
29	-9.0	-16.2	-12.6	196	3.7	4.0	193	14.0	SSW	60	-17.9	***	348	29
30	-4.8	-12.8	-8.8	132	.9	2.4	140	11.4	N	42	-19.5	***	495	30
MONTH	6.6	-29.4	-12.9	201	.1	2.1	130	23.5	N	54	-20.6	***	22772	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 15.2

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 22.2

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 16.5

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 17.8

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 \*\*\*\*

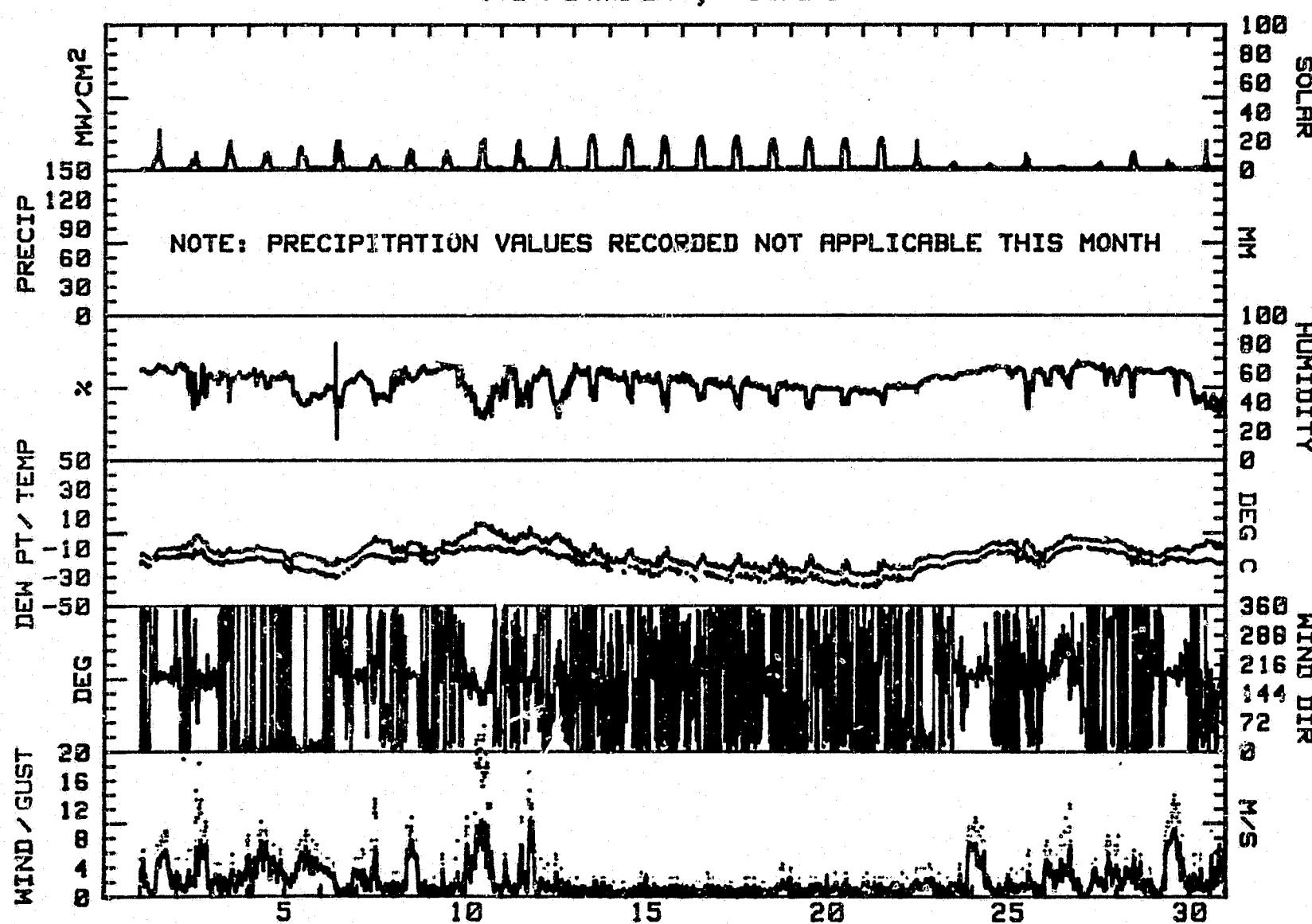
R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

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

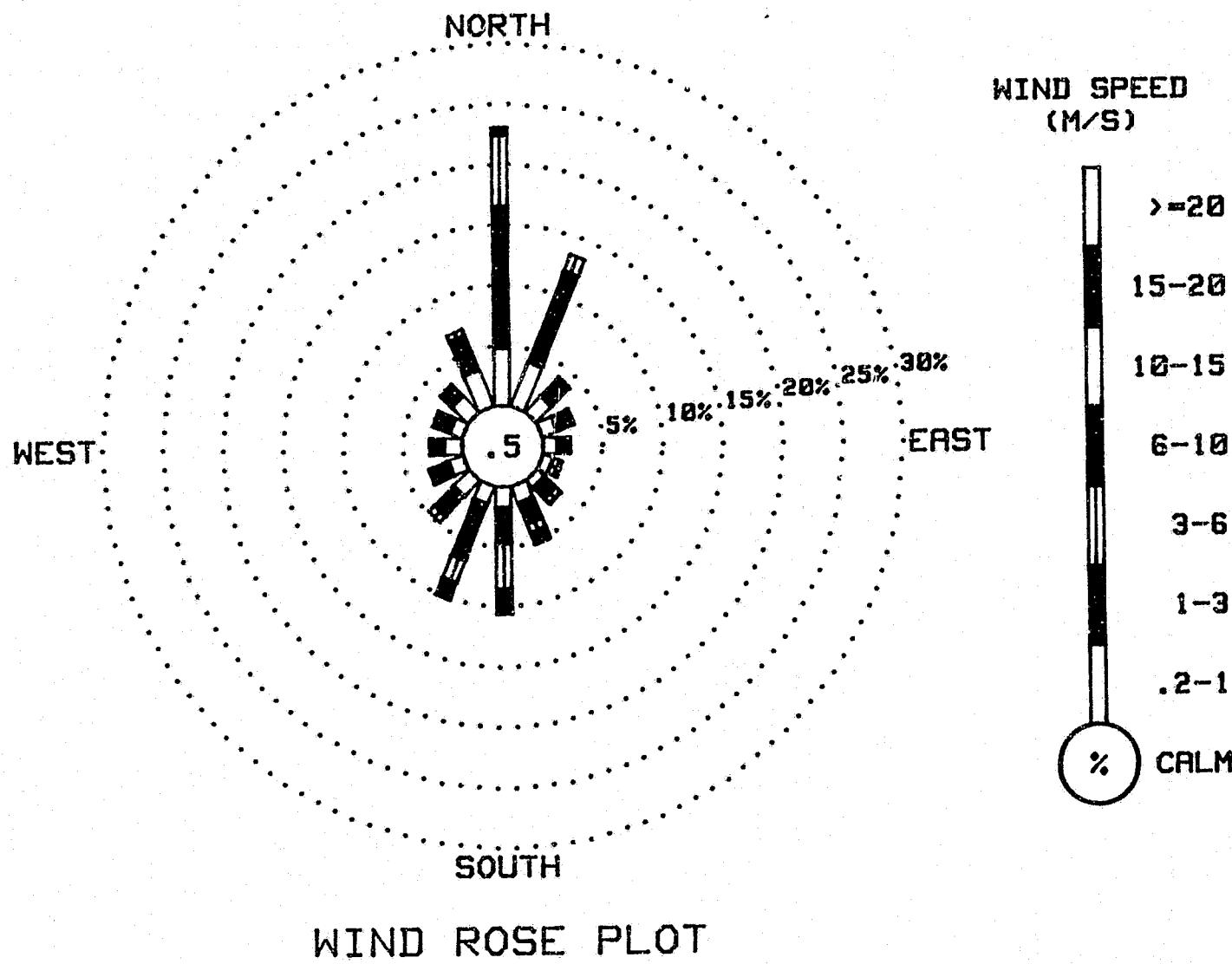
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	4.77	11.76	5.78	.66	0.00	0.00	0.00	22.96	
NNE	3.93	8.04	1.43	0.00	0.00	0.00	0.00	13.40	
NE	1.84	2.12	.03	0.00	0.00	0.00	0.00	4.00	
ENE	1.36	1.39	.07	0.00	0.00	0.00	0.00	2.82	
E	1.22	1.08	0.00	0.00	0.00	0.00	0.00	2.30	
ESE	.94	.59	.10	.14	0.00	0.00	0.00	1.77	
SE	.87	1.08	.24	.56	.10	0.00	0.00	2.85	
SSE	1.50	1.88	.80	1.01	0.00	0.00	0.00	5.18	
S	1.74	2.96	3.76	2.02	.07	0.00	0.00	10.54	
SSW	1.57	5.01	1.98	1.53	0.00	0.00	0.90	10.09	
SW	1.84	2.30	.66	0.00	0.00	0.00	0.00	4.60	
WSW	1.32	1.36	.38	0.00	0.00	0.00	0.00	3.06	
W	1.53	.90	.35	0.00	0.00	0.00	0.00	2.78	
WNW	1.18	1.15	.38	0.00	0.00	0.00	0.00	2.71	
NW	1.95	1.15	.21	0.00	0.00	0.00	0.00	3.31	
NNW	3.27	3.10	.52	0.00	0.00	0.00	0.00	6.89	
CALM									.52
TOTAL	30.83	45.86	16.70	5.92	.17	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2874 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



No precipitation data for December

(See INTERPRETING DATA).

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 1981

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		
	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	-10.9	-20.1	47	192	7.8	198	14.6	1	0300	-8.1	-13.7	64	208	2.6	225	5.1	1	0300	-6.3	-12.0	64	349	1.3	266	5.7	1
0600	-9.4	-17.9	50	188	8.1	188	16.5	1	0600	-8.4	-14.2	63	200	2.6	211	5.1	1	0600	-8.1	-13.9	63	185	5.2	187	12.1	1
0900	-5.2	-14.0	50	193	6.0	196	14.0	2	0900	-9.2	-18.8	46	212	2.1	228	6.3	2	0900	-9.1	-15.0	62	242	2.5	244	5.7	1
1200	-2.1	-17.0	37	156	8.6	147	17.8	4	1200	-9.9	****	47	240	.4	194	4.4	5	1200	-9.0	-14.9	62	196	1.5	221	5.1	2
1500	-2.7	-16.5	34	142	8.5	154	15.2	2	1500	-14.1	-20.8	57	170	.5	195	5.1	1	1500	-8.7	-14.6	62	353	2.5	345	4.4	1
1800	-3.3	-18.2	31	139	4.9	134	12.1	1	1800	-12.0	****	58	030	.6	041	2.5	1	1800	-8.7	-15.1	60	358	2.5	001	7.0	1
2100	-4.6	-17.9	35	144	4.3	133	12.1	2	2100	-11.8	-18.0	60	360	1.4	356	4.4	1	2100	-9.2	-15.7	59	003	3.1	353	8.3	1
2400	-7.4	-15.6	52	201	1.4	140	7.6	1	2400	-9.9	-15.8	62	005	1.7	010	4.4	1	2400	-6.7	-14.2	55	168	1.7	181	12.7	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		
	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	-16.6	57	201	2.3	191	10.2	1	0300	-16.2	****	47	343	1.6	331	4.4	1	0300	-13.6	-20.3	57	201	1.2	187	3.8	1
0600	-10.4	****	56	131	.7	107	9.5	1	0600	-18.3	-25.8	52	355	1.2	358	3.8	1	0600	-12.3	-19.3	56	183	3.4	171	6.3	1
0900	-13.0	-18.9	61	190	1.1	204	3.2	2	0900	-16.8	****	50	347	.7	220	2.5	2	0900	-13.0	-19.1	60	335	1.0	291	3.8	1
1200	-10.7	-18.9	51	351	1.2	346	4.4	4	1200	-17.5	-25.0	52	337	.3	167	2.5	5	1200	-13.7	-21.5	52	222	.4	211	3.8	10
1500	-11.0	-19.4	50	171	1.6	237	5.7	1	1500	-19.4	-25.4	59	343	1.0	357	3.8	1	1500	-18.5	-24.5	59	168	.2	218	2.5	1
1800	-16.8	-25.5	47	018	1.3	003	2.5	1	1800	-19.0	-25.8	55	341	.8	358	3.8	1	1800	-16.0	****	58	003	1.1	347	2.5	1
2100	-16.6	-26.1	44	013	4.3	024	8.3	2	2100	-18.1	-24.7	56	357	.6	204	3.2	1	2100	-22.3	-29.3	53	132	.4	150	1.9	1
2400	-16.3	-25.3	46	347	2.9	349	6.3	2	2400	-14.4	-20.8	58	206	1.9	206	5.7	1	2400	-25.4	-32.8	50	351	1.0	354	2.5	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		
	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	-24.7	-32.1	50	356	1.8	357	4.4	2	0300	-28.7	-36.3	48	013	1.0	027	1.9	1	0300	-23.3	****	50	183	.3	199	1.3	1
0600	-29.4	-36.7	49	336	1.2	330	3.2	1	0600	-28.4	****	48	013	1.0	006	1.9	1	0600	-22.8	****	51	188	.6	158	1.9	1
0900	-27.2	****	49	340	.6	355	2.5	2	0900	-30.3	****	47	359	.5	339	2.5	2	0900	-22.3	****	51	186	.6	192	1.3	2
1200	-25.6	****	51	185	.3	170	1.9	11	1200	-26.2	-34.2	47	009	1.0	024	2.5	11	1200	-22.5	****	51	193	.3	199	1.3	3
1500	-27.6	****	49	189	.4	193	1.9	1	1500	-26.1	****	49	025	.4	006	1.9	1	1500	-23.9	****	51	155	.3	161	1.3	1
1800	-26.8	****	50	029	.2	350	1.9	1	1800	-28.1	****	48	200	.6	192	1.9	1	1800	-24.4	****	50	185	.3	172	1.3	1
2100	-27.3	****	49	269	.2	154	1.9	2	2100	-26.6	****	49	186	.2	156	1.3	1	2100	-25.0	****	51	170	.1	208	1.9	1
2400	-28.7	-36.3	48	011	.4	317	1.9	1	2400	-25.1	****	49	234	.2	233	1.3	1	2400	-25.5	****	50	063	.2	031	1.9	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 1981

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

0300	-25.1	*****	50	158	.3	078	1.3	1	0300	-23.2	-30.8	50	011	1.6	018	2.5	1	0300	-11.3	-17.1	62	214	4.4	222	7.6	1
0600	-26.5	*****	50	161	.3	036	1.9	1	0600	-23.7	-31.0	51	006	1.0	012	2.5	2	0600	-9.2	-15.1	62	191	3.1	196	7.0	1
0900	-29.2	*****	48	189	.6	201	2.5	2	0900	-21.2	-28.3	53	004	1.3	004	2.5	2	0900	-10.7	-16.5	62	195	1.8	184	5.7	1
1200	-27.8	*****	48	199	.2	232	1.3	3	1200	-18.4	-25.0	56	087	.2	185	5.7	4	1200	-7.8	-13.6	63	215	2.4	205	6.3	3
1500	-27.4	-34.9	49	000	.2	011	1.9	1	1500	-17.0	-23.5	57	190	3.6	196	6.3	1	1500	-6.8	-12.6	63	188	1.9	215	4.4	1
1800	-26.9	-34.4	49	014	1.8	021	3.8	2	1800	-16.7	-23.0	58	197	3.3	211	6.3	1	1800	-7.6	-13.8	61	190	3.2	196	5.7	1
2100	-24.1	-31.4	51	052	1.5	094	5.1	1	2100	-16.4	-22.7	58	268	1.4	271	3.2	1	2100	-10.6	-16.5	62	176	.4	235	3.2	1
2400	-22.8	-30.2	51	010	1.8	023	3.8	1	2400	-11.5	-17.5	61	256	1.4	227	5.1	1	2400	-11.2	*****	63	343	1.0	245	3.2	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.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.
DEG C	DEG C	%	DEG C	DEG C	DEG C	POINT RH	DIR.	SPD.	DIR.	GUST RAD	DEG C
			M/S	M/S	M/S					M/S	M/S
			MW	MW	MW					MW	MW

0300	-13.8	-19.7	61	175	.4	276	2.5	1	0300	-20.0	-26.5	56	000	.5	015	1.3	1	0300	-19.6	-26.1	56	004	.8	011	1.9	1
0600	-15.1	*****	60	306	.6	228	2.5	1	0600	-20.2	-26.9	55	165	.4	122	2.5	1	0600	-19.3	*****	57	005	.8	003	1.9	2
0900	-16.8	-22.9	59	283	.5	277	3.2	1	0900	-24.3	*****	52	206	.6	198	1.9	1	0900	-16.2	*****	59	005	.8	005	1.9	1
1200	-16.4	-23.1	56	355	1.0	272	3.2	8	1200	-21.2	*****	55	358	.7	352	2.5	6	1200	-15.0	*****	59	355	.8	002	1.9	4
1500	-15.9	-21.7	61	012	.8	029	2.5	1	1500	-21.0	*****	55	354	.9	003	2.5	1	1500	-15.1	-21.3	59	059	.2	039	1.9	1
1800	-17.1	-23.0	60	013	1.0	001	2.5	1	1800	-19.4	-26.0	56	015	.9	004	2.5	1	1800	-17.7	*****	58	094	.2	000	1.9	1
2100	-17.2	*****	59	002	.7	351	2.5	1	2100	-18.1	*****	58	001	.5	003	1.9	1	2100	-14.1	*****	60	032	.6	086	1.9	1
2400	-18.4	-24.6	58	,006	1.1	008	3.2	1	2400	-19.1	*****	57	008	.9	005	1.9	1	2400	-10.8	-16.6	62	224	.4	173	3.8	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.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD	NDNG TEMP.
DEG C	DEG C	%	DEG C	DEG C	DEG C	POINT RH	DIR.	SPD.	DIR.	GUST RAD	DEG C
			M/S	M/S	M/S					M/S	M/S
			MW	MW	MW					MW	MW

0300	-17.7	*****	58	239	1.0	243	3.2	1	0300	-,9	-8.8	55	149	8.5	145	22.2	1	0300	3.4	-4.8	55	150	9.6	134	31.1	1
0600	-17.2	-23.5	58	049	.3	170	2.5	1	0600	-2.3	-8.4	63	190	5.6	183	12.1	1	0600	-,8	-8.0	52	146	8.9	139	31.7	1
0900	-17.1	-23.2	59	192	.7	182	2.5	1	0900	,1	-9.9	47	156	8.7	153	15.9	1	0900	-1.6	-9.5	55	185	1.2	200	7.0	1
1200	-8.6	*****	63	263	.4	233	2.5	2	1200	-1.5	-9.1	56	194	6.1	188	14.0	3	1200	1.3	-10.0	43	164	6.5	145	15.2	3
1500	-5.6	-12.3	59	174	2.2	178	13.3	1	1500	-1.5	-8.9	57	193	4.3	156	17.1	1	1500	-1.5	-7.6	63	161	5.7	146	14.0	1
1800	-3.6	-12.1	52	188	7.9	178	15.9	1	1800	-1.3	*****	52	073	,6	208	7.6	1	1800	-2.4	-8.9	61	222	2.0	199	7.0	1
2100	-3.6	-10.0	61	179	7.1	187	20.3	1	2100	-1.7	-9.8	54	255	,5	195	5.1	1	2100	-2.5	-8.8	62	196	2.6	197	6.3	1
2400	-1.1	-10.4	43	195	3.7	192	13.3	1	2400	5.7	-12.0	27	208	1.9	238	19.0	2	2400	-3.5	-9.3	64	195	3.4	188	8.9	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	MW	RAD

0300	-3.1	-10.0	59	183	1.7	156	3.8	1	0300	-9.0	-19.4	43	013	4.3	018	7.0	1	0300	-9.1	-15.2	61	031	.7	066	5.1	1
0600	-3.7	-9.9	62	157	.8	128	2.5	1	0600	-11.6	-17.8	66	004	2.4	021	5.1	1	0600	-11.5	****	62	171	.8	176	5.1	1
0900	-9.4	-15.3	62	317	.3	334	2.5	1	0900	-11.1	-17.5	59	332	.3	010	3.8	1	0900	-9.2	-15.1	62	136	.4	358	2.5	1
1200	-8.5	-16.6	52	354	2.8	005	5.7	7	1200	-8.9	-17.0	52	196	1.4	152	7.0	3	1200	-10.1	-16.0	62	204	1.2	202	3.2	2
1500	-8.5	-14.5	62	015	3.8	013	5.7	1	1500	-9.2	-15.5	60	181	5.5	170	8.3	1	1500	-9.7	****	61	179	.8	204	3.2	1
1800	-8.5	-14.3	63	009	4.9	001	7.6	1	1800	-9.4	-15.3	62	137	1.0	168	5.7	1	1800	-10.1	-16.4	60	356	2.1	001	4.4	1
2100	-7.8	-17.5	46	006	6.6	005	10.2	1	2100	-10.5	-16.2	63	297	.5	299	2.5	1	2100	-11.3	-19.9	49	008	2.4	001	5.1	1
2400	-7.8	-18.3	43	005	5.6	001	9.5	1	2400	-10.3	****	63	357	.9	333	1.9	1	2400	-14.4	****	60	123	.4	006	3.8	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
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	MW	RAD

0300	-16.8	****	60	163	.2	162	2.5	1	0300	-13.9	-19.8	61	213	1.4	190	6.3	1	0300	-9.1	****	64	337	.7	233	3.2	1
0600	-15.7	****	60	356	.6	339	1.9	1	0600	-17.0	-23.1	59	097	.1	213	3.8	1	0600	-11.1	-16.9	62	355	2.0	356	4.4	1
0900	-16.8	-22.9	59	168	1.2	186	5.7	1	0900	-12.7	-18.6	61	306	.8	346	5.1	1	0900	-8.8	-14.5	63	358	2.4	351	3.8	1
1200	-17.6	-23.7	59	007	1.0	013	3.2	2	1200	-9.0	-15.8	58	219	.8	198	9.5	2	1200	-9.2	-14.9	63	000	3.0	001	4.4	4
1500	-21.1	****	56	195	.5	196	2.5	1	1500	-7.2	-15.7	51	202	5.0	188	11.4	1	1500	-9.7	-15.6	62	005	2.6	356	4.4	1
1800	-17.7	-24.0	58	229	.6	210	4.4	1	1800	-7.6	-14.0	60	208	4.2	201	7.6	1	1800	-7.2	-12.8	64	004	1.3	016	3.2	1
2100	-14.4	-20.4	60	198	2.9	200	7.6	1	2100	-6.2	-12.1	63	186	5.2	191	8.3	1	2100	-7.2	-12.8	64	207	.5	227	3.2	1
2400	-10.7	-16.5	62	190	2.7	201	6.3	1	2400	-6.1	-12.2	62	173	1.9	185	5.7	1	2400	-9.2	-15.1	62	193	2.1	213	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
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	MW	RAD

0300	-12.4	****	61	199	.7	218	3.2	1	0300	-12.2	-21.8	45	005	4.2	007	6.3	1	0300	-20.5	-39.7	16	027	3.8	035	6.3	1
0600	-12.9	-18.6	62	020	.3	024	1.9	1	0600	-13.2	-23.2	43	008	4.9	000	7.6	2	0600	-20.9	-39.4	17	019	3.2	017	6.3	1
0900	-14.7	-20.7	60	000	.4	045	2.5	1	0900	-14.4	-24.9	41	012	4.3	005	8.3	2	0900	-26.5	****	46	323	.5	003	3.8	2
1200	-11.9	-17.9	61	352	2.0	352	3.8	6	1200	-14.9	-26.8	36	025	4.4	019	7.0	6	1200	-29.7	-32.0	80	334	.6	346	3.2	8
1500	-12.6	-18.2	63	351	1.0	352	4.4	1	1500	-15.4	-27.2	36	032	3.6	033	6.3	2	1500	-30.7	****	47	255	.4	310	3.2	2
1800	-15.6	-21.6	60	008	1.6	007	4.4	1	1800	-16.2	-36.8	15	020	3.8	017	7.6	1	1800	-30.8	-39.1	44	354	.6	030	2.5	1
2100	-14.3	-20.8	58	006	2.7	356	5.1	1	2100	-18.7	-38.2	16	021	3.9	011	6.3	1	2100	-32.9	-40.6	46	345	.2	167	2.5	2
2400	-13.1	-20.2	55	005	3.1	014	5.7	1	2400	-18.5	-38.0	16	029	3.8	031	6.3	1	2400	-32.9	****	45	015	.3	204	3.2	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 1981

DAY 28

DAY 29

DAY 30

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	M/S	MW		DEG C	DEG C	M/S	M/S	MW		DEG C	DEG C	%	DEG	M/S	M/S	MW					
0300	-34.9	*****	45	348	.8	357	2.5	1	0300	-35.8	-43.7	44	011	.5	323	1.9	2	0300	-37.0	-40.1	72	057	.5	182	2.5	1
0600	-36.5	-44.3	44	335	.7	001	3.2	1	0600	-35.8	*****	44	310	.4	233	2.5	1	0600	-36.1	*****	43	182	.4	133	1.9	1
0900	-36.0	-43.8	44	220	.8	195	3.2	2	0900	-34.7	*****	43	055	.4	163	2.5	1	0900	-41.3	*****	24	169	.2	208	1.9	1
1200	-35.3	*****	22	346	.3	194	2.5	10	1200	-37.1	*****	22	115	.3	203	2.5	12	1200	-37.1	*****	22	205	.3	199	2.5	7
1500	-33.8	-41.6	45	024	.6	056	1.9	1	1500	-38.1	*****	91	286	.3	226	2.5	1	1500	-36.4	*****	22	240	.2	178	1.9	1
1800	-34.4	*****	44	030	.2	199	2.5	1	1800	-34.8	*****	44	225	.3	269	2.5	1	1800	-35.9	*****	43	280	.4	273	1.9	1
2100	-34.9	*****	44	225	.2	200	1.9	1	2100	-35.8	*****	44	011	.5	249	1.9	2	2100	-33.3	*****	43	290	.3	347	1.9	1
2400	-35.1	*****	44	347	.5	357	1.9	1	2400	-39.9	*****	23	043	.5	065	1.9	1	2400	-34.6	*****	43	257	.3	224	1.9	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	M/S	MW		

0300	-32.0	*****	44	018	.6	044	1.9	2
0600	-32.0	*****	44	001	.1	004	1.9	1
0900	-29.6	*****	45	008	.7	005	2.5	1
1200	-25.3	-34.3	43	353	2.6	356	5.1	4
1500	-20.4	-29.8	43	352	2.7	349	4.4	1
1800	-23.0	-31.7	45	006	2.4	025	5.1	1
2100	-27.0	*****	46	322	1.0	341	4.4	1
2400	-29.7	*****	47	159	.9	188	3.8	2

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 1981

DAY	MAX.			RES.			AVG.			MAX.			DAY'S		
	TEMP. DEG C	MIN. DEG C	MEAN DEG C	WIND DIR.	WIND SPD. M/S	WIND SPD. M/S	GUST DIR.	GUST SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DEG C	PRECIP MM	SOLAR ENERGY WH/SQM	DAY	
1	-1.9	-11.8	-6.9	167	5.7	6.4	147	17.8	SE	42	-17.1	****	403	1	
2	-7.3	-15.4	-11.4	220	.6	1.9	228	6.3	SSW	57	-17.0	****	403	2	
3	-4.7	-10.2	-7.5	267	.4	3.1	181	12.7	N	61	-14.6	****	288	3	
4	-5.9	-17.5	-11.7	004	.5	2.4	191	10.2	N	51	-20.3	****	393	4	
5	-14.4	-21.5	-18.0	332	.6	1.5	206	5.7	N	52	-25.2	****	423	5	
6	-10.8	-25.9	-18.4	207	.3	1.5	171	6.3	N	55	-23.2	****	500	6	
7	-19.8	-29.5	-24.7	345	.4	.9	357	4.4	N	51	-33.4	****	590	7	
8	-22.3	-32.0	-27.2	008	.4	.7	339	2.5	N	48	-35.4	****	610	8	
9	-21.9	-26.1	-24.0	179	.3	.5	158	1.9	S	51	-30.9	****	343	9	
10	-20.3	-30.2	-25.3	032	.5	1.0	094	5.1	NNE	49	-32.5	****	353	10	
11	-11.5	-24.1	-17.8	228	.6	2.0	196	6.3	N	55	-25.6	****	398	11	
12	-6.6	-12.6	-9.6	202	2.0	2.6	222	7.6	SSW	62	-15.3	****	328	12	
13	-10.2	-18.7	-14.5	354	.6	1.0	277	3.2	N	60	-21.8	****	478	13	
14	-16.8	-25.3	-21.1	002	.4	.8	122	2.5	N	55	-27.6	****	413	14	
15	-10.8	-19.9	-15.4	009	.4	.8	173	3.8	N	69	-21.7	****	318	15	
16	1.2	-18.4	-8.6	188	2.7	3.2	187	20.3	S	59	-15.2	****	290	16	
17	5.7	-3.4	1.2	174	4.0	5.1	145	22.2	SSW	63	-9.4	****	333	17	
18	5.6	-3.5	1.1	164	4.7	5.3	139	31.7	SSW	51	-9.5	****	330	18	
19	-2.6	-9.5	-6.1	007	2.7	3.5	005	10.2	N	56	-14.3	****	423	19	
20	-7.8	-11.7	-9.8	055	.1	2.4	170	8.3	N	57	-17.0	****	335	20	
21	-8.9	-15.6	-12.3	024	.3	1.5	066	5.1	N	61	-16.8	****	290	21	
22	-10.7	-22.6	-16.7	195	.8	1.6	200	7.6	SSW	59	-22.0	****	295	22	
23	-5.8	-17.0	-11.4	200	2.2	3.2	188	11.4	S	59	-16.5	****	293	23	
24	-5.9	-11.5	-8.7	354	1.2	2.0	356	4.4	N	63	-14.6	****	335	24	
25	-9.4	-17.1	-13.3	001	1.3	1.7	014	5.7	N	60	-19.5	****	375	25	
26	-11.8	-18.7	-15.3	018	4.1	4.1	005	8.3	NNE	32	-29.2	****	440	26	
27	-17.2	-35.6	-26.4	012	1.1	1.8	035	6.3	NNE	34	-39.3	****	478	27	
28	-30.3	-38.3	-34.3	334	.3	.9	001	3.2	N	43	-42.4	****	508	28	
29	-32.9	-40.7	-36.8	012	.2	.8	233	2.5	N	40	-42.4	****	583	29	
30	-30.3	-41.7	-36.0	234	.1	.7	182	2.5	SSW	40	-41.6	****	453	30	
31	-15.9	-34.5	-25.2	357	1.1	1.6	356	5.1	N	44	-33.5	****	398	31	
MONTH	5.7	-41.7	-16.5	171	.2	2.1	139	31.7	N	53	-24.0	****	12391		

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 29.2

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 27.9

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 21.0

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 16.5

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 \*\*\*\*

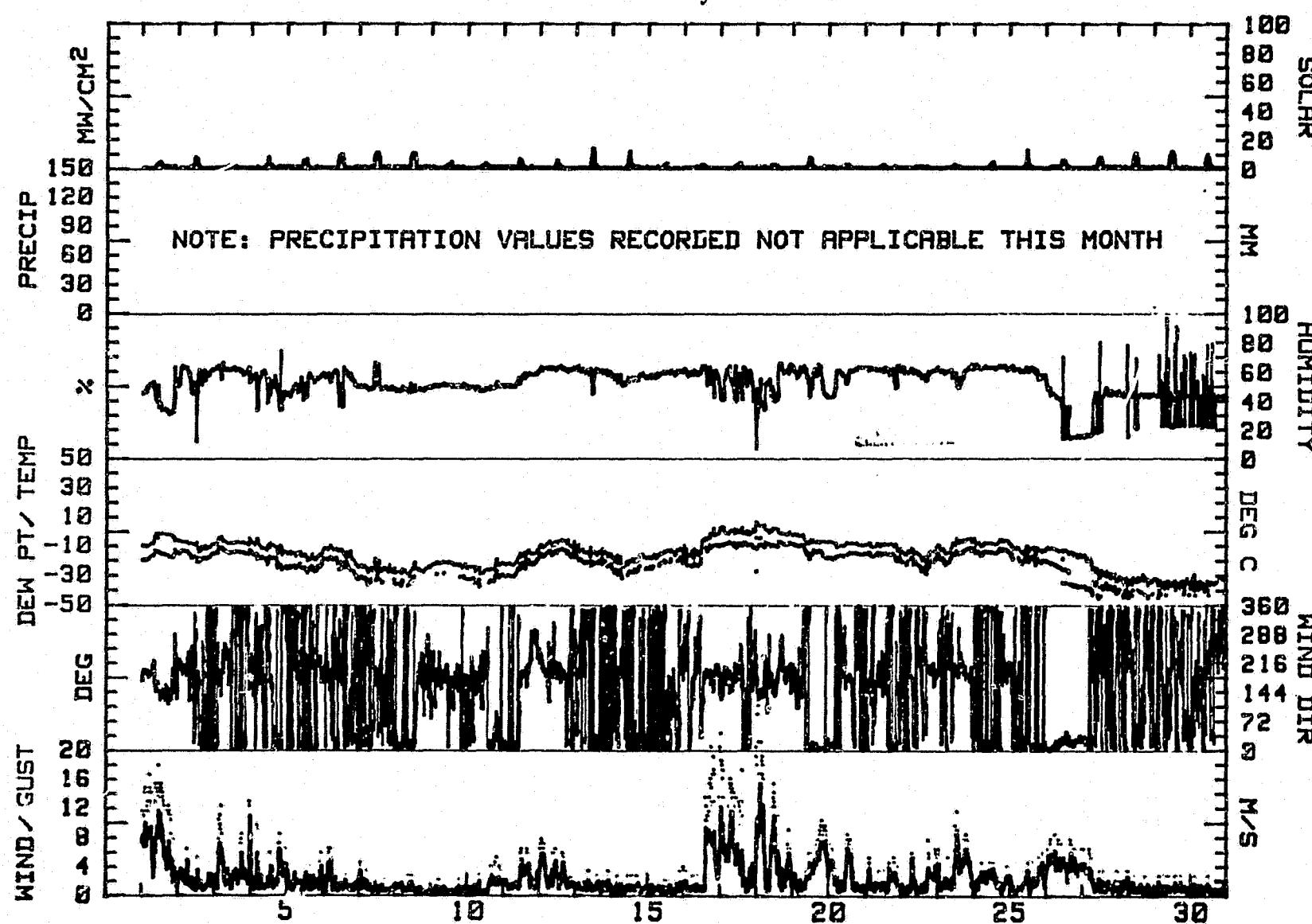
R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING December, 1981

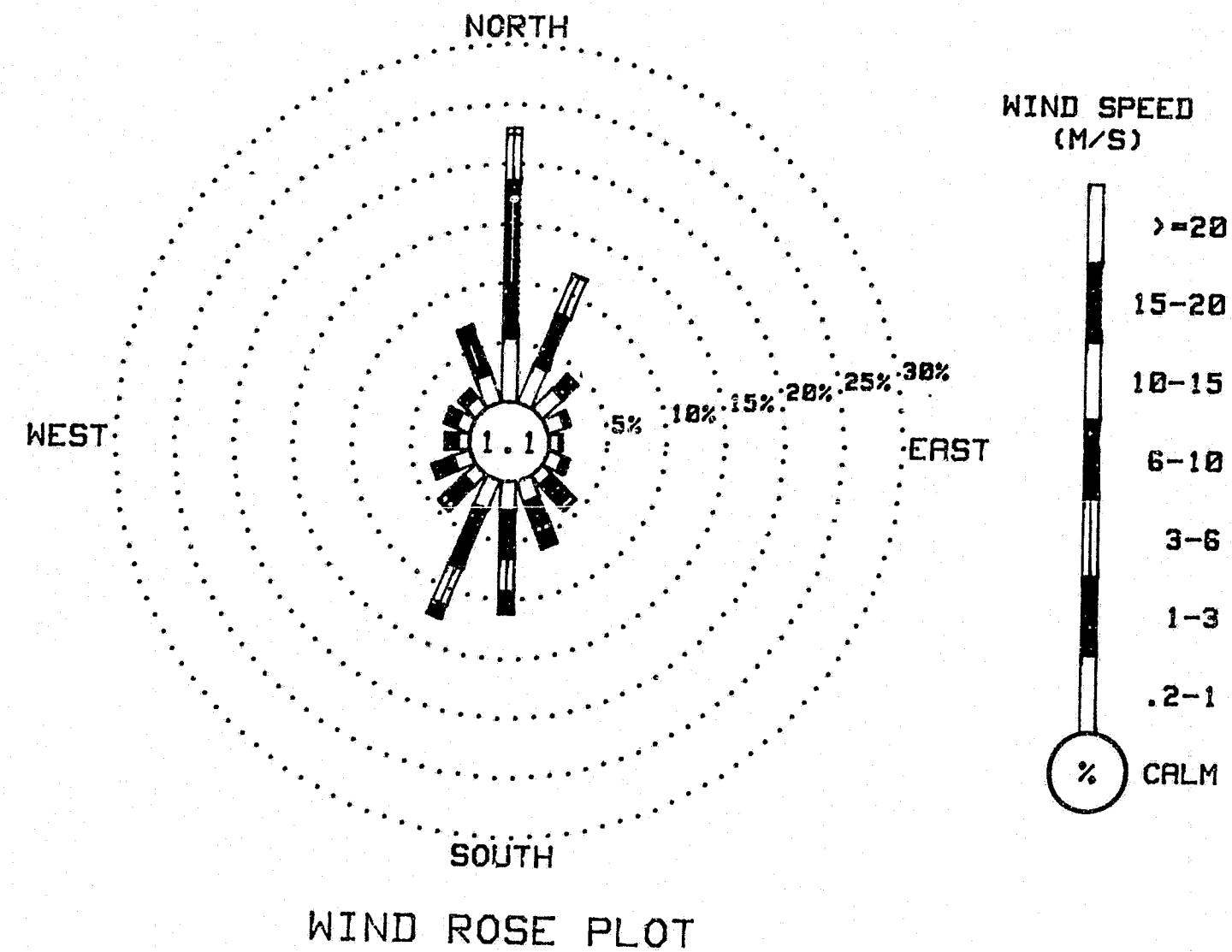
DIRECTION	VELOCITY (M/S)							TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER	
	1.0	3.0	6.0	10.0	15.0	20.0		
N	5.38	13.15	3.82	.54	0.00	0.00	0.00	22.93
NNE	3.46	4.64	3.53	.03	0.00	0.00	0.00	11.67
NE	2.42	1.45	.24	0.00	0.00	0.00	0.00	4.10
ENE	1.55	.37	.03	0.00	0.00	0.00	0.00	1.95
E	.91	.27	0.00	0.00	0.00	0.00	0.00	1.18
ESE	1.38	.47	.13	0.00	0.00	0.00	0.00	1.98
SE	1.11	1.01	.44	.87	.61	.03	0.00	4.07
SSE	1.88	2.25	.61	1.04	.24	0.00	0.00	6.02
S	2.45	3.97	2.79	1.88	.03	0.00	0.00	11.13
SSW	2.66	5.35	3.40	1.18	0.00	0.00	0.00	12.58
SW	1.38	2.08	.81	.03	0.00	0.00	0.00	4.30
WSW	1.55	1.51	.37	0.00	0.00	0.00	0.00	3.43
W	.98	.98	.13	0.00	0.00	0.00	0.00	2.08
WNW	1.31	1.01	.07	0.00	0.00	0.00	0.00	2.39
NW	1.28	.84	0.00	0.00	0.00	0.00	0.00	2.12
NNW	2.59	3.93	.40	0.00	0.00	0.00	0.00	6.93
CALM								1.14
TOTAL	32.28	43.28	16.81	5.58	.87	.03	0.00	100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2974 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT  
DENALI WEATHER STATION  
December, 1981



R&M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT  
DENALI WEATHER STATION  
December, 1981



No precipitation data for January

(See INTERPRETING DATA).

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300 -28.9 **** 47	188	.4	195	2.5	1	0300 -27.6 **** 47	281	.0	002	1.3	1	0300 -32.1 **** 45	199	.6	116	1.9	1
0600 -29.8 -37.1 49	039	.3	139	3.2	1	0600 -27.8 **** 47	218	.3	199	1.9	2	0600 -32.7 **** 45	224	.5	172	1.9	1
0900 -30.3 **** 47	264	.2	299	3.2	2	0900 -29.1 **** 46	161	.3	017	1.3	2	0900 -33.7 **** 45	339	.3	158	1.3	2
1200 -31.8 **** 43	277	.1	067	1.3	10	1200 -28.4 **** 43	208	.5	216	1.9	4	1200 -31.3 **** 20	329	.4	010	1.9	13
1500 -33.6 -41.6 44	218	.6	206	2.5	1	1500 -28.7 **** 45	202	.5	213	2.5	1	1500 -32.2 **** 46	275	.4	252	1.3	2
1800 -29.7 -37.6 46	178	.6	238	1.9	2	1800 -28.1 **** 47	013	.1	011	1.9	1	1800 -31.0 -38.8 46	011	.7	348	1.9	1
2100 -31.1 -39.1 45	187	.4	187	2.5	1	2100 -29.1 **** 46	199	.6	194	1.9	1	2100 -31.0 -39.0 45	319	.3	351	1.9	1
2400 -29.1 **** 46	078	.2	178	1.9	2	2400 -29.9 **** 46	211	.7	209	1.9	1	2400 -31.1 **** 45	358	.6	011	1.9	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 RAD
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300 -30.3 **** 45	346	.2	003	1.9	2	0300 -21.0 -31.7 38	007	7.9	010	12.1	1	0300 -28.9 -45.1 19	19	5.5	015	8.9	1
0600 -26.9 -34.6 48	284	.4	199	3.2	1	0600 -23.4 -32.5 43	007	8.1	001	12.7	1	0600 -28.4 -44.7 19	025	4.1	026	6.3	1
0900 -23.7 -31.2 50	001	.7	358	1.9	2	0900 -24.5 -41.9 18	003	7.6	359	14.6	1	0900 -34.2 **** 21	009	2.9	017	6.3	1
1200 -21.3 -29.0 50	024	1.4	012	3.2	5	1200 -26.2 -43.3 18	009	8.3	009	13.3	4	1200 -36.9 **** 22	224	.5	357	3.8	7
1500 -20.0 -28.0 49	024	1.6	041	5.1	1	1500 -27.1 -43.6 19	019	7.7	015	14.0	1	1500 -37.2 **** 22	228	.3	194	2.5	1
1800 -19.4 -27.2 50	142	1.8	137	8.3	1	1800 -27.7 -44.1 19	008	8.3	003	13.3	1	1800 -35.1 -38.4 71	022	.4	036	1.9	1
2100 -19.6 -26.8 53	358	1.0	047	3.8	1	2100 -28.2 -44.5 19	019	7.4	027	12.1	1	2100 -37.4 **** 22	304	.5	349	2.5	1
2400 -18.2 -26.6 48	001	2.3	000	6.3	1	2400 -29.0 -45.2 19	016	7.0	023	10.8	1	2400 -39.6 **** 23	215	.4	356	2.5	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	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

0300 -38.7 **** 23	021	1.0	346	3.8	1	0300 -34.7 **** 21	021	1.3	054	3.2	1	0300 -21.1 -39.6 17	136	.8	162	7.0	1
0600 -36.9 **** 22	356	.9	303	3.8	1	0600 -36.9 **** 22	350	.7	056	3.2	1	0600 -22.4 -40.7 17	127	1.8	154	9.5	1
0900 -41.3 **** 24	298	.5	265	2.5	1	0900 -33.1 -41.6 42	333	1.0	004	3.2	2	0900 -21.1 -39.6 17	127	3.8	138	12.1	1
1200 -41.2 **** 24	356	1.1	284	3.8	11	1200 -34.8 **** 22	356	2.5	359	5.7	12	1200 -22.5 -40.8 17	136	3.1	157	10.8	8
1500 -40.3 **** 24	358	1.0	204	3.2	1	1500 -34.1 **** 21	357	2.6	001	5.1	1	1500 -23.4 -41.5 17	064	2.2	083	7.0	1
1800 -36.7 **** 22	269	.5	306	3.2	1	1800 -33.3 **** 21	003	3.3	004	5.7	1	1800 -19.8 -39.1 16	151	5.6	149	12.1	1
2100 -38.7 **** 23	325	.7	348	2.5	1	2100 -34.2 **** 21	353	1.4	347	5.7	1	2100 -19.2 -30.3 37	168	7.6	163	12.1	1
2400 -36.3 **** 22	338	1.0	001	3.2	1	2400 -22.2 -40.5 17	252	1.2	271	5.7	1	2400 -19.0 -29.6 39	174	7.1	175	12.1	2

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING January, 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.	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	-19.1	-28.6	43	136	1.8	166	8.3	2	0300	-20.7	*****	53	010	1.0	003	2.5	1	0300	-16.0	-22.6	57	015	1.4	025	3.8	1		
0600	-18.6	-29.2	39	084	1.1	174	7.6	1	0600	-21.1	-28.2	53	009	1.3	019	3.2	1	0600	-16.0	*****	57	359	.8	039	3.2	1		
0900	-21.5	-31.1	42	027	2.2	123	7.0	2	0900	-20.6	-27.7	53	358	1.3	018	5.1	1	0900	-16.7	*****	57	010	.8	008	1.9	1		
1200	-20.6	-31.3	38	019	2.0	6.5	4.4	6	1200	-19.1	-25.9	55	359	1.2	000	2.5	5	1200	-16.4	-23.6	54	299	.6	274	2.5	5		
1500	-21.0	-30.6	42	017	1.0	047	2.5	2	1500	-20.3	*****	53	358	.6	288	2.5	1	1500	-17.9	-24.0	59	354	1.0	011	2.5	1		
1800	-20.0	-28.0	43	011	.8	290	3.2	1	1800	-20.1	-27.0	54	020	2.0	025	4.4	1	1800	-19.6	-26.1	56	335	.3	197	2.5	1		
2100	-23.1	-31.1	48	013	1.5	042	3.2	1	2100	-18.1	-24.7	56	018	2.3	016	3.8	1	2100	-20.5	-27.6	53	359	.8	011	3.2	1		
2400	-20.4	-27.1	55	017	1.4	008	3.2	1	2400	-16.8	-23.3	57	017	1.2	007	3.8	1	2400	-17.6	*****	56	009	.8	001	3.2	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.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-19.2	*****	55	013	.3	043	1.9	1	0300	-18.8	-29.7	38	176	7.1	174	12.1	1	0300	-20.5	-39.7	16	173	2.0	192	11.4	1		
0600	-19.8	-26.7	54	356	1.8	006	3.2	1	0600	-24.8	*****	48	180	.5	185	6.3	1	0600	-24.2	-41.7	18	167	4.3	191	11.4	1		
0900	-19.9	-26.6	55	356	1.8	357	3.2	1	0900	-26.3	-34.1	48	352	1.0	038	3.2	2	0900	-28.4	*****	41	005	1.3	060	6.3	2		
1200	-14.3	-26.2	36	021	2.5	030	5.1	15	1200	-26.5	-35.6	42	324	1.0	356	5.7	15	1200	-30.9	-46.4	20	351	.3	011	4.4	5		
1500	-14.3	-33.9	14	026	3.7	026	5.7	1	1500	-20.3	-39.5	16	057	1.9	136	10.2	1	1500	-29.7	-38.5	42	003	2.4	010	5.1	2		
1800	-21.1	-31.5	39	016	2.6	026	5.1	1	1800	-25.5	-42.7	18	042	1.5	147	7.0	1	1800	-29.4	-38.3	42	554	.7	015	3.8	1		
2100	-23.5	-31.5	48	339	1.2	221	3.2	1	2100	-22.7	-40.9	17	121	.5	249	7.6	1	2100	-30.7	*****	43	232	.5	235	1.9	1		
2400	-16.3	-26.3	42	253	.9	266	7.6	1	2400	-20.1	-39.4	16	158	3.9	153	13.3	1	2400	-28.3	-37.3	42	009	.4	238	1.9	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.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW	
0300	-30.8	*****	43	008	.9	352	2.5	1	0300	-14.4	-36.0	14	014	6.6	016	8.9	1	0300	-30.1	*****	45	255	.3	239	2.5	1		
0600	-31.6	*****	44	337	.6	318	2.5	1	0600	-14.8	-36.3	14	019	6.4	018	9.5	1	0600	-25.3	*****	47	357	.9	000	2.5	1		
0900	-32.3	*****	44	005	.7	348	2.5	2	0900	-15.0	-36.5	14	016	6.7	013	8.9	2	0900	-26.2	-34.4	46	355	.9	346	1.9	2		
1200	-29.1	-45.3	19	013	.7	347	2.5	15	1200	-15.6	-36.3	15	012	3.9	013	7.6	7	1200	-24.4	-32.5	47	340	1.3	350	3.8	9		
1500	-32.1	-47.0	21	274	.5	356	2.5	1	1500	-20.5	-31.5	37	358	1.6	000	3.2	2	1500	-14.3	-26.2	36	011	3.6	012	6.3	2		
1800	-30.7	-39.7	41	160	.8	075	3.2	1	1800	-25.5	-34.5	43	264	.2	255	2.5	1	1800	-14.4	-25.7	38	010	4.9	003	8.3	1		
2100	-18.3	-29.5	37	354	2.6	006	5.7	1	2100	-27.7	-35.3	48	044	.3	014	2.5	1	2100	-13.3	-25.6	35	013	4.8	004	8.9	1		
2400	-13.5	-35.3	14	013	4.3	011	7.6	1	2400	-27.9	-35.8	47	001	.5	026	3.2	1	2400	-13.7	-25.7	36	021	4.9	010	13.3	1		

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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	DEG	M/S	MW	DEG C	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW	DEG C	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW
0300	-13.4	-25.1	37	006	6.5	007	11.4	1	0300	-29.0	*****	46	329	.4	011	1.9	1	0300	-26.9	-35.0	46	180	5.4	183	10.8	1			
0600	-20.7	-30.1	43	009	2.7	001	4.4	1	0600	-32.0	-40.0	45	254	.3	020	2.5	1	0600	-21.1	-30.9	41	190	7.6	186	12.7	1			
0900	-20.6	-29.7	44	003	2.9	003	5.1	2	0900	-29.6	*****	45	029	.2	000	2.5	2	0900	-26.8	-35.6	43	196	6.6	188	12.1	2			
1200	-19.9	-27.0	53	356	1.4	356	3.8	13	1200	-27.5	*****	47	312	.2	326	1.9	11	1200	-20.2	-39.4	16	183	3.2	179	9.5	17			
1500	-20.4	****	42	331	.5	303	1.9	2	1500	-25.9	*****	45	353	1.1	012	3.2	2	1500	-18.2	-37.8	16	200	6.1	194	14.6	2			
1800	-22.9	****	49	347	.2	190	1.9	1	1800	-29.8	-37.5	47	358	.7	017	3.2	1	1800	-21.9	-40.3	17	189	9.4	187	17.8	1			
2100	-23.9	-31.4	50	004	.8	029	2.5	1	2100	-29.3	-37.3	46	004	2.0	004	5.1	1	2100	-21.6	-40.0	17	182	11.3	185	19.0	1			
2400	-27.1	****	48	354	1.1	357	3.2	1	2400	-27.2	-35.3	46	009	1.8	014	4.4	1	2400	-21.7	-40.1	17	185	10.1	180	16.5	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	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW	DEG C	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW
0300	-25.1	-42.4	16	192	9.7	190	14.0	1	0300	-32.1	-47.0	21	354	1.8	000	7.0	1	0300	-29.9	-38.5	43	320	.9	289	4.4	1			
0600	-22.7	-40.9	17	188	7.5	177	11.4	1	0600	-31.7	-34.1	79	316	1.1	310	5.1	1	0600	-32.3	-40.7	43	337	1.4	009	5.1	2			
0900	-29.3	-45.0	20	192	3.3	181	10.2	2	0900	-30.4	-39.4	41	338	1.2	349	4.4	2	0900	-30.0	-38.8	42	001	1.7	359	4.4	2			
1200	-25.7	-42.9	18	001	2.1	021	5.1	12	1200	-28.1	-44.4	19	004	1.6	359	4.4	16	1200	-29.0	-38.4	40	349	1.3	353	3.2	4			
1500	-27.6	-44.0	19	328	1.6	341	4.4	2	1500	-27.8	*****	19	354	1.2	355	3.8	2	1500	-28.6	-32.0	72	003	1.4	005	3.8	2			
1800	-28.9	-45.1	19	000	1.3	002	3.8	1	1800	-29.4	*****	45	036	.4	202	3.2	1	1800	-28.8	*****	41	359	.4	023	1.9	2			
2100	-29.3	-45.0	20	021	.3	017	3.2	1	2100	-30.2	*****	43	357	.4	159	2.5	1	2100	-31.2	-40.1	41	012	.8	335	2.5	1			
2400	-33.4	****	21	346	.9	013	3.2	1	2400	-33.1	-41.4	43	218	.2	256	3.2	1	2400	-31.0	****	42	194	.4	255	1.9	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	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW	DEG C	M/S	MW	DEG C	DEG C	%	DEG	M/S	MW
0300	-31.8	****	43	216	.3	130	1.9	1	0300	-33.8	*****	42	347	.6	357	1.9	1	0300	-35.2	-43.2	43	360	.8	305	2.5	1			
0600	-32.5	****	44	204	.3	224	1.9	2	0600	-37.9	*****	23	262	.4	309	2.5	1	0600	-34.9	****	77	000	1.7	600	3.8	1			
0900	-32.6	****	42	202	.3	339	1.9	2	0900	-33.2	*****	42	196	.2	008	1.9	2	0900	-34.5	-42.9	42	001	1.5	003	3.2	2			
1200	-30.3	-45.9	20	182	.5	205	1.9	20	1200	-32.2	*****	43	196	.4	205	1.9	21	1200	-30.4	-38.9	43	003	1.7	011	4.4	7			
1500	-31.7	****	20	278	.2	198	2.5	2	1500	-32.0	*****	21	248	.2	202	2.5	2	1500	-24.4	-32.5	47	015	1.3	066	5.1	2			
1800	-32.0	****	45	216	.0	202	1.9	1	1800	-33.2	-41.5	43	004	.4	009	2.5	1	1800	-22.5	-30.8	47	165	5.8	162	12.7	1			
2100	-34.4	-42.8	42	181	.3	013	1.9	1	2100	-36.1	*****	43	003	1.1	004	2.5	1	2100	-21.3	-30.1	45	182	8.2	189	14.0	1			
2400	-32.8	****	44	358	.2	185	1.9	1	2400	-35.1	-43.2	43	011	1.6	019	4.4	1	2400	-21.5	-30.1	46	188	8.6	190	12.7	1			

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING January, 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 C	DEG C	DEG C	%	DEG C	DEG C	DEG C	%
	DEG, M/S	M/S	MW	DEG, M/S	DEG, M/S	DEG, M/S	%	DEG, M/S	DEG, M/S	DEG, M/S	%

0300	-19.3	-27.6	48	192	9.4	186	15.9	1	0300	-15.4	-22.2	56	021	1.8	033	3.8	1	0300	-19.4	*****	53	275	.8	245	2.5	1
0600	-19.5	-27.3	50	196	7.3	191	14.0	1	0600	-18.4	-25.0	56	013	1.7	039	3.8	1	0600	-18.2	-25.0	55	319	.6	249	2.5	1
0900	-19.4	-27.0	51	339	1.1	032	5.7	2	0900	-20.2	-27.5	52	010	1.8	033	3.8	2	0900	-18.5	-25.5	54	249	.8	342	3.2	3
1200	-17.4	-25.4	50	250	.8	006	5.1	6	1200	-17.8	-26.0	49	012	2.1	031	5.1	10	1200	-17.5	-26.2	47	250	1.2	269	3.2	11
1500	-15.7	-22.5	56	086	1.2	167	6.3	2	1500	-15.7	-23.1	53	019	1.0	029	3.2	2	1500	-19.4	-26.6	53	286	.9	349	3.2	2
1800	-17.2	-24.1	55	015	2.0	028	5.1	1	1800	-18.5	-25.1	56	213	.7	195	4.4	1	1800	-20.3	-27.0	55	353	.9	002	2.5	1
2100	-15.8	-22.4	57	022	2.6	020	5.1	1	2100	-18.6	-25.4	55	277	.3	202	3.8	1	2100	-23.1	*****	51	306	.8	342	1.9	1
2400	-15.2	-22.6	53	030	2.4	034	4.4	1	2400	-19.2	-26.2	54	277	.7	218	1.9	1	2400	-23.1	-30.7	50	007	.8	349	2.5	1

DAY 31

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 C	DEG C	DEG C	%
	DEG, M/S	M/S	MW	DEG, M/S	DEG, M/S	DEG, M/S	%

0300	-22.7	-30.3	50	009	1.6	017	3.2	1
0600	-23.4	-31.2	49	009	1.0	010	2.5	1
0900	-22.7	*****	50	005	1.3	001	3.2	2
1200	-19.6	-26.3	55	359	.8	344	1.9	20
1500	-20.6	-27.9	52	352	.8	004	2.5	2
1800	-20.5	-27.6	53	010	1.3	015	2.5	1
2100	-22.7	-30.1	51	354	1.1	006	3.2	1
2400	-22.7	-30.1	51	005	1.1	009	3.2	1

## R &amp; M CONSULTANTS, INC.

## SALISI TINA HYDROELECTRIC PROJECT

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

DAY	MAX. TEMP. DEG C			RES. TEMP. DEG C			RES. WIND DIR. DEG			AVG. WIND SPD. M/S			MAX. GUST SPD. M/S			MAX. P'VAL DIR. RH %			DAY'S SOLAR ENERGY WH/SDM		
	MAX. TEMP. DEG C	MIN. TEMP. DEG C	MEAN TEMP. DEG C	WIND DIR. DEG	WIND SPD. M/S	WIND DIR. DEG	GUST DIR. DEG	GUST SPD. M/S	P'VAL DIR. RH %	MEAN DEG C	MEAN DP MM	PRECIP MM									
1	-26.1	-33.6	-29.9	194	.2	.8	139	3.2	SSW	46	-37.7	****	535	1							
2	-26.0	-30.4	-28.2	205	.3	.6	213	2.5	SSW	45	-37.4	****	505	2							
3	-29.6	-33.9	-31.8	311	.2	.6	116	1.9	N	43	-39.6	****	568	3							
4	-17.4	-31.2	-24.3	019	.7	1.5	137	8.3	NNE	49	-28.8	****	403	4							
5	-18.3	-29.0	-23.7	011	7.7	7.8	359	14.6	N	83	-41.0	****	341	5							
6	-28.4	-39.8	-34.1	014	1.5	2.3	015	8.9	NNE	22	-45.1	****	435	6							
7	-33.1	-42.4	-37.8	346	.7	1.3	345	3.8	N	23	-39.8	****	540	7							
8	-22.2	-42.2	-32.2	353	1.6	2.1	359	5.7	N	24	-42.4	****	603	8							
9	-19.0	-25.8	-22.4	150	3.6	4.6	138	12.1	SSE	21	-38.6	****	413	9							
10	-18.1	-23.3	-20.7	035	1.1	1.8	166	8.3	NNE	43	-30.0	****	445	10							
11	-16.8	-21.6	-19.2	011	1.4	1.5	018	5.1	NNE	54	-26.7	****	408	11							
12	-15.3	-20.9	-18.1	359	.8	1.2	025	3.8	N	56	-24.0	****	375	12							
13	-11.4	-24.7	-18.1	008	1.6	2.1	266	7.6	N	45	-28.7	****	688	13							
14	-16.8	-29.5	-23.2	150	1.1	3.1	153	13.3	N	31	-36.6	****	578	14							
15	-20.3	-31.6	-26.0	145	.2	2.1	192	11.4	N	37	-39.5	****	433	15							
16	-13.4	-33.7	-23.6	004	1.1	1.6	011	7.6	N	36	-37.6	****	733	16							
17	-13.0	-27.9	-20.5	014	3.2	3.6	018	9.5	NNE	29	-34.2	****	598	17							
18	-11.7	-30.7	-21.2	010	2.6	2.9	010	13.3	N	42	-29.7	****	495	18							
19	-12.4	-27.1	-19.8	003	2.0	2.2	007	11.4	N	40	-30.2	****	715	19							
20	-23.4	-32.0	-27.7	357	.8	1.2	004	5.1	N	46	-36.4	****	630	20							
21	-17.7	-29.4	-23.5	188	7.4	7.7	185	19.0	S	28	-37.0	****	823	21							
22	-21.9	-33.4	-27.7	198	1.9	3.6	190	14.0	N	19	-43.6	****	648	22							
23	-24.3	-34.4	-29.4	350	.9	1.3	000	7.0	N	34	-41.7	****	845	23							
24	-25.4	-33.5	-29.5	350	.9	1.2	009	5.1	N	41	-40.4	****	540	24							
25	-27.0	-35.6	-31.3	206	.2	.7	198	2.5	S	37	-42.8	****	1059	25							
26	-28.7	-38.1	-33.4	350	.4	1.0	019	4.4	N	39	-41.7	****	1078	26							
27	-21.0	-36.3	-28.7	178	1.9	3.8	189	14.0	N	44	-35.5	****	493	27							
28	-13.5	-22.6	-18.1	187	1.1	3.7	186	15.9	NNE	52	-25.0	****	445	28							
29	-14.5	-21.2	-17.9	006	1.0	1.6	031	5.1	N	53	-24.9	****	603	29							
30	-16.6	-23.8	-20.2	297	.6	1.2	342	3.2	NNW	52	-26.8	****	715	30							
31	-15.1	-25.0	-20.1	004	1.1	1.2	017	3.2	N	52	-29.5	****	940	31							
MONTH	-11.4	-42.4	-25.2	016	.4	2.3	185	19.0	N	41	-35.3	****	18622								

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 13.3

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 13.3

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 16.5

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 \*\*\*\*

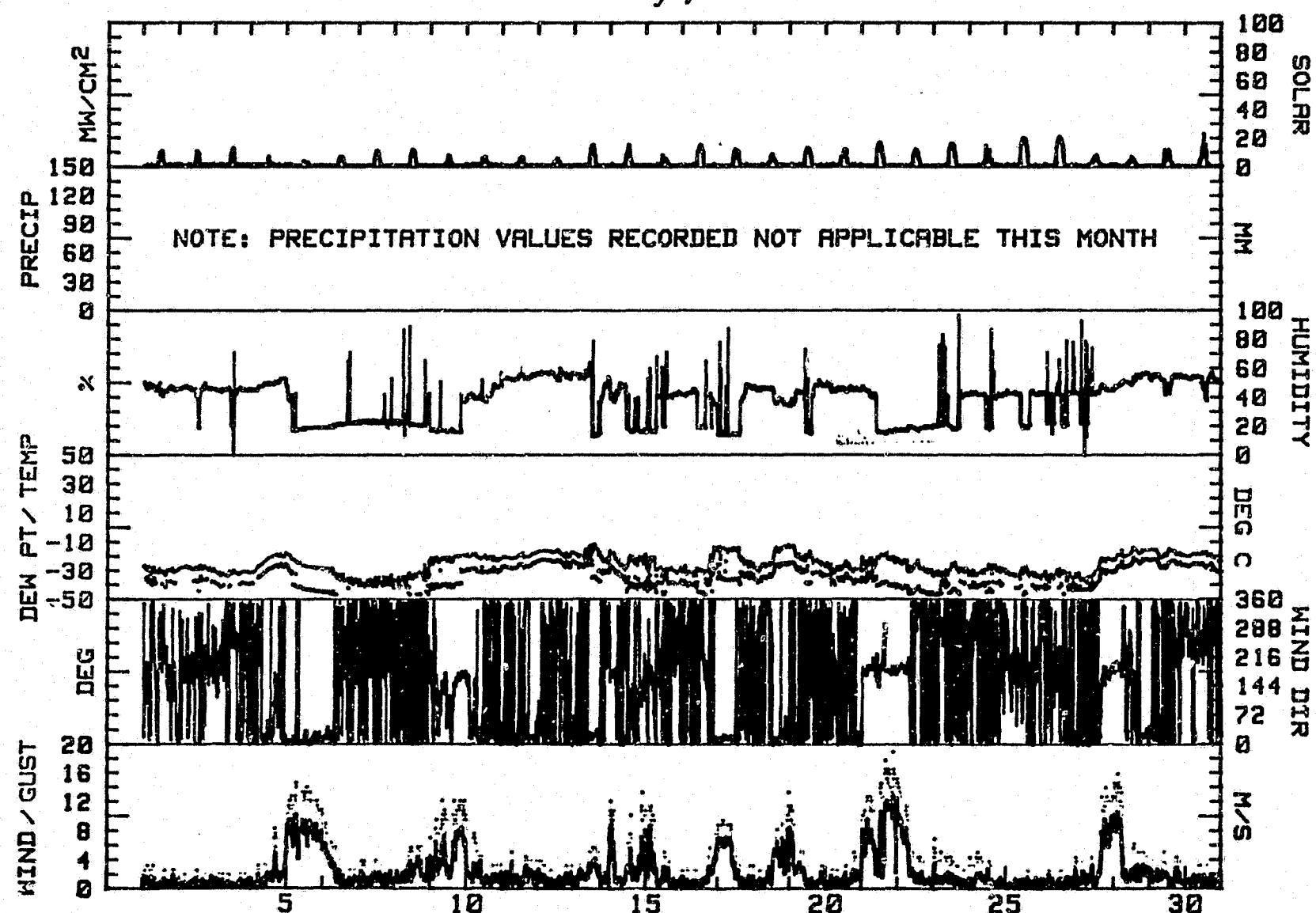
R & M CONSULTANTS, INC.  
SUBSIDIARY HYDRO ELECTRIC PROJECT

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

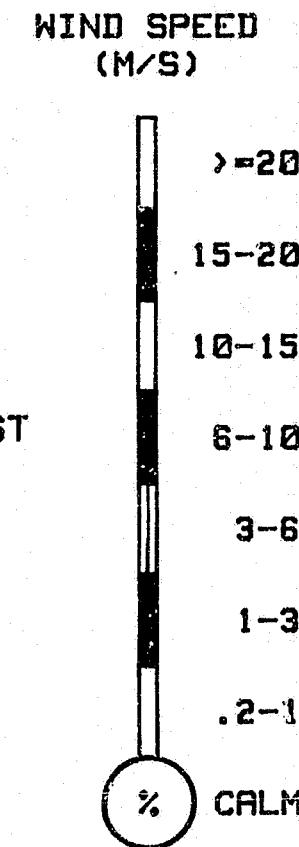
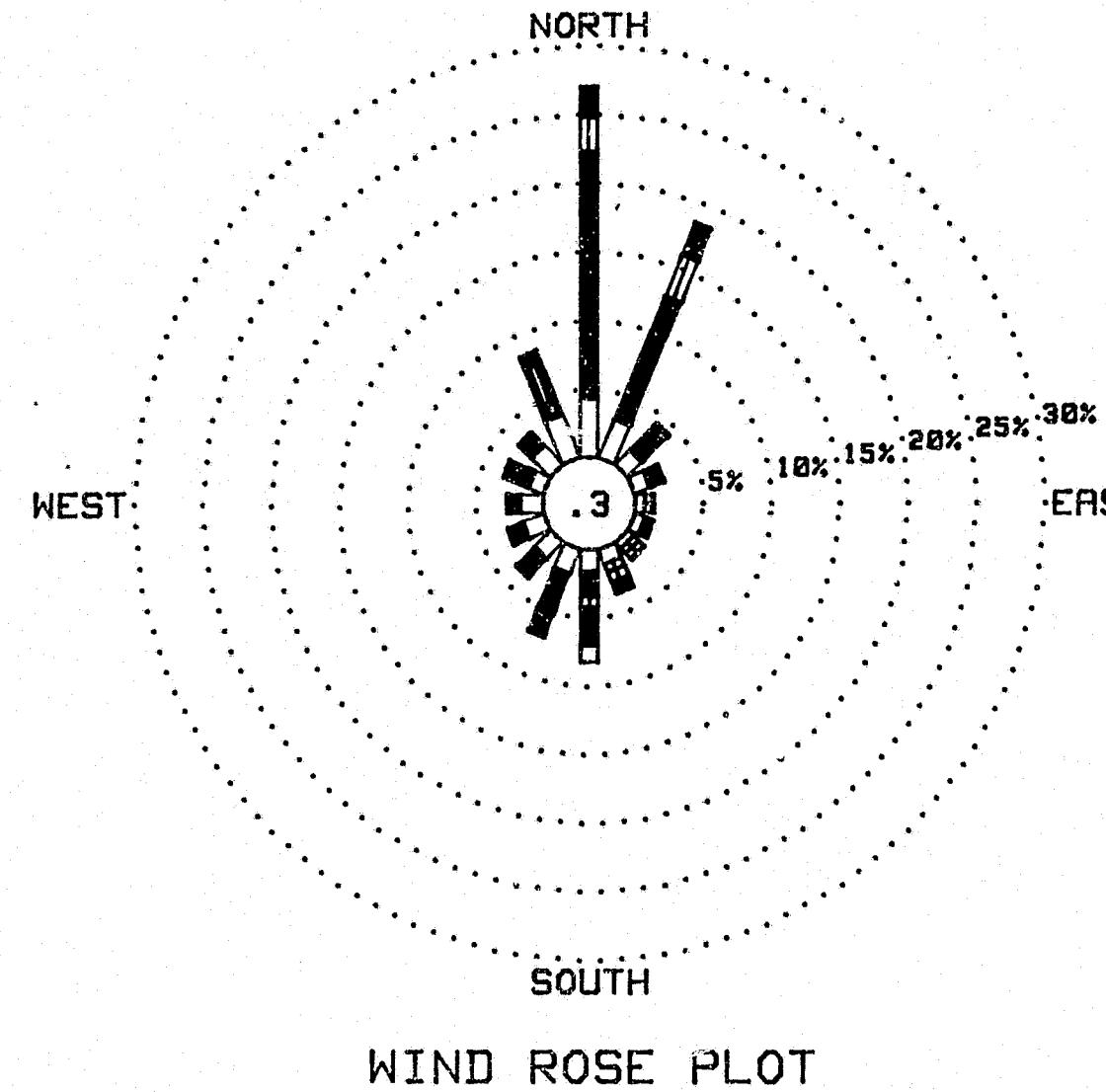
DIRECTION	0.2	1.0	3.0	6.0	10.0	15.0	20.0	DR	TOTAL
	TO	TO	TO	TO	TO	TO	GREATER		
N	4.31	17.95	2.46	2.16	.07	0.00	0.00	26.95	
NNE	5.07	9.67	3.20	2.53	0.00	0.00	0.00	18.46	
NE	1.52	2.53	.27	0.00	0.00	0.00	0.00	4.31	
ENE	1.21	.98	.13	0.00	0.00	0.00	0.00	2.32	
E	.74	.57	.13	0.00	0.00	0.00	0.00	1.45	
ESE	.84	.34	.34	0.00	0.00	0.00	0.00	1.52	
SE	.61	.51	.54	.10	0.00	0.00	0.00	1.75	
SSE	1.15	.64	.84	.64	0.00	0.00	0.00	3.47	
S	1.58	1.82	.81	2.80	1.21	0.00	0.00	8.22	
SSW	1.92	2.86	.37	1.65	.13	0.00	0.00	6.94	
SW	1.68	1.82	.10	.03	0.00	0.00	0.00	3.64	
WSW	1.68	1.18	.03	0.00	0.00	0.00	0.00	2.90	
W	1.68	.91	.13	0.00	0.00	0.00	0.00	2.73	
WNW	1.25	1.95	.07	0.00	0.00	0.00	0.00	3.27	
NW	1.99	1.38	0.00	0.00	0.00	0.00	0.00	3.37	
NNW	3.44	4.85	.13	0.00	0.00	0.00	0.00	8.42	
CALM	-----	-----	-----	-----	-----	-----	-----	-----	.30
TOTAL	28.66	49.95	9.57	10.10	1.41	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2969 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



No precipitation data for February

(See INTERPRETING DATA).

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING February, 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					
	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	MW

0300	-17.6	-24.5	55	302	.7	230	4.4	1	0300	-4.9	-11.7	59	182	5.0	176	8.3	1	0300	0.0	-8.0	55	182	6.2	192	10.2	1
0600	-16.2	-22.5	58	245	1.8	202	5.1	1	0600	-7.1	-12.9	63	184	5.8	192	8.9	1	0600	-2.2	-9.1	59	181	6.6	181	10.2	1
0900	-10.1	-16.0	62	196	3.7	188	7.6	2	0900	-3.9	-11.2	57	176	5.2	174	8.3	3	0900	-.5	-7.7	58	194	5.2	177	9.5	4
1200	-10.1	-16.2	61	179	6.4	182	9.5	7	1200	-3.2	-10.7	56	182	7.9	177	12.7	9	1200	.8	-6.1	60	193	5.1	203	8.9	8
1500	-6.2	-12.5	61	196	3.1	193	5.7	3	1500	-2.8	-10.1	57	184	8.7	183	12.7	3	1500	1.4	-5.9	58	201	4.9	201	9.5	3
1800	-6.3	-13.0	59	180	1.1	187	5.1	1	1800	-4.0	-10.8	59	189	9.1	183	13.3	1	1800	2.0	-5.4	58	185	4.8	186	10.8	1
2100	-7.6	-14.4	58	155	3.7	156	10.2	1	2100	-3.2	-10.3	58	194	9.2	190	14.6	1	2100	2.6	-4.8	58	189	7.2	179	10.8	1
2400	-5.8	-12.5	59	176	3.8	179	7.0	1	2400	-3.0	-10.1	58	180	6.7	185	12.1	1	2400	.9	****	62	187	3.9	190	8.9	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					
	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	MW

0300	1.1	****	65	131	.5	161	1.9	1	0300	-2.5	****	63	***	****	***	****	1	0300	-9.7	****	61	***	****	***	****	1
0600	.3	****	67	315	.2	009	1.9	1	0600	-5.9	****	62	***	****	***	****	1	0600	-12.2	****	60	***	****	***	****	1
0900	1.6	****	66	360	1.2	018	1.9	2	0900	-7.4	****	62	***	0.0	***	0.0	3	0900	-12.6	****	61	***	****	***	****	3
1200	1.8	-4.9	61	357	1.9	350	3.8	7	1200	-5.0	****	64	***	0.0	***	0.0	24	1200	-7.4	****	63	***	****	***	****	21
1500	3.0	-4.9	56	010	2.4	343	5.1	6	1500	-2.6	****	62	***	0.0	248	.6	4	1500	-6.5	****	58	350	.4	347	1.9	12
1800	.9	-4.7	66	009	2.9	356	5.1	1	1800	-4.2	****	63	***	****	***	****	1	1800	-8.5	****	60	***	****	***	****	1
2100	.1	****	63	004	3.1	004	6.3	1	2100	-6.7	****	62	***	****	***	****	1	2100	-9.8	****	61	***	****	***	****	1
2400	-.4	****	66	250	1.1	244	1.9	0	2400	-8.0	****	62	***	****	***	****	1	2400	-7.8	-14.0	61	***	****	***	****	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					
	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	MW

0300	-6.5	-13.0	60	***	****	***	****	1	0300	-13.5	****	59	***	****	***	****	1	0300	-3.6	-12.3	51	351	8.5	353	12.7	1
0600	-5.3	-12.0	59	***	****	***	****	1	0600	-15.7	****	58	***	****	***	****	1	0600	-5.0	-13.6	51	348	8.6	349	12.7	1
0900	-10.7	-16.7	61	***	****	***	****	3	0900	-12.6	-18.7	60	***	****	***	****	4	0900	-5.0	-15.7	43	351	9.8	349	14.6	4
1200	-6.1	****	50	002	1.4	008	3.2	27	1200	-7.5	-13.3	63	149	2.6	149	5.7	7	1200	-4.5	-17.1	37	360	7.7	358	12.7	23
1500	-7.6	-15.6	53	284	.4	199	4.4	10	1500	-8.4	****	61	***	****	***	****	2	1500	-6.1	-18.9	36	359	9.4	350	17.8	4
1800	-7.5	****	62	***	****	***	****	1	1800	-7.0	-13.0	62	***	****	***	****	1	1800	-6.8	-18.9	38	009	6.7	000	12.1	2
2100	-10.4	****	61	***	****	***	****	1	2100	-5.0	-11.8	59	***	****	***	****	1	2100	-7.4	-19.1	39	016	3.4	011	9.5	2
2400	-10.8	****	61	***	****	***	****	1	2400	-2.8	-9.9	58	118	6.9	118	10.2	1	2400	-8.4	-20.6	37	010	6.2	003	13.3	1

R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING February, 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.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	DEG C	%	DEG C	DEG C	DEG C	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
			M/S	M/W											M/W

0300	-9.8	-21.9	37	011	6.0	009	11.4	1	0300	-21.9	-31.9	40	007	2.8	016	6.3	1	0300	-27.1	-36.2	42	356	1.5	355	4.4	1
0600	-10.9	-23.2	36	023	7.2	021	13.3	1	0600	-21.7	-32.0	39	356	1.8	013	3.8	2	0600	-27.8	*****	44	001	.9	031	3.2	1
0900	-12.1	-24.6	35	012	8.5	009	13.3	4	0900	-24.0	-33.3	42	327	.8	345	4.4	4	0900	-29.9	-38.3	44	354	1.1	325	3.2	4
1200	-11.5	-34.4	13	005	5.3	004	10.2	22	1200	-20.3	*****	16	147	.4	184	4.4	24	1200	-24.6	-42.0	18	346	.9	357	3.8	30
1500	-11.2	-34.2	13	001	6.2	001	8.9	8	1500	-14.9	-36.4	14	008	.8	002	5.7	9	1500	-20.1	-39.4	16	219	.9	213	1.9	15
1800	-14.1	-37.3	12	003	4.4	000	8.9	1	1800	-20.6	-31.6	37	052	1.1	139	5.1	1	1800	-22.5	*****	17	214	.6	206	2.5	1
2100	-15.4	-36.1	15	012	2.9	005	5.7	1	2100	-23.5	-33.6	39	352	1.6	003	5.7	1	2100	-23.2	*****	17	106	.1	260	1.9	1
2400	-17.6	-29.2	36	018	2.6	016	4.4	1	2400	-23.5	-33.6	39	005	2.4	330	5.1	1	2400	-22.5	-40.8	17	180	.7	182	3.2	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 C	DEG C	DEG C	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD		
			M/S	M/W												M/W	

0300	-27.3	-36.3	42	326	.5	213	2.5	1	0300	-26.5	-35.4	43	276	.6	214	3.2	1	0300	-28.7	-45.0	19	001	7.5	005	12.1	1
0600	-26.9	*****	43	008	.8	336	2.5	1	0600	-24.0	-32.6	45	029	.6	013	3.2	1	0600	-29.1	-45.3	19	359	8.3	003	12.1	1
0900	-25.9	*****	41	307	.6	327	3.2	8	0900	-19.4	-29.7	46	358	1.3	009	3.8	7	0900	-28.9	-45.1	19	000	9.0	002	12.1	6
1200	-22.2	-32.7	38	344	1.1	357	3.8	12	1200	-22.0	-32.6	38	010	6.1	019	11.4	13	1200	-27.9	-44.3	19	002	6.7	357	10.2	18
1500	-22.8	-42.8	14	003	4.6	356	9.5	5	1500	-25.1	-42.4	18	015	8.2	017	14.0	6	1500	*****	*****	**	004	6.0	359	9.5	***
1800	-14.7	-36.2	14	006	4.3	006	7.6	1	1800	-26.7	-43.3	19	016	7.2	022	13.3	1	1800	-29.2	-44.9	20	013	4.8	009	7.6	1
2100	-14.3	-35.9	14	013	3.5	010	5.7	1	2100	-27.8	*****	19	015	7.5	020	12.1	1	2100	-29.5	-45.2	20	014	4.9	009	7.6	1
2400	-24.2	-34.0	40	353	.3	013	5.1	1	2400	-28.7	-45.0	19	001	8.2	001	13.3	1	2400	-30.6	-46.1	20	011	6.3	357	11.4	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	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD
DEG C	DEG C	%	DEG C	DEG C	DEG C	POINT RH	DIR.	SPD.	DIR.	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST RAD		
			M/S	M/W												M/W	

0300	-28.6	-44.9	19	360	9.7	359	14.1	1	0300	-28.4	-37.3	42	012	1.0	359	4.4	1	0300	-26.7	-35.3	44	003	2.5	005	5.1	1
0600	-28.5	-44.8	19	263	1.8	009	9.5	1	0600	-28.4	-37.6	41	324	1.4	254	5.1	1	0600	-26.4	-35.0	44	063	4.9	007	8.9	2
0900	-28.2	-30.4	81	014	2.2	056	5.1	8	0900	-24.9	-34.7	40	001	1.1	007	3.2	11	0900	-25.1	-33.9	44	001	4.6	000	7.0	8
1200	-27.1	-43.6	19	343	1.7	356	5.1	17	1200	-23.6	*****	17	288	.7	311	3.8	14	1200	-20.9	-31.3	39	004	6.9	007	13.3	20
1500	-21.4	-39.9	17	190	.9	164	9.5	11	1500	-22.8	-41.0	17	339	.8	355	3.2	10	1500	-22.0	-40.4	17	002	11.0	010	14.6	12
1800	-27.2	-36.7	40	003	2.1	358	3.8	1	1800	-25.4	-33.9	45	283	.5	359	3.2	1	1800	-23.6	-41.7	17	000	11.5	002	15.9	1
2100	-26.3	-36.2	39	351	1.4	358	5.1	1	2100	-26.2	-34.9	44	359	2.8	003	6.3	2	2100	-23.3	-41.4	17	000	10.3	001	14.6	1
2400	-27.4	-36.7	41	351	2.0	000	7.6	1	2400	-26.1	-34.8	44	360	3.1	358	6.3	2	2400	-23.9	-41.4	18	002	8.7	008	12.1	1

## R &amp; M CONSULTANTS, INC.

## SUBSTITUTION HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING February, 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	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW
	%	DEG.			%	DEG.			%	DEG.	

0300 -24.9 -42.2 18 001 8.0 000 10.8 1 0300 -23.4 -41.5 17 012 6.5 006 10.8 1 0300 -25.6 -42.8 18 034 5.1 039 8.3 1
0600 -25.9 -43.1 18 003 7.1 005 10.8 1 0600 -24.6 -42.0 18 009 6.9 004 10.2 1 0600 -26.1 -43.3 18 034 4.4 037 7.0 1
0900 -26.0 -43.2 18 005 6.3 002 9.5 7 0900 -25.0 -42.3 18 028 4.7 023 7.0 7 0900 -26.1 -43.3 18 034 4.6 030 7.0 4
1200 -24.7 -42.1 18 007 6.0 011 9.5 19 1200 -22.7 -40.9 17 014 6.3 015 8.9 27 1200 -23.7 -41.2 18 026 5.0 025 8.3 29
1500 -24.0 -41.5 18 001 6.9 000 10.8 11 1500 -22.7 -40.9 17 014 6.6 009 8.9 15 1500 -23.6 -41.7 17 010 5.6 001 12.1 14
1800 -25.2 -42.5 18 005 7.0 359 11.4 1 1800 -25.2 -42.5 18 022 6.4 017 10.8 1 1800 -25.6 -42.8 18 014 7.0 006 11.4 1
2100 -25.2 -42.5 18 011 4.2 006 9.5 1 2100 -25.3 -42.6 18 029 5.7 029 8.3 1 2100 -27.1 -43.6 19 006 6.6 000 11.4 1
2400 -23.3 -41.4 17 015 4.0 024 7.6 1 2400 -25.1 -42.4 18 028 6.1 026 9.5 1 2400 -28.7 -45.0 19 019 4.7 010 7.0 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	DEG C	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW
	%	DEG.			%	DEG.			%	DEG.	

0300 -28.1 -44.4 19 019 4.1 021 6.3 1 0300 -34.3 ***** 21 355 1.4 359 4.4 1 0300 -31.3 ***** 20 339 .2 302 3.2 1
0600 -33.8 ***** 21 013 3.8 025 7.0 1 0600 -35.1 ***** 22 351 1.8 351 4.4 1 0600 -33.0 ***** 21 357 .9 008 2.5 1
0900 -35.8 ***** 22 198 .8 212 3.8 4 0900 -34.6 ***** 21 268 .3 000 3.2 4 0900 -33.7 ***** 21 344 .8 356 2.5 4
1200 -27.8 ***** 19 350 .7 035 1.9 29 1200 -25.9 -43.1 18 004 .7 209 3.2 32 1200 -25.2 -42.5 18 012 .1 357 2.5 33
1500 -26.1 ***** 18 277 .4 353 2.5 15 1500 -23.3 -41.4 17 353 2.2 005 5.1 15 1500 -24.6 -42.0 18 357 2.2 358 4.4 16
1800 -29.2 -44.9 20 191 .7 172 3.2 1 1800 -29.7 -45.3 20 009 1.1 028 5.7 1 1800 -26.3 -43.4 18 359 1.0 349 3.8 1
2100 -31.1 -46.5 20 025 .5 230 2.5 1 2100 -25.3 -42.6 18 004 2.6 357 5.1 1 2100 -23.9 ***** 18 190 .6 177 3.2 1
2400 -32.3 ***** 21 004 .5 209 1.9 1 2400 -29.8 -45.4 20 346 .9 344 3.8 1 2400 -29.4 -45.1 20 352 .9 347 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	DEG C	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW	NDNG TEMP. POINT RH DIR. SPD. DIR. GUST RAD	DEG C	M/S	MW
	%	DEG.			%	DEG.			%	DEG.	

0300 -30.7 -46.2 20 349 1.7 355 3.8 1 0300 -27.8 ***** 19 307 .2 312 2.5 1 0300 -22.5 ***** 17 345 .8 206 3.2 1
0600 -30.3 -45.9 20 358 1.7 006 4.4 1 0600 -28.7 ***** 19 000 .5 335 1.9 1 0600 -19.2 -38.6 16 011 .5 104 1.9 1
0900 -27.2 -43.7 19 356 1.3 005 3.2 5 0900 -30.6 ***** 20 158 .1 346 2.5 5 0900 -22.4 -40.7 17 338 1.1 358 3.8 8
1200 -23.4 -41.5 17 326 1.0 004 3.8 31 1200 -22.1 -40.4 17 345 .6 002 2.5 32 1200 -15.8 -36.5 15 302 .3 208 3.2 30
1500 -20.4 -39.6 16 351 2.2 336 4.4 16 1500 -18.9 -38.4 15 349 1.3 346 3.2 17 1500 -12.6 ***** 14 333 .9 345 3.2 15
1800 -23.3 -41.4 17 357 1.6 357 3.2 1 1800 -23.6 -41.7 17 347 1.0 274 3.2 1 1800 -15.1 ***** 14 161 .4 199 2.5 1
2100 -26.1 -43.3 18 353 1.3 357 3.8 1 2100 -22.0 ***** 17 260 .6 337 4.4 1 2100 -16.8 ***** 15 087 .3 018 1.9 1
2400 -25.8 -43.0 18 027 .6 008 3.8 1 2400 -24.8 -42.2 18 350 .7 359 3.8 1 2400 -19.0 -38.5 16 076 .3 164 1.9 1

R & M CONSULTANTS, INC.  
SUSITNA HYDRO ELECTRIC PROJECT

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

DAY 28

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

0300	-22.7	*****	17	211	.7	230	2.5	1
0600	-26.2	-36.1	39	004	.2	177	2.5	1
0900	-20.2	*****	16	357	1.0	306	3.2	6
1200	-16.0	*****	15	276	.4	303	2.5	34
1500	-15.7	-36.4	15	335	.9	327	2.5	18
1800	-18.5	*****	16	002	1.6	000	3.2	1
2100	-21.7	-40.1	17	068	.3	132	2.5	1
2400	-23.9	*****	40	353	.8	356	2.5	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY	MAX.			RES.			AVG.			MAX.			MAX.			DAY'S		
	TEMP. DEG C	MIN. DEG C	MEAN DEG C	WIND DIR.	WIND SPD. M/S	WIND DIR. SPD. M/S	GUST DIR. SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DEG C	DP MM	PRECIP	SOLAR ENERGY WH/SQM	DAY				
1	-5.7	-22.8	-14.3	186	2.7	3.4	156	10.2	S 59	-17.0	****	568	1					
2	-8	-9.1	-5.0	185	7.2	7.3	190	14.6	S 58	-11.0	****	730	2					
3	3.7	-5.0	-7	188	5.5	5.6	186	10.8	S 59	-7.0	****	633	3					
4	3.0	-9	1.1	005	1.6	1.7	004	6.3	N 64	-4.8	****	633	4					
5	-8	-8.0	-4.4	***	0.0	0.0	248	.6	*** **	****	****	1060	5					
6	-3.8	-13.1	-8.5	350	.4	.4	347	1.9	NNW 60	-14.8	****	1313	6					
7	-5.0	-10.9	-8.0	322	.5	1.6	199	4.4	N 59	-14.3	****	1258	7					
8	-2.8	-15.7	-9.3	126	4.6	1.9	118	10.2	ESE 60	-14.4	****	510	8					
9	-2.8	-8.4	-5.6	358	7.4	7.6	350	17.8	N 43	-16.4	****	1118	9					
10	-7.9	-17.6	-12.8	011	5.4	5.5	021	13.3	N 27	-29.0	****	1145	10					
11	-14.5	-25.9	-20.2	006	1.3	2.0	016	6.3	N 31	-33.8	****	1367	11					
12	-19.8	-30.1	-25.0	334	.3	1.3	355	4.4	N 31	-38.3	****	1576	12					
13	-11.7	-29.4	-20.6	002	1.9	2.4	356	9.5	N 26	-35.2	****	1093	13					
14	-19.0	-28.7	-23.9	010	4.8	5.1	017	14.0	N 32	-37.7	****	887	14					
15	-27.6	-30.6	-29.1	004	6.8	6.9	005	12.1	N 20	-44.8	****	1119	15					
16	-21.4	-48.9	-35.2	355	1.9	3.3	359	14.1	N 29	-40.3	****	1346	16					
17	-22.2	-29.8	-26.0	348	1.3	1.8	003	6.3	N 40	-36.1	****	1225	17					
18	-19.7	-27.8	-23.8	002	7.6	7.6	002	15.9	N 32	-37.1	****	1510	18					
19	-23.3	-28.2	-25.8	005	6.2	6.2	359	11.4	N 18	-42.4	****	1365	19					
20	-22.4	-25.6	-24.0	019	6.1	6.2	006	10.8	NNE 18	-41.7	****	1813	20					
21	-23.1	-28.7	-25.9	021	5.3	5.4	001	12.1	NNE 18	-42.8	****	1690	21					
22	-24.4	-35.8	-30.1	011	1.0	1.8	025	7.0	NNE 20	-45.0	****	1728	22					
23	-21.4	-36.8	-29.1	355	1.3	1.7	028	5.7	N 20	-43.7	****	1870	23					
24	-21.8	-36.6	-29.2	353	.7	1.4	358	4.4	N 19	-43.8	****	1910	24					
25	-18.9	-33.5	-26.2	353	1.4	1.7	006	4.4	N 18	-43.1	****	1933	25					
26	-18.6	-31.8	-25.2	339	.5	1.2	337	4.4	N 18	-41.7	****	2003	26					
27	-10.9	-24.4	-17.7	352	.4	1.1	358	3.8	N 16	-39.3	****	1923	27					
28	-12.9	-26.2	-19.6	346	.5	1.1	306	3.2	N 21	-38.4	****	2109	28					
MONTH	3.7	-48.9	-18.7	005	1.9	3.3	350	17.8	N 33	-31.6	****	37233						

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 12.7

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 15.2

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 17.8

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 \*\*\*\*

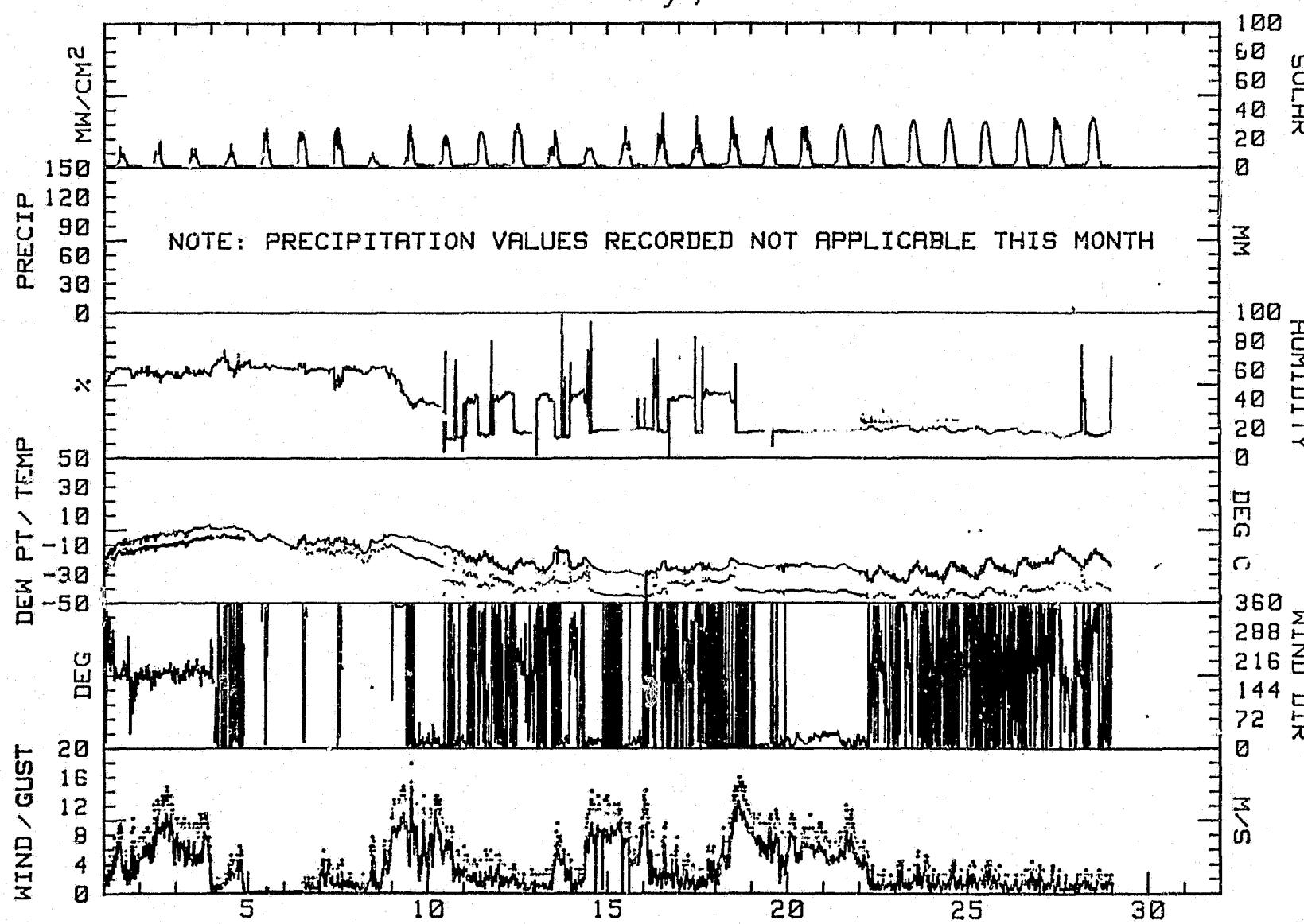
R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

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

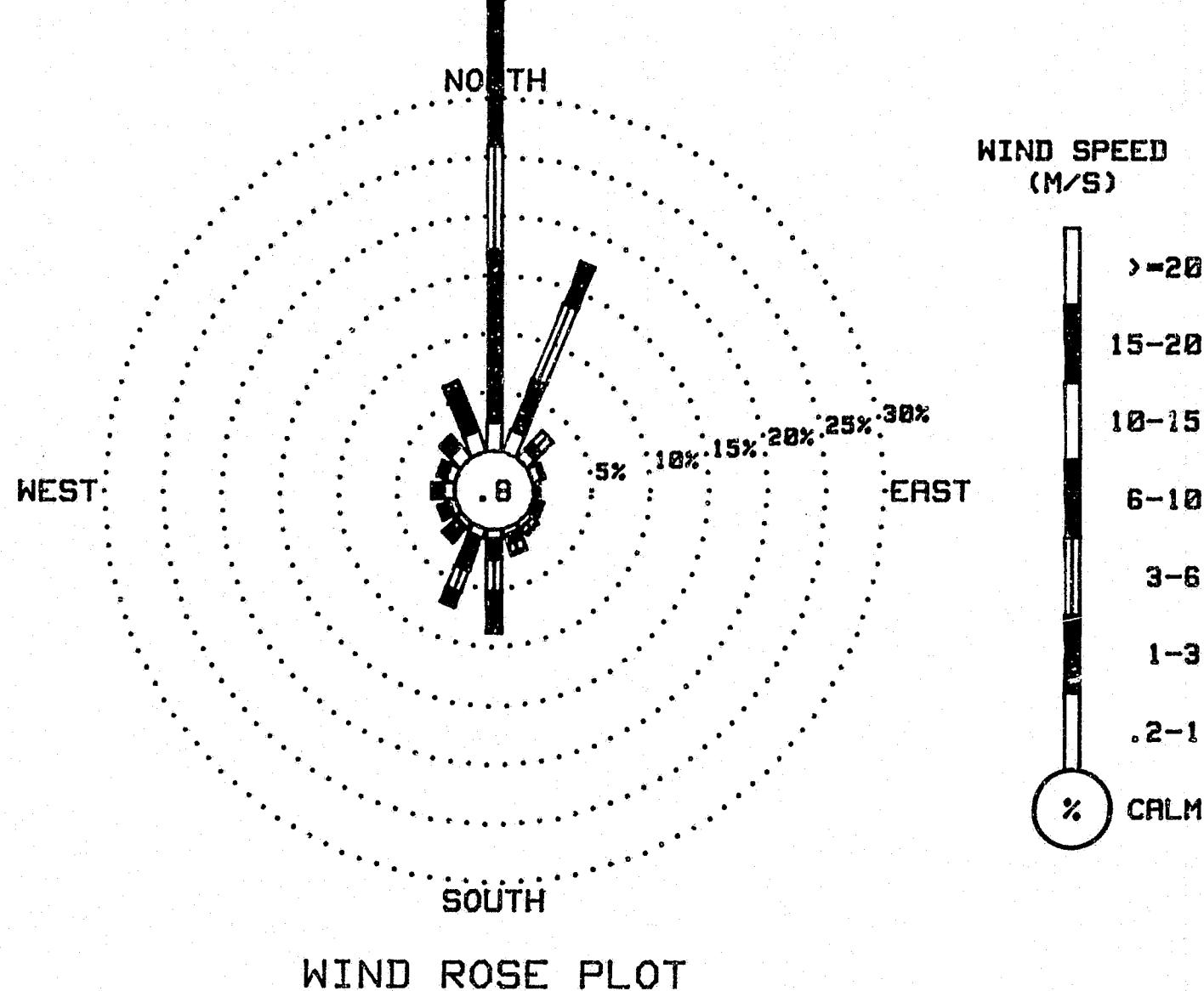
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	2.38	14.71	8.78	12.38	1.82	0.00	0.00	40.07	
NNE	1.95	4.67	6.97	3.63	.17	0.00	0.00	17.40	
NE	1.00	.74	1.34	0.00	0.00	0.00	0.00	3.07	
ENE	.82	.26	0.00	0.00	0.00	0.00	0.00	1.08	
E	.13	.43	0.00	0.00	0.00	0.06	0.00	.56	
ESE	.48	.48	0.00	.04	0.00	0.00	0.00	1.00	
SE	.56	.61	.17	0.00	0.00	0.00	0.00	1.34	
SSE	.56	.78	.82	.17	0.00	0.00	0.00	2.34	
S	.82	1.69	2.73	3.25	.26	0.00	0.00	8.74	
SSW	.82	2.94	1.99	1.25	.04	0.00	0.00	7.05	
SW	.56	1.51	.17	0.00	0.00	0.00	0.00	2.25	
WSW	.61	.95	.04	0.00	0.00	0.00	0.00	1.60	
W	1.00	.91	.09	0.00	0.00	0.00	0.00	1.99	
WNW	.91	.69	.09	0.00	0.00	0.00	0.00	1.69	
NW	1.34	1.25	0.00	0.00	0.00	0.00	0.00	2.60	
NNW	1.86	3.85	.13	.48	.13	0.00	0.00	6.45	
CALM	-----	-----	-----	-----	-----	-----	-----	.78	
TOTAL	15.79	36.48	23.32	21.20	2.42	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2311 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



No Precipitation data for March  
(See INTERPRETING DATA) ?

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING March, 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
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	

0300	-26.1	-35.5	41	356	.6	011	2.5	1	0300	-24.0	****	18	082	.3	014	3.8	1	0300	-24.3	****	18	004	.5	216	1.9	1
0600	-27.9	-36.4	44	174	.1	197	2.5	1	0600	-25.0	****	18	004	1.5	013	5.1	1	0600	-26.9	-43.4	19	332	.3	348	1.9	1
0900	-24.0	-41.5	18	002	1.0	359	2.5	6	0900	-26.2	-43.3	18	337	.5	025	2.5	5	0900	-27.5	****	19	005	.9	027	2.5	5
1200	-19.1	****	16	335	.8	215	3.8	40	1200	-16.9	-37.4	15	324	.6	189	2.5	35	1200	-17.7	****	15	357	.8	006	1.9	36
1500	-13.8	-35.5	14	353	1.4	353	3.2	19	1500	-13.6	-35.4	14	349	1.5	327	4.4	20	1500	-13.9	-35.6	14	357	1.5	007	3.2	20
1800	-17.8	****	15	319	.5	353	3.8	1	1800	-16.2	****	15	332	.8	331	2.5	1	1800	-18.9	-38.4	16	002	1.2	066	4.4	1
2100	-19.9	-39.2	16	017	1.2	357	3.2	1	2100	-21.6	-40.0	17	217	.2	197	2.5	1	2100	-21.2	****	17	356	1.1	331	4.4	1
2400	-20.2	-39.4	16	035	.8	359	2.5	1	2400	-23.1	-41.3	17	242	.2	173	1.9	1	2400	-21.4	****	17	329	.6	339	1.9	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	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	-25.1	****	18	337	.2	186	1.9	1	0300	-17.9	****	15	200	1.2	202	3.2	1	0300	-13.8	-25.8	36	007	.7	012	3.2	1
0600	-26.5	-35.9	41	256	.1	192	2.5	1	0600	-18.9	-30.0	37	207	1.0	202	2.5	1	0600	-14.2	-25.5	38	008	1.3	004	3.2	1
0900	-26.3	-35.9	40	106	.2	136	3.2	6	0900	-16.5	****	15	214	.7	240	1.9	15	0900	-13.2	-25.2	36	040	1.2	043	5.1	16
1200	-18.9	-38.4	16	344	.7	061	2.5	32	1200	-10.2	****	13	177	.9	189	4.4	29	1200	-9.5	-33.6	12	008	1.4	274	3.8	28
1500	-16.0	****	15	312	.7	357	1.9	13	1500	-9.5	-33.6	12	186	3.7	184	6.3	13	1500	-8.9	-21.7	35	175	3.6	181	8.9	13
1800	-16.2	-36.8	15	199	1.0	197	2.5	1	1800	-10.3	-33.5	13	172	2.5	194	6.3	1	1800	-9.7	-17.7	52	180	4.9	178	8.9	1
2100	-15.6	****	15	238	.1	239	2.5	1	2100	-11.5	-34.4	13	170	1.1	202	6.3	1	2100	-8.8	-16.7	53	174	4.5	180	7.6	1
2400	-16.5	-37.0	15	016	.1	205	1.9	1	2400	-11.8	-34.7	13	023	1.4	048	4.4	1	2400	-8.3	-15.7	55	167	3.2	173	6.3	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	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	-9.2	****	59	043	.4	167	4.4	1	0300	-13.0	****	57	056	.0	035	1.9	1	0300	-13.7	-20.6	56	187	.5	178	3.8	1
0600	-10.1	-16.6	59	356	1.4	001	4.4	1	0600	-13.4	****	57	310	.2	011	1.9	1	0600	-11.8	-18.6	57	185	5.2	191	10.8	1
0900	-7.9	-17.8	45	350	2.8	353	4.4	29	0900	-9.2	****	58	357	.8	004	2.5	11	0900	-7.3	-18.1	42	204	3.2	188	11.4	10
1200	-7.0	-18.4	40	354	2.0	359	3.8	32	1200	-7.5	-17.2	46	353	:?	353	3.8	23	1200	-5.8	-19.3	34	160	5.4	156	12.1	23
1500	-6.0	-19.5	34	002	2.5	002	4.4	28	1500	-5.5	-17.7	38	007	2.1	004	4.4	33	1500	-7.0	-14.8	54	189	4.5	167	12.1	10
1800	-10.2	-19.7	46	357	2.3	356	3.8	1	1800	-7.9	-17.1	48	010	2.0	358	3.8	1	1800	-8.4	****	61	199	1.6	207	4.4	1
2100	-11.5	****	57	017	.3	357	3.2	1	2100	-9.6	-16.3	58	013	2.1	018	3.8	1	2100	-9.4	-16.3	57	012	1.1	000	3.2	1
2400	-13.5	****	57	181	.6	222	1.9	1	2400	-14.1	****	59	357	1.0	015	3.8	1	2400	-6.9	-16.1	48	318	.5	251	3.2	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDRO ELECTRIC PROJECT

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

DAY 10

DAY 11

DAY 12

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 C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW

0300	-11.6	-18.2	58	351	1.5	004	3.8	1	0300	-13.8	*****	53	358	1.2	355	3.2	1	0300	-17.2	-24.1	55	356	1.6	346	3.2	1
0600	-11.8	-18.4	58	009	2.5	004	4.4	1	0600	-13.2	*****	56	352	.4	196	1.9	1	0600	-12.7	-23.9	39	021	2.8	025	5.1	2
0900	-9.0	-15.5	59	005	3.0	008	5.7	31	0900	-12.3	*****	42	008	.2	004	1.3	13	0900	-12.6	-25.0	35	022	3.2	024	5.1	17
1200	-7.2	-17.8	43	002	2.4	012	3.8	42	1200	-7.0	*****	34	339	.7	333	1.9	23	1200	-9.7	-33.8	12	013	3.4	010	5.7	55
1500	-7.7	-17.9	44	010	2.7	010	5.7	15	1500	-9.0	-19.7	42	353	.7	359	2.5	14	1500	-10.0	-33.2	13	004	4.2	001	6.3	26
1800	-10.3	-18.1	53	013	2.3	003	3.8	1	1800	-12.2	-21.5	46	004	2.2	355	3.8	1	1800	-12.6	-34.5	14	007	5.2	000	8.9	1
2100	-11.1	-19.3	51	001	3.1	353	6.3	1	2100	-13.1	-20.9	52	357	1.7	349	3.2	1	2100	-15.0	-36.5	14	016	4.7	006	8.9	1
2400	-13.1	-21.1	51	005	2.4	004	4.4	1	2400	-14.9	-23.8	47	357	2.5	000	3.8	2	2400	-16.4	*****	**	026	4.1	025	6.3	1

DAY 13

DAY 14

DAY 15

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 C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW

0300	*****	*****	**	***	***	028	6.3	***	0300	-26.9	*****	42	006	.8	359	2.5	***	0300	-15.0	-22.9	51	351	1.1	357	3.2	1
0600	-17.6	*****	**	027	5.0	***	***	***	0600	*****	*****	**	***	***	004	2.5	***	0600	-14.9	-22.6	52	353	1.0	355	2.5	1
0900	-15.9	-36.5	15	014	3.1	020	5.7	27	0900	*****	*****	**	***	***	***	***	***	0900	-11.7	*****	41	340	.6	331	1.9	16
1200	-15.1	-36.6	14	330	1.5	008	4.4	43	1200	*****	*****	**	***	***	***	***	***	1200	-7.9	*****	12	344	1.0	355	2.5	21
1500	-13.8	-35.5	14	307	1.0	294	2.5	28	1500	-14.5	-26.4	36	358	1.6	354	2.5	18	1500	-8.5	*****	38	351	1.3	341	2.5	11
1800	-18.5	-38.0	16	354	1.7	351	3.2	1	1800	-15.9	-24.4	48	353	1.3	358	2.5	1	1800	-12.1	-20.4	50	353	1.1	352	1.9	2
2100	-21.5	-39.9	17	074	.3	219	3.2	1	2100	-15.9	-24.0	50	358	1.9	356	3.2	2	2100	-15.8	-24.1	49	354	1.8	352	3.2	1
2400	-24.9	*****	39	000	.8	205	2.5	1	2400	-15.6	*****	50	353	1.5	359	3.2	1	2400	-15.9	-24.0	50	352	1.7	357	3.2	1

DAY 16

DAY 17

DAY 18

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 C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW		DEG C	DEG C	% DEG.	M/S	MW

0300	-14.8	-23.0	50	354	.8	354	2.5	1	0300	-2.4	-13.7	42	160	6.4	152	15.2	2	0300	-1.4	-15.7	33	158	6.6	159	12.1	2
0600	-15.6	*****	51	221	.6	200	1.9	1	0600	-3.6	-12.6	50	184	8.7	162	14.6	1	0600	-3.7	-13.2	48	161	5.6	158	12.7	1
0900	-12.5	*****	43	257	.3	257	1.9	10	0900	-.4	-14.9	33	166	9.1	163	16.5	21	0900	-1.8	-14.7	37	162	4.9	157	9.5	13
1200	-8.3	-20.2	38	050	.4	178	7.0	30	1200	-.4	-14.5	32	168	10.3	169	16.5	41	1200	-1.4	-15.4	34	170	3.5	184	9.5	26
1500	-8.4	-18.8	43	190	5.7	181	8.3	13	1500	1.4	-14.8	29	152	9.0	151	15.9	15	1500	-1.3	-14.9	35	284	1.4	204	7.0	19
1800	-8.9	-17.0	52	192	6.5	192	9.5	2	1800	-.3	-15.8	29	150	9.6	146	18.4	2	1800	-3.4	-12.1	51	190	2.7	155	7.6	2
2100	-8.4	-15.4	57	190	4.9	192	8.9	1	2100	-.9	-16.4	30	153	9.6	157	17.8	1	2100	-4.6	-13.2	51	288	.2	007	2.5	1
2400	-7.2	-13.4	61	198	4.1	194	8.9	1	2400	-1.9	-15.1	36	158	9.6	155	14.6	1	2400	-4.3	-14.8	44	172	2.2	179	6.3	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING March, 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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	

0300	-6.0	*****	46	180	2.9	159	7.0	1 0300	-1.0	-14.3	36	142	12.2	135	17.8	1 0300	-1.4	-16.1	52	149	10.0	136	14.6	1
0600	-2.7	-14.2	41	175	3.5	184	9.5	2 0600	-8	-14.5	35	145	11.0	148	16.5	2 0600	-1.0	-16.1	31	161	10.3	162	15.9	2
0900	-1.4	-13.1	41	157	3.0	143	13.3	17 0900	-7	-12.7	40	147	11.3	151	16.5	19 0900	-8	-15.6	32	149	11.8	149	15.9	15
1200	.5	-14.8	31	166	7.8	163	17.1	32 1200	1.1	-13.2	34	156	9.6	154	17.1	38 1200	-8	-13.5	38	148	10.2	141	4.0	20
1500	1.9	-14.4	29	146	8.2	150	19.0	14 1500	1.5	-14.9	29	186	6.3	172	9.5	34 1500	-3	-13.0	38	159	7.0	149	14.0	21
1800	.8	-14.6	31	147	9.1	137	16.5	2 1800	-2.3	*****	50	225	2.8	195	7.0	2 1800	-2	-12.6	39	169	7.9	178	11.4	2
2100	-.1	-15.0	32	143	10.7	137	17.8	1 2100	-1.5	-15.8	33	152	5.6	139	12.7	1 2100	-2.2	-9.1	59	187	4.2	157	10.8	1
2400	-.9	-14.2	36	147	11.9	149	17.8	2 2400	-9	-16.4	30	156	6.9	145	13.3	1 2400	-2.7	-10.7	54	225	1.6	200	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 C	%	DEG. M/S	DEG. M/S	MW		DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	

0300	-4.5	-12.0	56	224	1.8	232	3.8	1 0300	-5.9	*****	59	175	.5	179	1.9	1 0300	-7.2	-14.3	57	359	.9	358	4.4	1
0600	-3.8	-12.0	53	191	3.1	182	8.9	2 0600	-8.1	-15.1	57	204	2.9	190	8.3	2 0600	-10.0	-16.3	60	001	4.5	359	6.3	2
0900	-3.9	-13.1	49	189	6.1	178	10.2	23 0900	-4.9	-15.7	43	199	4.4	195	8.9	30 0900	-8.4	-20.0	39	001	5.2	359	8.3	36
1200	-1.6	-13.6	40	198	5.5	189	7.6	32 1200	-1.6	-16.7	31	169	4.0	165	10.8	36 1200	-6.4	-32.1	11	358	5.3	356	10.2	44
1500	-1.6	-15.9	33	200	5.4	203	7.6	18 1500	-7	-29.8	9	173	1.9	155	9.5	23 1500	-6.7	-32.3	11	001	7.6	007	11.4	31
1800	-2.5	-16.0	35	195	2.3	227	4.4	3 1800	-2.2	-16.5	33	321	1.3	314	4.4	2 1800	-8.9	-22.4	33	002	7.0	003	9.5	3
2100	-3.7	-14.9	42	179	3.1	185	6.3	1 2100	-4.8	-11.8	58	229	1.3	198	7.0	1 2100	-9.8	-22.8	34	001	7.6	002	10.8	2
2400	-4.3	*****	42	192	1.2	285	3.8	1 2400	-5.1	-11.0	63	340	.6	218	2.5	1 2400	-10.1	-23.1	34	002	8.3	002	11.4	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	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	

0300	-10.8	-23.7	34	002	8.2	357	12.1	1 0300	-16.0	-36.6	15	014	5.4	000	8.3	1 0300	-22.2	-30.0	49	359	1.0	359	2.5	2
0600	-11.6	-24.4	34	007	7.1	005	10.8	2 0600	-16.5	-37.0	15	023	4.8	023	7.6	2 0600	-21.1	*****	49	015	.3	008	1.9	3
0900	-10.5	-33.6	13	008	6.7	011	10.2	28 0900	-14.3	-35.9	14	018	4.2	027	6.3	36 0900	-19.8	-30.0	40	333	.3	357	2.5	26
1200	-9.4	-33.6	12	005	7.6	005	10.8	69 1200	-11.9	-34.7	13	001	3.5	012	5.7	52 1200	-8.4	*****	12	301	.7	342	3.8	48
1500	-9.5	-33.6	12	003	7.6	005	11.4	32 1500	-12.1	-34.9	13	357	4.2	000	5.7	36 1500	-7.6	-32.1	12	186	.8	198	5.7	28
1800	-11.7	-34.6	13	360	6.0	354	8.9	3 1800	-14.0	-35.7	14	357	3.4	356	5.1	4 1800	-10.9	*****	13	199	2.2	199	5.1	3
2100	-14.1	-35.8	14	003	6.5	356	9.5	1 2100	-19.4	-30.2	38	359	1.9	359	3.8	1 2100	-14.0	-26.3	35	349	1.0	005	3.2	1
2400	-14.8	-36.3	14	002	7.1	000	10.2	1 2400	-19.6	*****	50	130	.4	346	1.9	1 2400	-13.4	*****	36	334	.5	276	2.5	1

R & M CONSULTANTS, INC.  
SUBSTITUTIVE HYDROELECTRIC PROJECT

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

DAY 28

DAY 29

DAY 30

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	MW	DEG C	DEG C	%	DEG	M/S	MW

0300	-16.0	-24.8	47	324	.2	168	2.5	1	0300	-16.2	-25.7	44	352	.5	025	1.9	1	0300	-14.2	-26.4	35	028	3.2	033	5.7	1
0600	-16.8	-26.0	45	042	.2	221	2.5	3	0600	-16.9	*****	49	017	.4	017	1.9	3	0600	-15.0	-22.9	51	020	3.2	018	5.7	3
0900	-13.5	*****	14	305	.4	358	2.5	27	0900	-11.6	*****	13	280	.1	197	1.9	41	0900	-12.9	-34.8	14	023	3.3	025	5.1	39
1200	-9.1	-33.3	12	346	.8	356	3.8	54	1200	-6.7	*****	11	241	.5	149	1.3	62	1200	-10.9	-33.9	13	010	3.5	018	5.1	55
1500	-8.1	-32.5	12	357	2.8	356	4.4	35	1500	-7.7	-32.2	12	340	1.5	357	4.4	38	1500	-11.2	-34.2	13	359	3.9	358	6.3	39
1800	-11.0	-34.0	13	357	3.3	357	5.1	4	1800	-11.7	-24.2	35	355	2.6	357	4.4	4	1800	-12.7	-34.6	14	357	4.4	356	6.3	5
2100	-16.0	-27.4	37	001	2.5	002	5.1	1	2100	-13.3	-25.3	36	015	2.7	020	4.4	2	2100	-16.0	-36.6	15	019	2.9	029	5.1	1
2400	-16.4	*****	41	000	1.6	016	3.8	1	2400	-13.1	-25.5	35	022	2.8	019	4.4	1	2400	-18.6	-38.1	16	008	3.0	007	6.3	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	DEG	M/S	MW	

0300	-21.5	-39.9	17	009	2.8	001	5.1	1
0600	-23.6	-32.7	43	227	.2	051	2.5	3
0900	-17.6	*****	15	189	.3	004	1.9	40
1200	-15.8	-36.5	15	356	4.2	354	7.0	56
1500	-14.3	-35.9	14	357	5.2	354	7.0	40
1800	-14.5	-36.1	14	357	6.0	357	8.3	6
2100	-17.4	-37.8	15	007	4.8	354	7.6	1
2400	-18.2	-37.8	16	007	5.3	004	7.6	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY	RES.			RES.			Avg.	Max.	Max.	DAY'S			
	MAX. DEG C	MIN. DEG C	MEAN DEG C	WIND DIR.	WIND SPD. M/S	WIND SPD. M/S	GUST DIR.	GUST SPD. M/S	P'VAL %	MEAN RH	MEAN DEG C	PRECIP MM	SOLAR ENERGY WH/SDM
1	-13.5	-27.9	-20.7	359	.7	1.2	215	3.8	N	23	-37.6	****	2313 1
2	-12.6	-26.7	-19.7	346	.6	1.1	013	5.1	N	16	-39.7	****	2188 2
3	-12.8	-28.3	-20.6	356	.9	1.0	066	4.4	N	16	-39.1	****	2268 3
4	-15.3	-28.3	-21.8	286	.1	.9	136	3.2	N	21	-37.9	****	2068 4
5	-9.2	-19.0	-14.1	183	1.2	1.8	184	6.3	S	17	-34.0	****	1808 5
6	-8.3	-14.7	-11.5	167	1.5	2.9	181	8.9	S	40	-22.6	****	1650 6
7	-4.1	-13.5	-8.8	357	1.4	1.8	167	4.4	N	48	-17.9	****	2625 7
8	-5.2	-14.6	-9.9	003	1.3	1.5	004	4.4	N	49	-18.0	****	2058 8
9	-5.4	-15.9	-10.7	185	2.3	3.1	156	12.1	SSW	50	-17.5	****	1564 9
10	-6.2	-13.1	-9.7	005	2.5	2.6	353	6.3	N	52	-18.4	****	2491 10
11	-5.0	-15.8	-10.4	357	1.2	1.3	355	3.8	N	48	-21.4	****	1680 11
12	-9.6	-17.7	-13.7	013	3.6	3.6	000	8.9	NNE	25	-30.6	****	3156 12
13	-13.1	-24.9	-19.0	001	1.4	2.0	028	6.3	N	19	-36.3	****	3407 13
14	-14.2	-26.9	-20.6	357	1.5	1.5	356	3.2	N	40	-27.0	****	1809 14
15	-7.9	-16.5	-12.2	351	1.2	1.2	357	3.2	N	47	-22.4	****	1645 15
16	-7.2	-15.9	-11.6	194	2.6	3.2	192	9.5	SSW	48	-18.6	****	1715 16
17	2.2	-6.7	-2.3	161	8.9	9.1	146	18.4	SSE	36	-14.7	****	2283 17
18	-3	-5.0	-2.7	169	3.1	3.8	158	12.7	SSE	39	-14.6	****	1910 18
19	2.4	-6.7	-2.2	153	7.0	7.4	150	19.0	SE	36	-14.6	****	2578 19
20	2.3	-3.2	-.5	155	7.8	8.4	135	17.8	SE	35	-14.2	****	3020 20
21	.6	-3.0	-1.2	157	8.2	8.0	162	15.9	SSE	40	-13.6	****	1953 21
22	.6	-6.4	-2.9	195	3.5	3.7	178	10.2	SSW	44	-13.9	****	3430 22
23	.5	-8.2	-3.9	196	1.6	2.5	165	10.8	S	41	-17.2	****	2913 23
24	-5.1	-12.2	-8.7	001	5.8	5.8	007	11.4	N	37	-22.5	****	3445 24
25	-8.9	-14.8	-11.9	004	7.1	7.1	357	12.1	N	22	-30.4	****	3523 25
26	-11.7	-19.6	-15.7	009	3.3	3.6	000	8.3	N	18	-34.9	****	3773 26
27	-7.2	-22.3	-14.8	285	.2	1.2	198	5.7	N	29	-30.5	****	3115 27
28	-7.4	-17.6	-12.5	356	1.4	1.8	357	5.1	N	29	-28.6	****	3815 28
29	-3.5	-17.8	-10.7	003	1.2	1.6	357	4.4	N	30	-27.6	****	4090 29
30	-10.3	-18.7	-14.5	012	3.4	3.4	358	6.3	NNE	20	-33.1	****	4168 30
31	-14.0	-24.5	-19.3	001	3.5	3.8	357	8.3	N	18	-36.8	****	4213 31
MONTH	2.4	-28.3	-11.5	106	.4	3.3	150	19.0	N	34	-25.4	****	82666

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 14.0

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 15.9

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 17.1

GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 15.9

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 \*\*\*\*

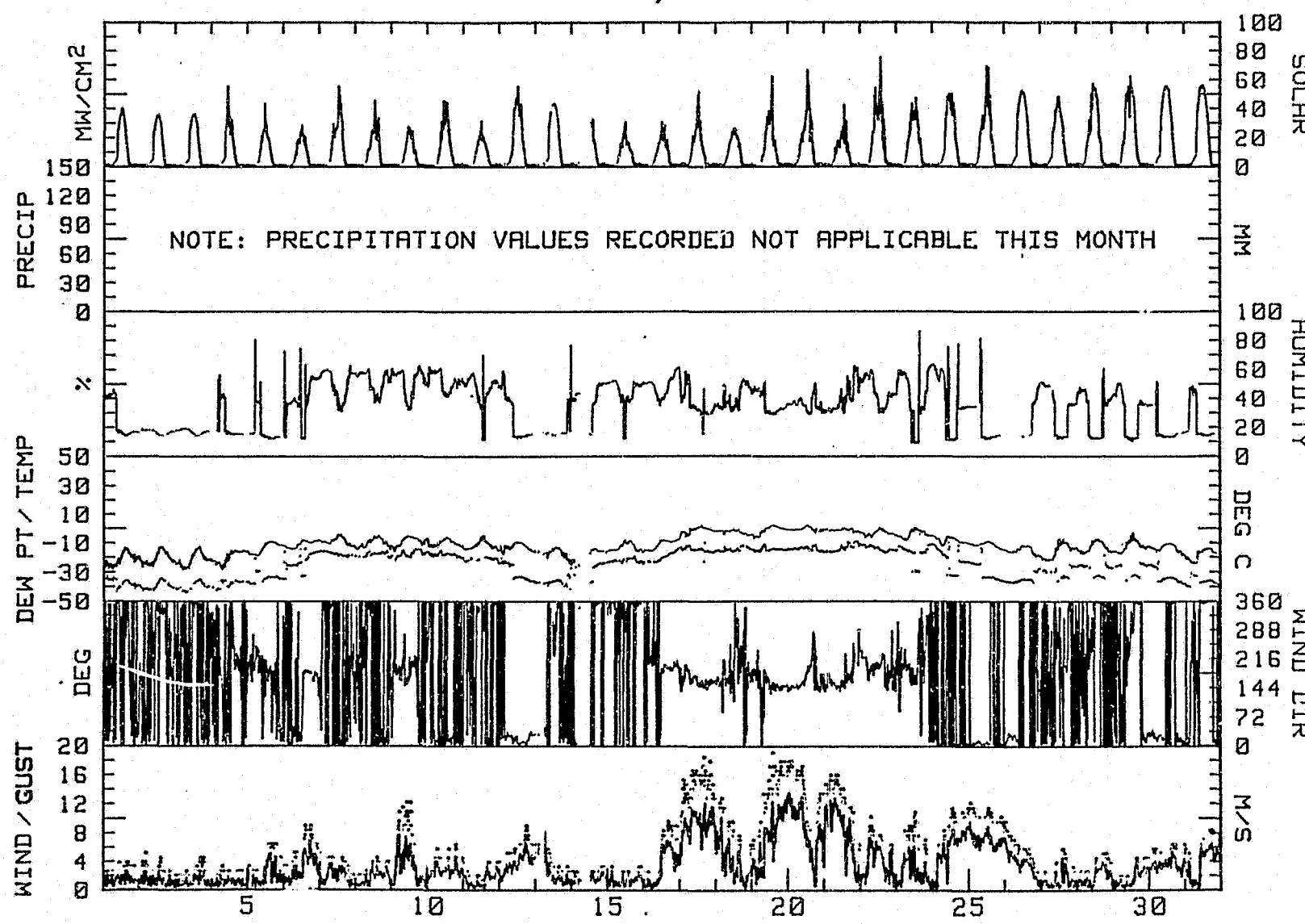
R & M CONSULTANTS, INC.  
SUSITNA HYDRO ELECTRIC PROJECT

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

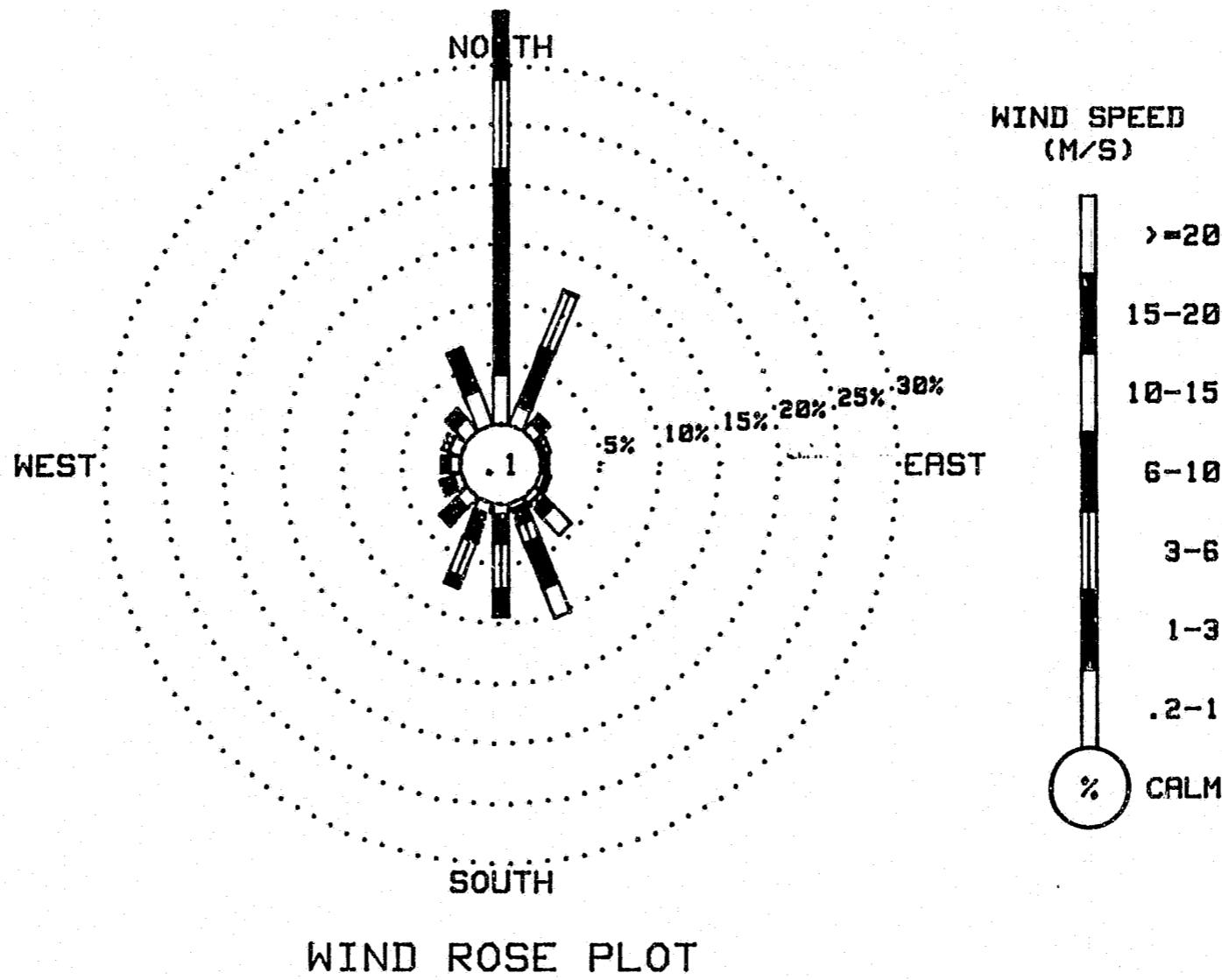
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
	1.0	3.0	6.0	10.0	15.0	20.0			
N	4.09	17.14	7.51	5.57	0.00	0.00	0.00	34.31	
NNE	1.73	5.16	5.02	.10	0.00	0.00	0.00	12.02	
NE	.93	.83	.03	0.00	0.00	0.00	0.00	1.80	
ENE	.38	.52	0.00	0.00	0.00	0.00	0.00	.90	
E	.35	.35	0.00	0.00	0.00	0.00	0.00	.69	
ESE	.55	.35	.03	0.00	0.00	0.00	0.00	.93	
SE	.69	.55	.14	.87	2.08	0.00	0.00	4.33	
SSE	.55	1.35	1.66	3.95	2.70	0.00	0.00	10.21	
S	.90	2.32	3.81	2.15	.17	0.00	0.00	9.35	
SSW	.97	2.49	3.12	.90	0.00	0.00	0.00	7.48	
SW	1.25	1.63	.38	0.00	0.00	0.00	0.00	3.25	
WSW	.76	.90	.21	0.00	0.00	0.00	0.00	1.87	
W	.93	.66	.03	0.00	0.00	0.00	0.00	1.63	
WNW	1.11	.62	0.00	0.00	0.00	0.00	0.00	1.73	
NW	1.45	1.00	.03	0.00	0.00	0.00	0.00	2.49	
NNW	3.05	3.67	.10	.03	0.00	0.00	0.00	6.86	
CALM									.14
TOTAL	19.70	39.54	22.09	13.57	4.95	0.00	0.00	100.00	

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2888 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



R & M CONSULTANTS, INC.  
SUSTAINA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING April, 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

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING April 1, 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 C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	GUST	RAD
0300	-18.8	-38.3	16	015	5.0	014	7.6	1	0300	-19.1	-38.5	16
0600	-18.9	-38.4	16	031	4.6	031	7.0	4	0600	-20.1	-39.4	16
0900	-16.7	-37.2	15	029	4.9	029	7.6	40	0900	-17.4	-37.8	15
1200	-14.5	-36.1	14	010	5.4	007	7.6	56	1200	-15.2	-36.7	14
1500	-14.1	-35.8	14	002	5.5	003	9.5	40	1500	-14.7	-36.2	14
1800	-15.7	-36.4	15	004	6.1	002	8.9	6	1800	-14.9	-36.4	14
2100	-17.7	-38.0	15	007	6.1	016	9.5	1	2100	-19.4	-38.8	16
2400	-19.3	-38.7	16	013	4.8	007	8.9	1	2400	-23.5	-41.6	17
								002	2.3	003	4.4	1
								002	2.3	003	4.4	1
								002	2.3	003	4.4	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 C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	GUST	RAD
0300	-19.1	*****	16	003	.8	008	2.5	1	0300	-11.6	-34.5	13
0600	-19.1	*****	16	344	.8	348	2.5	3	0600	-12.6	-23.0	42
0900	-13.1	*****	14	012	.6	345	1.3	43	0900	-9.2	-33.4	12
1200	-7.0	-31.7	12	355	1.7	351	3.2	58	1200	.3	*****	9
1500	-5.6	-31.5	11	163	.9	193	6.3	55	1500	-1.7	-29.4	10
1800	-6.7	-32.3	11	205	2.8	212	5.1	7	1800	-3.7	*****	10
2100	-9.7	*****	12	333	.4	222	1.9	1	2100	-6.4	*****	11
2400	-10.5	*****	13	020	.5	357	1.9	1	2400	-7.4	*****	12
								327	.5	316	1.9	1
								327	.5	316	1.9	1
								327	.5	316	1.9	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	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG C	DEG C	%	DEG C	DEG C	DIR.	SPD.	DIR.	GUST	RAD
0300	-2.8	-17.3	32	187	.4	191	2.5	1	0300	-8.5	-22.0	33
0600	.5	-15.2	30	009	2.7	009	6.3	4	0600	-6.0	-31.8	11
0900	-1.1	-11.9	44	007	1.3	008	6.3	17	0900	-4.2	-30.4	11
1200	2.6	-13.8	29	303	3.5	268	7.6	52	1200	-2.4	-30.0	10
1500	.2	-15.9	29	343	5.0	355	8.9	24	1500	-.8	-29.9	9
1800	-1.4	-29.2	10	003	5.3	353	8.3	7	1800	-2.8	-16.8	33
2100	-7.3	-31.9	12	003	2.6	034	6.3	1	2100	-5.7	-16.1	44
2400	-7.0	*****	12	065	.4	348	3.2	1	2400	-9.1	-18.4	47
								355	1.4	316	3.2	1
								355	1.4	316	3.2	1
								355	1.4	316	3.2	1

R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING April, 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	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S
0300	-14.3	*****	44	004	2.9	000	7.0	2	0300	-11.2	-19.1	52	007	3.0	003	5.1	1	0300	-10.1	-33.3	13	358	8.5	358	12.1	1	
0600	-15.4	*****	49	034	.4	075	1.9	8	0600	-9.2	-18.5	47	001	4.5	002	7.0	7	0600	-10.1	-33.3	13	359	2.4	004	12.7	7	
0900	-8.4	*****	12	225	.5	202	1.9	43	0900	-6.6	-19.0	37	001	6.5	357	8.9	48	0900	-8.3	-32.7	12	357	9.7	356	13.3	47	
1200	-4.1	-31.3	10	246	.9	203	3.2	58	1200	-4.2	-30.4	11	357	6.3	357	8.3	61	1200	-5.9	-31.7	11	358	9.1	358	12.7	76	
1500	-4.3	-30.4	11	193	3.3	173	9.5	38	1500	-3.9	-31.1	10	355	5.8	354	7.6	46	1500	-5.7	-31.5	11	358	8.7	353	12.1	36	
1800	-5.6	*****	11	210	2.2	200	5.7	7	1800	-6.4	-20.5	32	357	5.2	353	7.0	7	1800	-7.5	-32.1	12	358	7.5	001	10.2	6	
2100	-8.6	-22.1	33	001	.4	233	2.5	1	2100	-9.2	-23.0	32	012	4.0	007	7.6	2	2100	-8.9	-33.2	12	358	7.1	359	9.5	1	
2400	-9.0	-18.8	45	006	1.2	004	4.4	2	2400	-9.6	-33.7	12	005	5.5	002	9.5	1	2400	-9.2	-33.4	12	000	7.0	354	10.2	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	DEG	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S
0300	-9.8	-33.1	13	358	7.6	003	10.2	1	0300	-12.7	-34.6	14	359	4.0	356	6.3	1	0300	-5.1	-19.0	33	183	2.5	141	12.7	1	
0600	-10.1	-33.3	13	357	7.3	358	10.8	8	0600	-13.2	*****	35	359	1.3	358	3.2	7	0600	-5.0	-18.9	33	213	2.4	192	8.3	10	
0900	-8.6	-32.9	12	358	7.5	358	10.8	38	0900	-8.3	-32.7	12	041	.1	164	3.8	49	0900	-1.3	-30.3	9	193	2.9	194	12.1	29	
1200	-6.9	-32.5	11	358	7.5	359	9.5	57	1200	-3.7	-31.0	10	188	3.6	156	11.4	69	1200	.3	-29.0	9	116	2.1	137	11.4	41	
1500	-6.6	-32.3	11	355	6.6	356	9.5	48	1500	-2.1	-29.8	10	172	4.4	156	10.8	28	1500	-.7	-29.8	9	180	2.0	161	9.5	27	
1800	-8.3	-32.7	12	356	5.5	354	8.3	11	1800	-3.0	-30.5	10	270	1.4	170	9.5	5	1800	-1.6	-29.4	10	286	.8	056	5.1	8	
2100	-10.2	-33.4	13	358	5.2	001	8.3	1	2100	-.9	-30.0	9	114	1.6	117	16.5	1	2100	-6.9	-32.5	11	047	.5	063	3.8	1	
2400	-11.8	-34.7	13	359	5.6	358	8.9	1	2400	-2.1	-29.8	10	142	4.9	146	14.6	1	2400	-8.7	-33.0	12	003	3.4	000	7.6	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	DEG	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S	DEG C	M/S	DEG C	M/S	DEG	M/S	DEG	M/S
0300	-10.9	-33.9	13	359	2.2	355	3.2	1	0300	-8.3	-32.7	12	017	3.0	019	5.1	1	0300	-9.0	-15.5	59	351	1.0	301	1.9	1	
0600	-10.9	-22.3	39	353	2.0	356	3.8	11	0600	-7.5	-32.1	12	016	3.5	005	7.6	8	0600	-7.4	-16.3	49	162	.6	192	2.5	10	
0900	-6.4	-20.2	33	001	3.5	003	5.1	33	0900	-5.8	-31.6	11	012	4.4	019	7.0	45	0900	-2.5	-30.1	10	138	.5	139	12.1	47	
1200	-2.3	-29.9	10	355	4.0	355	6.3	67	1200	-4.4	-30.5	11	358	5.5	353	7.6	61	1200	-2.1	-29.8	10	160	6.9	125	12.1	38	
1500	-1.8	-29.5	10	355	5.5	355	8.3	54	1500	-3.8	-31.1	10	358	5.2	355	7.0	49	1500	-4.2	-30.4	11	251	4.6	262	9.5	49	
1800	-3.1	-30.5	10	357	5.4	356	7.6	10	1800	-4.9	-30.9	11	358	4.2	359	5.7	12	1800	-5.8	-31.6	11	281	3.9	268	8.3	13	
2100	-5.8	-31.6	11	000	3.9	358	7.0	1	2100	-6.6	-32.3	11	000	3.8	001	5.7	1	2100	-9.1	-21.6	36	350	.5	290	4.4	1	
2400	-8.1	-10.9	80	003	2.4	008	5.1	1	2400	-9.2	*****	33	012	1.9	008	4.4	1	2400	-11.2	-19.1	52	351	1.1	354	1.9	1	

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDRO ELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING April, 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	-13.4	-20.5	55	355	1.3	352	2.5	1	0300	-5.8	-13.0	57	016	2.4	031	5.1	1	0300	-5.9	-13.3	56	358	1.7	357	3.8	1		
0600	-16.6	-24.2	52	346	.5	210	3.2	8	0600	-7.3	-15.1	32	148	4.1	159	17.1	12	0600	-5.5	-13.1	55	003	2.2	003	3.8	10		
0900	-7.8	-21.8	32	010	1.0	016	2.5	37	0900	2.0	-29.0	8	173	4.8	153	14.0	63	0900	-1.4	-16.1	32	343	.7	352	1.9	45		
1200	-5.8	-19.6	33	357	2.3	356	3.8	43	1200	1.8	-29.1	8	152	5.6	170	15.2	48	1200	2.8	-28.4	8	209	2.5	199	4.4	87		
1500	-6.1	-17.6	40	003	4.3	007	5.7	32	1500	1.5	-3.9	67	153	6.2	162	13.3	27	1500	1.8	-29.1	8	301	2.3	305	7.0	47		
1800	-6.1	-13.2	57	007	4.2	006	6.3	5	1800	-3	-9.5	50	289	.3	152	7.0	11	1800	1.3	-28.3	9	263	2.1	286	3.8	21		
2100	-6.5	-13.2	59	006	3.5	007	5.1	1	2100	-2.5	-8.8	62	358	2.7	356	5.7	1	2100	-7	-14.4	35	254	1.2	249	3.8	2		
2400	-6.2	-14.5	52	014	3.6	004	8.9	1	2400	-4.8	-11.6	59	008	2.8	000	5.7	1	2400	-1.2	*****	33	203	.7	187	3.2	2		

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	-1.8	-13.7	40	160	1.3	186	7.0	2	0300	-3.8	-15.2	41	355	.6	011	3.2	1	0300	-4.5	-10.7	62	177	1.6	182	5.1	1		
0600	-2.1	-15.7	35	098	2.1	121	7.0	8	0600	-7.7	*****	49	235	.8	351	1.9	11	0600	-4.9	-11.7	59	182	4.1	194	8.3	10		
0900	-3	-29.5	9	347	.4	141	5.7	31	0900	-3.0	-17.5	32	241	.5	221	2.5	42	0900	-1.6	-13.9	39	185	5.4	178	10.8	54		
1200	0.0	-29.3	9	271	1.2	294	4.4	41	1200	-3	-29.5	9	211	2.9	210	4.4	85	1200	1.0	-28.5	9	178	6.0	179	9.5	65		
1500	1.0	-28.5	9	295	3.6	282	9.5	59	1500	-1.2	-30.2	9	215	3.2	210	5.1	29	1500	1.0	-8.0	51	196	4.4	192	7.6	35		
1800	-8	-29.9	9	283	2.0	297	5.1	13	1800	-2.1	-12.2	46	182	2.5	175	5.7	8	1800	.8	-14.6	31	238	1.6	178	7.0	8		
2100	-3.0	*****	34	329	1.0	282	3.8	2	2100	-2.8	-13.2	45	155	1.2	167	4.4	1	2100	-.8	-10.5	48	269	1.4	193	7.0	1		
2400	-3.0	*****	43	349	.6	286	2.5	1	2400	-4.5	-10.3	64	197	2.5	187	5.1	1	2400	1.1	-13.9	32	162	2.3	158	15.2	2		

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	.9	-14.5	31	135	8.5	132	17.8	1	0300	-4.1	-10.1	63	192	.7	211	2.5	1	0300	-3.3	-11.1	55	006	1.7	359	4.4	1		
0600	1.5	-15.2	28	146	7.3	142	15.9	12	0600	-5.3	-12.3	58	188	1.6	187	3.8	10	0600	-2.8	-10.6	55	011	2.1	355	3.8	14		
0900	2.9	-28.3	8	158	7.5	148	15.2	64	0900	-1.8	-16.8	31	164	1.9	169	4.4	40	0900	1.0	-10.9	41	000	2.2	352	5.1	38		
1200	4.3	-28.7	7	147	7.3	150	18.4	69	1200	.4	-29.0	9	356	.7	156	3.2	57	1200	6.5	-27.0	7	141	2.5	130	14.0	73		
1500	3.7	-27.7	8	187	6.4	184	10.8	48	1500	.1	-29.2	9	356	2.6	357	4.4	46	1500	5.7	-27.6	7	137	3.3	193	13.3	35		
1800	.3	-12.5	38	194	4.1	258	8.3	14	1800	-1.0	-16.9	29	355	3.5	347	7.0	13	1800	5.2	-28.0	7	130	2.1	169	8.3	12		
2100	-.8	*****	39	153	.6	277	8.9	1	2100	-1.3	-16.0	32	006	1.8	358	3.8	2	2100	2.7	-13.3	30	342	.6	048	8.9	1		
2400	-2.8	-8.8	63	158	2.0	110	5.1	1	2400	-2.3	*****	38	019	1.4	016	3.8	1	2400	4.2	-28.7	7	154	4.5	148	18.4	1		

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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	NDNG TEMP.	POINT RH	DIR.	SPD.	DIR.	GUST
DEG C	DEG C	%	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	MW	DEG C	DEG C	%

0300	2.6	-28.5	8	135	6.7	127	15.9	1	0300	-2.5	****	57	193	.6	230	3.2	1	0300	-5.9	-17.4	40	350	2.5	356	4.4	2
0600	2.6	-28.5	8	130	5.8	128	13.3	16	0600	-1.7	-15.3	35	183	1.0	207	2.5	16	0600	-5.3	-16.0	43	354	2.2	356	3.8	16
0900	3.1	-28.2	8	056	1.5	087	10.2	64	0900	.5	-28.9	9	202	2.1	210	3.8	72	0900	-.7	-15.9	31	360	2.7	002	4.4	52
1200	3.7	-27.7	8	101	2.0	121	7.0	39	1200	1.4	-29.4	8	214	3.4	219	5.7	55	1200	-.6	-15.0	33	359	4.2	357	5.7	63
1500	3.9	-27.6	8	061	3.6	066	6.3	45	1500	1.2	-28.3	9	240	2.0	275	6.3	58	1500	.9	-14.9	30	356	4.2	356	6.3	57
1800	3.0	-28.2	8	215	.4	092	6.3	12	1800	1.2	-28.3	9	287	2.3	265	4.4	18	1800	-1.1	-15.1	34	355	4.8	354	6.3	12
2100	-.4	-9.6	50	225	1.9	270	6.3	1	2100	-3.0	-15.5	38	352	1.3	356	3.2	1	2100	-4.3	-15.4	42	356	3.7	355	5.7	2
2400	-1.5	-9.1	56	187	1.4	169	3.2	1	2400	-5.7	-18.2	37	342	1.9	355	3.8	1	2400	-7.2	-17.9	43	004	2.3	004	5.1	2

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY	TEMP.			RES.	RES.	AVG.	MAX.	MAX.	P'VAL			MEAN		DAY'S	
	MAX. DEG C	MIN. DEG C	MEAN DEG C	WIND DIR.	WIND SPD. M/S	WIND SPD. M/S	GUST DIR. DEG	GUST SPD. M/S	P'VAL %	MEAN RH	MEAN DEG C	PRECIP MM	SOLAR WH/SDM	ENERGY DAY	
1	-13.7	-19.7	-16.7	013	5.2	5.3	003	9.5	NNE	15	-37.3	0.0	4268	1	
2	-14.3	-23.6	-19.0	011	4.1	4.2	002	7.6	N	15	-38.0	0.0	4325	2	
3	-8.5	-25.6	-17.1	346	.6	1.0	002	4.4	N	21	-36.2	0.0	4548	3	
4	-5.5	-22.2	-13.9	319	.2	1.4	193	6.3	N	13	-34.1	0.0	4115	4	
5	1.7	-13.7	-6.0	322	.5	1.0	356	3.2	N	17	-28.6	0.0	4410	5	
6	.8	-9.5	-4.4	191	2.8	3.2	182	10.8	SSW	11	-29.8	0.0	4578	6	
7	2.6	-8.4	-2.9	350	2.3	3.1	355	8.9	N	22	-21.8	0.0	4155	7	
8	1.2	-9.9	-4.4	221	.5	2.4	161	8.9	N	27	-22.7	0.0	3490	8	
9	-2.8	-13.4	-7.7	006	3.3	3.3	001	7.6	N	35	-21.9	0.0	4988	9	
10	-3.3	-15.8	-9.5	248	.3	1.8	173	9.5	N	26	-26.9	0.0	4668	10	
11	-3.7	-11.2	-7.5	001	5.1	5.1	002	9.5	N	33	-23.1	0.0	5173	11	
12	-5.3	-10.2	-7.8	358	8.4	8.4	356	13.3	N	12	-32.7	0.0	4475	12	
13	-6.4	-11.8	-9.1	358	6.6	6.6	358	10.8	N	12	-33.0	0.0	4848	13	
14	-.8	-13.4	-7.1	156	1.0	3.2	117	16.5	N	15	-29.8	0.0	4835	14	
15	1.1	-8.7	-3.8	184	.8	2.8	141	12.7	SSW	15	-27.1	0.0	3763	15	
16	-1.6	-13.4	-7.5	358	3.6	3.6	355	8.3	N	21	-27.6	0.0	5283	16	
17	-3.5	-9.8	-6.7	005	3.9	4.0	005	7.6	N	12	-31.6	0.0	5328	17	
18	-1.6	-11.8	-6.7	225	1.0	3.0	139	12.1	N	34	-22.1	0.0	4378	18	
19	-5.6	-16.9	-11.3	005	2.6	2.7	004	8.9	N	46	-19.0	0.0	4060	19	
20	3.5	-7.0	-1.8	141	1.7	4.3	159	17.1	N	37	-16.8	.6	4783	20	
21	5.5	-6.5	-.5	290	.9	1.8	305	7.9	N	33	-18.8	0.0	5623	21	
22	2.0	-4.1	-1.1	297	.6	2.0	282	9.5	NNW	25	-21.6	0.0	5323	22	
23	.1	-8.0	-4.0	203	1.5	1.9	175	5.7	SSW	40	-16.8	0.0	4968	23	
24	1.8	-5.0	-1.6	188	3.1	3.9	158	15.2	S	38	-15.5	0.0	5748	24	
25	4.3	-2.8	.8	157	5.2	5.9	150	18.4	SSE	27	-18.6	0.0	5410	25	
26	3.2	-5.9	-1.4	003	.7	1.9	347	7.0	N	33	-19.4	.2	5498	26	
27	6.3	-3.6	1.6	113	1.1	3.1	148	18.4	N	27	-19.4	.2	4970	27	
28	5.0	-1.5	1.8	124	2.1	3.5	127	15.9	SE	17	-24.2	0.0	5420	28	
29	3.4	-5.7	-1.2	245	1.0	2.0	275	6.3	SSW	27	-22.1	0.0	6615	29	
30	5.9	-7.2	-.7	357	3.3	3.3	356	6.3	N	37	-15.7	0.0	6343	30	
MONTH	6.8	-25.6	-5.9	004	1.1	3.3	150	18.4	N	25	-25.1	1.0	146382		

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 14.0

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.0

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.0

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 \*\*\*\*\*

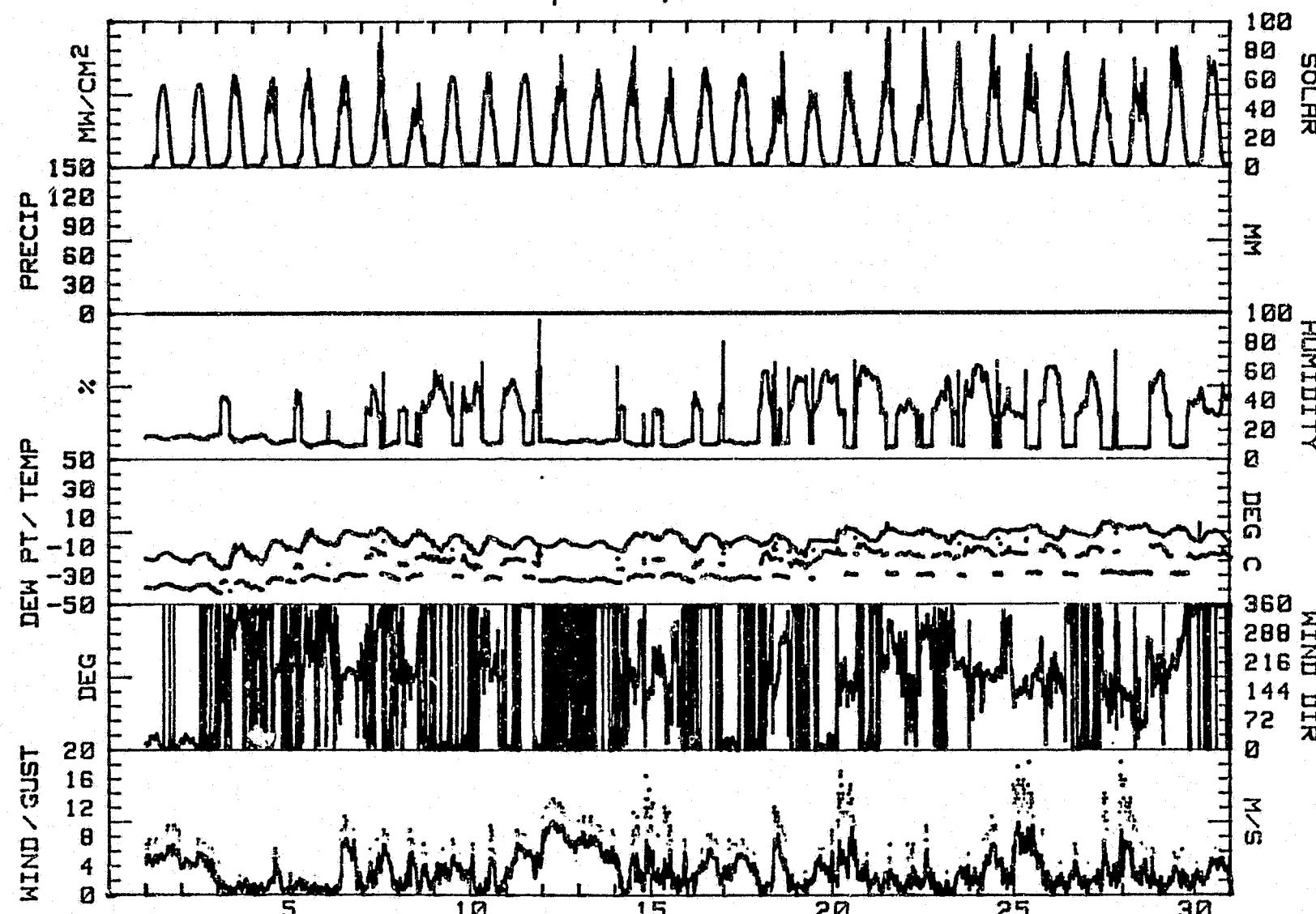
R. & M. CONSULTANTS, INC.  
SUSSITNA HYDROELECTRIC PROJECT

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

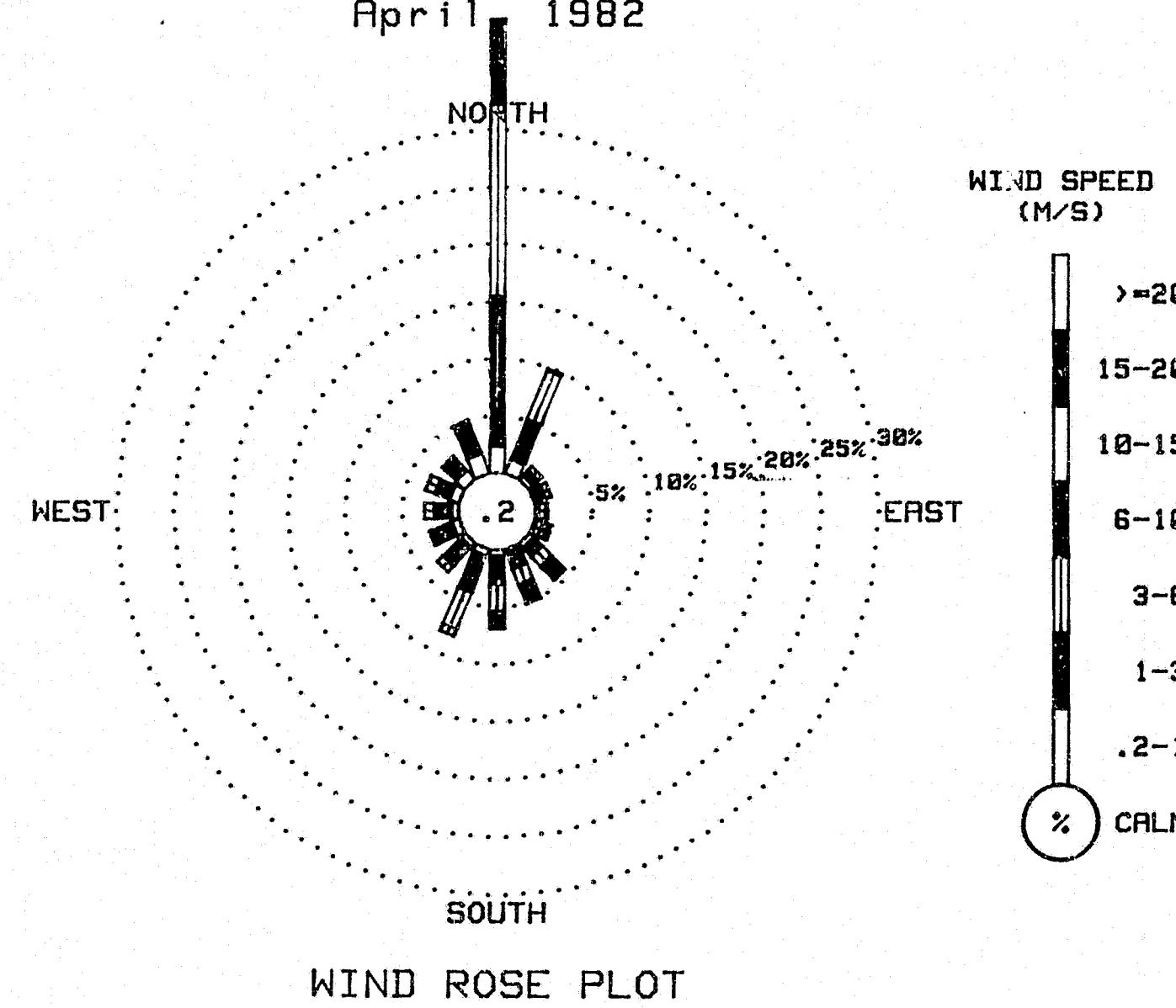
DIRECTION	VELOCITY (M/S)							TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER	
	1.0	3.0	6.0	10.0	15.0	20.0	GREATER	
N	2.33	13.09	16.74	7.29	.14	0.00	0.00	39.58
NNE	1.35	3.72	4.58	.17	0.00	0.00	0.00	9.83
NE	.45	.66	.45	0.00	0.00	0.00	0.00	1.56
ENE	.35	.66	.52	0.00	0.00	0.00	0.00	1.53
E	.31	.63	.14	0.00	0.00	0.00	0.00	1.08
ESE	.21	.56	.49	.35	0.00	0.00	0.00	1.60
SE	.52	1.04	1.15	1.67	0.00	0.00	0.00	4.38
SSE	.14	1.67	1.42	1.77	.07	0.00	0.00	5.07
S	.52	2.47	2.36	1.53	0.00	0.00	0.00	6.88
SSW	.63	3.40	3.47	.63	0.00	0.00	0.00	8.13
SW	.49	2.22	.69	0.00	0.00	0.00	0.00	3.40
WSW	.69	1.94	.14	0.00	0.00	0.00	0.00	2.78
W	.63	1.53	.87	0.00	0.00	0.00	0.00	3.02
WNW	.90	1.39	.87	.03	0.00	0.00	0.00	3.19
NW	1.08	1.35	.38	0.00	0.00	0.00	0.00	2.81
NNW	1.88	2.60	.42	.10	0.00	0.00	0.00	5.00
CALM	-----	-----	-----	-----	-----	-----	-----	.17
TOTAL	12.47	38.92	34.69	13.54	.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  
DENALI WEATHER STATION  
April, 1982



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



R & M CONSULTANTS, INC.

## SUSTINA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING May, 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

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING May, 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.	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	MW	DEG C	DEG C	%	DEG. M/S	MW

0300	-10.1	-19.6	46	347	1.1	007	3.2	1	0300	-6.1	-16.8	43	357	1.1	315	4.4	2	0300	-7.1	-19.1	38	005	2.5	005	4.4	2
0600	-6.7	-20.4	33	076	.4	144	2.5	26	0600	-5.8	-17.4	40	356	1.0	359	4.4	22	0600	-5.9	-19.4	34	355	1.6	003	3.2	22
0900	.3	*****	9	356	1.1	357	2.5	58	0900	-2.3	-16.9	32	358	4.3	352	5.7	58	0900	-2.5	-30.1	10	359	3.3	359	5.1	64
1200	2.3	-28.8	8	337	.9	266	2.5	73	1200	-.2	-15.4	31	357	5.0	357	6.3	73	1200	.7	-28.7	9	359	2.1	356	4.4	80
1500	2.6	-28.5	8	346	1.7	345	3.8	57	1500	-.1	-9.4	49	357	5.1	354	7.0	57	1500	1.6	-29.3	8	358	2.7	356	4.4	61
1800	1.6	-29.3	8	357	2.5	357	3.8	19	1800	-.6	-29.7	9	352	5.0	353	7.0	18	1800	.6	-28.8	9	360	1.8	356	3.8	10
2100	-3.2	*****	32	359	2.4	001	3.8	1	2100	-3.3	-18.2	31	357	2.9	337	5.1	1	2100	-2.5	-9.0	61	321	1.6	284	4.4	1
2400	-4.7	-19.0	32	353	1.3	347	3.8	1	2400	-6.2	-18.7	37	003	1.7	002	4.4	2	2400	-3.5	-9.3	64	349	.9	350	3.2	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.	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	-4.0	*****	62	313	.6	293	2.5	1	0300	-8.4	-20.9	36	004	1.7	004	3.8	2	0300	-3.4	*****	35	343	1.1	353	3.2	2
0600	-3.2	-11.2	54	272	.6	295	2.5	14	0600	-6.8	-19.5	36	349	1.0	359	3.8	21	0600	-2.0	-16.6	32	348	.7	003	1.9	24
0900	-1.7	-15.0	36	222	2.5	230	4.4	45	0900	-1.6	-29.4	10	003	2.3	007	5.1	58	0900	2.9	-28.3	8	205	1.4	203	3.2	59
1200	.8	-28.6	9	218	.9	356	7.0	59	1200	1.7	-29.2	8	357	2.9	000	4.4	71	1200	6.8	-26.8	7	205	3.3	199	7.0	80
1500	.9	-28.6	9	328	1.0	009	4.4	50	1500	4.3	-28.7	7	352	3.6	332	6.3	58	1500	5.8	-27.5	7	286	1.2	237	4.4	57
1800	.4	-29.0	9	014	2.3	017	4.4	21	1800	3.5	-27.9	8	026	3.4	358	6.3	29	1800	4.6	-28.4	7	356	3.0	359	4.4	18
2100	-4.8	-18.1	35	359	2.7	003	5.1	1	2100	.1	-29.2	9	003	2.4	002	5.1	1	2100	1.2	-13.8	32	353	2.5	355	4.4	2
2400	-6.9	-20.6	33	004	2.8	010	5.1	1	2400	-1.5	-15.8	33	006	2.4	001	3.8	2	2400	.3	-13.9	34	357	2.0	005	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.	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	2.3	-12.9	32	322	1.3	288	6.3	2	0300	1.8	-7.0	52	133	1.0	153	3.8	1	0300	3.1	-8.7	42	195	3.5	179	8.9	2
0600	2.0	-11.3	37	358	1.2	011	3.2	14	0600	1.9	-8.3	47	353	.5	329	5.1	11	0600	.8	-5.8	61	187	5.8	183	10.2	10
0900	4.8	*****	29	280	1.1	224	3.2	55	0900	3.4	-9.7	38	173	1.5	131	5.1	45	0900	2.1	-6.0	55	200	4.5	187	7.6	26
1200	5.5	-12.1	27	270	.9	213	3.8	50	1200	5.1	-12.0	28	264	1.0	269	3.8	47	1200	3.4	-6.4	49	196	5.4	193	9.5	37
1500	6.0	-.9	61	240	1.5	242	3.2	35	1500	5.1	-12.5	27	273	1.2	290	3.2	30	1500	3.4	-6.1	50	205	3.7	189	7.6	16
1800	4.5	-12.6	28	340	1.6	357	3.2	10	1800	4.4	-12.2	29	337	1.0	351	3.2	9	1800	3.5	*****	47	215	1.9	205	3.8	10
2100	3.4	*****	37	001	.5	000	2.5	2	2100	2.1	*****	42	241	.6	209	2.5	1	2100	1.8	-6.0	56	199	1.8	227	5.1	1
2400	2.3	-6.6	52	096	1.0	041	5.7	1	2400	1.7	-7.1	52	222	1.8	187	7.0	1	2400	1.3	-5.6	60	192	1.9	202	4.4	1

## R &amp; M CONSULTANTS, INC.

## • SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING May, 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.	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	1.1	-6.0	59	183	1.1	206	3.2	2	0300	.1	*****	66	199	2.1	210	5.7	1	0300	-1.8	-15.0	36	335	.9	356	3.2	2	
0600	2.4	-6.2	53	179	2.2	173	4.4	16	0600	.4	*****	60	214	1.3	204	3.8	10	0600	-.8	-13.5	38	008	1.1	337	2.5	16	
0900	4.2	-7.7	42	196	2.7	191	4.4	31	0900	2.4	-12.4	33	261	.9	286	3.8	41	0900	*****	*****	**	***	***	340	4.4	***	
1200	5.5	-8.2	37	201	1.3	222	3.8	44	1200	3.3	-12.4	31	270	2.8	278	6.3	57	1200	*****	*****	**	***	***	335	4.4	***	
1500	5.0	-7.6	40	352	.8	023	3.2	27	1500	3.9	-27.6	8	279	4.9	280	8.3	63	1500	*****	*****	**	356	2.4	***	***	25	
1800	3.7	-6.6	47	124	.2	003	3.8	14	1800	2.7	-28.5	8	286	4.8	282	7.6	21	1800	4.0	-27.5	8	022	1.8	052	4.4	21	
2100	1.0	-5.2	63	036	.7	001	3.8	1	2100	.8	-15.0	30	308	3.0	298	7.0	1	2100	-.5	*****	59	147	1.2	185	5.1	1	
2400	.1	-5.7	65	192	1.5	196	2.5	1	2400	-.1	*****	31	020	1.0	042	3.8	1	2400	-.6	*****	52	086	.5	119	1.9	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.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-.4	-11.9	42	019	.4	089	1.9	2	0300	-5.0	-16.0	42	358	2.0	013	3.2	2	0300	-2.7	-14.9	39	351	1.6	336	3.2	2	
0600	-.3	-10.3	47	331	.7	196	1.9	8	0600	-.3	-15.1	32	359	1.9	022	3.8	22	0600	.9	-14.9	30	340	2.1	331	3.8	28	
0900	3.2	-13.7	28	004	2.1	002	3.8	67	0900	2.9	-13.5	29	003	3.1	001	5.1	63	0900	3.7	-27.7	8	004	2.5	005	4.4	63	
1200	3.9	-27.6	8	345	2.9	334	5.1	79	1200	4.1	-27.4	8	358	3.4	001	5.7	23	1200	5.6	-27.7	7	350	3.0	340	5.7	88	
1500	4.3	-28.7	7	335	2.9	340	5.1	66	1500	6.6	-26.9	7	332	2.9	319	6.3	61	1500	6.6	-26.9	7	320	3.1	333	5.7	59	
1800	4.0	-27.5	8	334	2.6	353	7.6	11	1800	5.7	-27.6	7	325	2.9	333	5.7	24	1800	5.5	-27.8	7	317	3.1	337	5.1	17	
2100	-.1	*****	9	350	1.8	348	4.4	1	2100	2.4	-28.7	8	345	2.3	328	5.1	1	2100	1.7	-29.2	8	349	2.1	331	4.4	2	
2400	-2.8	-15.6	37	358	1.9	001	3.2	1	2400	-1.2	-15.9	32	013	1.6	014	3.2	2	2400	-1.8	-15.7	34	010	1.4	027	3.8	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.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW		DEG C	DEG C	%	DEG.	M/S	MW
0300	-3.3	-15.4	39	355	1.7	348	3.2	2	0300	-.8	*****	9	354	1.2	003	2.5	2	0300	-.4	*****	68	***	0.0	***	0.0	1	
0600	1.0	-14.8	30	357	2.2	356	3.8	27	0600	2.4	-28.7	8	003	.6	343	2.5	20	0600	.7	-7.1	56	315	.1	353	1.9	16	
0900	5.5	*****	7	354	1.8	354	3.8	65	0900	5.6	-27.7	7	152	.3	172	3.2	28	0900	3.7	-10.5	35	354	.9	354	2.5	31	
1200	8.0	-27.5	6	026	1.6	335	5.7	81	1200	6.1	-27.3	7	125	1.7	125	7.0	40	1200	5.3	-11.9	28	165	2.0	153	7.0	35	
1500	6.4	-27.1	7	057	3.7	056	6.3	20	1500	5.1	-28.1	7	178	3.5	163	7.0	40	1500	1.2	-7.1	54	204	1.3	183	7.0	55	
1800	6.6	-26.9	7	069	4.3	068	7.0	24	1800	5.0	-28.1	7	193	3.0	195	6.3	17	1800	2.2	-6.7	52	350	1.7	350	7.6	13	
2100	2.5	-28.6	8	051	3.0	070	7.0	1	2100	1.0	-6.6	57	186	2.7	179	6.3	1	2100	1.4	*****	56	013	1.0	025	3.2	1	
2400	-.6	-29.7	9	355	2.5	001	5.7	1	2400	0.0	*****	62	195	.5	171	2.5	1	2400	-.2	-13.6	36	178	.9	108	5.7	1	

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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	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	DEG C	DEG C
			MW				MW				MW		

0300	-2.4	-14.3	40	046	.4	309	3.2	2	0300	1.1	-14.7	30	358	3.3	358	6.3	2	0300	-.4	*****	50	235	.3	185	3.2	2
0600	.3	-15.0	31	125	.5	109	2.5	34	0600	.7	*****	32	319	1.0	006	5.1	12	0600	.8	-9.3	47	174	1.0	196	5.1	16
0900	4.0	-27.5	8	143	.9	170	3.2	66	0900	1.0	-6.8	56	200	2.1	169	4.4	22	0900	3.8	-27.6	8	204	2.6	186	5.7	56
1200	6.1	-27.3	7	128	2.2	166	7.0	32	1200	4.2	-9.7	36	171	2.4	157	7.0	44	1200	4.2	-28.7	7	305	2.3	298	5.1	110
1500	5.8	-27.5	7	146	.4	195	7.6	37	1500	3.3	-9.1	40	177	3.9	156	8.3	34	1500	5.4	-27.8	7	322	2.9	313	5.7	63
1800	4.5	-12.1	29	357	2.6	358	6.3	25	1800	2.9	-9.8	39	276	1.9	272	5.1	11	1800	5.2	-28.0	7	320	3.5	332	7.0	25
2100	.7	-15.0	30	357	3.4	000	5.7	2	2100	.4	-8.3	52	280	3.2	286	7.6	1	2100	1.2	-28.3	9	348	3.2	325	5.7	2
2400	.2	-15.5	30	002	3.4	350	6.3	1	2400	.6	-12.2	38	095	.7	087	3.8	2	2400	-1.5	-17.0	30	010	2.6	007	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	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	DEG C	DEG C
			MW				MW				MW		

0300	-2.5	-17.5	31	359	3.3	348	5.1	3	0300	-.3	-10.6	46	091	.5	034	2.5	3	0300	2.8	*****	8	082	.5	145	3.8	2
0600	.8	-28.6	9	357	3.3	353	5.7	30	0600	3.2	-12.9	30	059	.7	071	1.9	31	0600	4.2	-13.3	27	186	1.1	179	5.1	17
0900	5.5	-27.8	7	359	3.0	356	5.7	67	0900	6.7	-26.9	7	258	.6	252	4.4	70	0900	6.8	-26.8	7	193	4.1	196	6.3	54
1200	7.0	-28.2	6	015	.8	037	6.3	40	1200	9.0	-26.8	5	094	1.7	117	6.3	82	1200	6.0	-11.3	28	136	.9	255	5.7	48
1500	6.0	-27.4	7	128	2.3	056	9.5	21	1500	9.4	-26.5	6	079	3.6	067	7.0	59	1500	8.3	-27.3	6	192	1.6	160	4.4	32
1800	7.7	-27.7	6	168	2.1	082	7.0	31	1800	8.5	-27.1	6	076	2.8	075	6.3	16	1800	8.0	-27.5	6	016	2.7	008	7.6	25
2100	2.6	-14.2	28	177	3.7	155	7.0	2	2100	7.0	-28.2	6	053	1.2	049	4.4	2	2100	4.3	-11.9	30	296	3.9	292	9.5	2
2400	-.2	*****	47	209	1.2	162	3.8	1	2400	3.7	-27.7	8	156	1.6	173	6.3	1	2400	3.4	-10.4	36	329	1.4	324	5.7	2

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 C	DEG C	%	DEG. M/S	DEG C	DEG C	%	DEG. M/S	DEG C	DEG C
			MW				MW				MW		

0300	2.8	-9.3	41	310	1.3	303	7.0	2	0300	2.1	*****	43	047	.4	032	3.2	3	0300	4.0	-13.0	28	200	2.6	187	8.3	2
0600	3.6	-8.5	41	334	1.4	321	5.1	8	0600	2.0	-7.4	50	201	.8	189	2.5	34	0600	6.6	-26.9	7	189	4.6	164	14.0	40
0900	5.3	-11.4	29	002	2.0	007	5.1	10	0900	6.5	-10.4	29	197	2.6	199	6.3	41	0900	7.9	-27.6	6	158	5.9	197	13.3	30
1200	7.8	-27.6	6	290	2.8	267	6.3	57	1200	8.9	-26.8	6	195	3.7	185	7.0	37	1200	10.2	-27.6	5	155	5.1	163	11.4	59
1500	6.4	-27.1	7	281	4.0	281	8.3	43	1500	9.5	-26.4	6	203	3.7	202	7.0	38	1500	11.8	-26.5	5	143	3.7	182	9.5	32
1800	5.2	-10.7	31	288	2.6	278	9.5	12	1800	8.8	-26.9	6	217	2.1	209	4.4	11	1800	6.8	-26.8	7	237	5.1	270	10.8	.12
2100	4.3	*****	33	312	1.1	258	3.8	2	2100	5.3	-.9	64	209	1.8	195	5.1	2	2100	4.3	-12.3	29	293	3.0	293	10.2	2
2400	3.0	-9.4	40	018	1.0	358	2.5	1	2400	4.0	-12.2	30	191	.5	201	2.5	1	2400	3.7	-13.3	28	100	1.6	080	6.3	1

R & M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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 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	2.7	*****	33	018	1.1	067	4.4	2	0300	2.0	*****	36	062	.8	080	3.2	3	0300	1.7	-6.1	56	347	1.2	324	3.2	2
0600	3.2	-10.6	36	149	.8	148	3.2	13	0600	2.7	-12.5	32	182	.8	196	2.5	16	0600	2.6	-7.4	48	350	2.6	350	5.7	12
0900	3.7	-11.2	33	262	2.8	269	7.0	16	0900	6.1	-27.3	7	005	.4	054	3.8	82	0900	4.3	-8.9	38	356	4.0	359	6.3	35
1200	6.6	-26.9	7	268	4.8	276	9.5	108	1200	7.0	-28.2	6	357	1.6	351	5.1	29	1200	8.8	-26.9	6	360	4.6	000	7.6	60
1500	6.0	-27.4	7	287	5.0	279	8.9	31	1500	7.3	-28.0	6	336	2.4	334	4.4	21	1500	10.3	-27.6	5	349	4.0	352	7.0	71
1800	5.2	-28.0	7	287	3.6	293	6.3	10	1800	5.3	-27.9	7	320	3.0	303	5.1	11	1800	9.4	-26.5	6	352	4.2	355	7.6	25
2100	3.2	*****	8	296	2.3	296	7.0	2	2100	4.2	-12.8	28	341	2.4	357	5.1	2	2100	6.2	-27.2	7	000	3.5	001	7.6	2
2400	2.1	*****	32	077	1.1	108	5.1	2	2400	2.7	-9.4	41	311	2.2	303	4.4	1	2400	1.2	-14.6	30	012	2.7	010	5.1	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 DEG. M/S MW

0300	.7	-13.9	33	012	1.7	016	3.2	3
0600	5.8	-27.5	7	008	2.2	004	3.8	33
0900	9.5	-26.4	6	356	3.6	359	5.7	67
1200	12.6	-27.9	4	329	2.1	334	6.3	80
1500	14.0	-26.9	4	319	2.6	333	6.3	64
1800	12.8	-27.8	4	345	4.0	321	7.0	27
2100	6.8	-26.8	7	356	3.5	353	5.7	3
2400	1.7	-29.2	8	358	2.2	002	5.1	1

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY	MAX. DEG C	MIN. DEG C	MEAN DEG C	RES. DIR.	RES. SPD. M/S	Avg. WIND DIR. M/S	Max. GUST DIR. M/S	Max. P'VAL RH %	Mean Mean DP DEG C	Day's PRECIP MM	Solar Energy Wh/Sec	Day
				deg	deg	deg	deg	%	deg C	mm	Wh/Sec	
1	3.4	-10.2	-3.4	355	1.4	1.6	345	3.8	N	24	-24.6	0.0
2	.4	-8.1	-3.9	356	3.2	3.4	354	7.0	N	30	-19.9	0.0
3	1.8	-9.1	-3.7	355	2.0	2.1	359	5.1	N	30	-21.6	0.0
4	3.4	-6.9	-1.8	334	.9	2.0	356	7.0	N	33	-20.6	0.0
5	4.9	-9.1	-2.1	004	2.4	2.7	332	6.3	N	17	-26.3	0.0
6	7.4	-4.9	1.3	321	.8	2.2	199	7.0	N	20	-21.9	0.0
7	6.9	.9	3.9	314	.6	1.5	288	6.3	N	33	-12.2	0.0
8	7.0	1.2	4.1	235	.5	1.5	187	7.0	WSW	38	-10.7	0.0
9	4.5	.6	2.6	197	3.5	3.7	183	10.2	SSW	52	-6.5	0.0
10	6.9	.1	3.5	188	.9	1.8	173	4.4	S	50	-6.9	.4
11	4.4	-.2	2.1	276	2.1	2.7	280	8.3	NNW	36	-15.6	2.2
12	4.0	-2.3	.9	017	.8	1.6	185	5.1	N	65	-14.2	0.0
13	4.5	-2.8	.9	346	1.9	2.0	353	7.6	N	25	-21.1	1.6
14	6.6	-5.0	.8	350	2.4	2.6	319	6.3	N	21	-21.5	0.0
15	7.4	-4.0	1.7	342	2.3	2.4	340	5.7	N	18	-23.2	0.0
16	8.4	-3.8	2.3	032	2.2	2.7	068	7.0	N	15	-24.3	0.0
17	6.8	-1.2	2.8	177	1.1	2.0	125	7.0	S	19	-24.8	0.0
18	7.4	-.5	3.5	207	.1	1.5	350	7.6	N	51	-8.7	1.2
19	6.9	-2.4	2.3	023	.9	2.6	195	7.6	N	25	-18.5	0.0
20	4.6	-.8	1.9	237	.8	2.7	156	8.3	SSW	40	-10.6	.2
21	6.8	-1.7	2.6	319	1.4	2.5	332	7.0	NW	23	-22.3	.2
22	8.1	-2.8	2.7	041	.3	3.1	056	9.5	N	17	-23.2	0.0
23	10.3	-.6	4.9	086	1.3	2.0	067	7.0	ENE	17	-24.4	0.0
24	9.4	1.3	5.4	245	.5	2.6	292	9.5	S	22	-17.1	0.0
25	8.7	2.2	5.5	307	1.7	2.4	278	9.5	NNW	29	-14.2	.2
26	10.9	-.3	5.3	202	1.8	2.2	185	7.0	SSW	25	-18.2	0.0
27	13.1	3.1	8.1	181	2.7	4.3	164	14.0	SSE	12	-23.5	0.0
28	7.1	2.1	4.6	282	2.1	2.9	276	9.5	W	22	-18.9	0.0
29	8.4	1.1	4.8	334	1.3	2.0	351	5.1	N	21	-19.3	0.0
30	11.0	.9	6.0	356	3.3	3.4	000	7.6	N	25	-18.1	.2
31	14.8	-.9	7.0	350	2.6	2.8	321	7.0	N	10	-25.2	0.0
MONTH	14.8	-10.2	2.5	331	.7	2.4	164	14.0	N	28	-18.7	6.2
												178601

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 9.5

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 11.4

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 11.4

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 \*\*\*\*

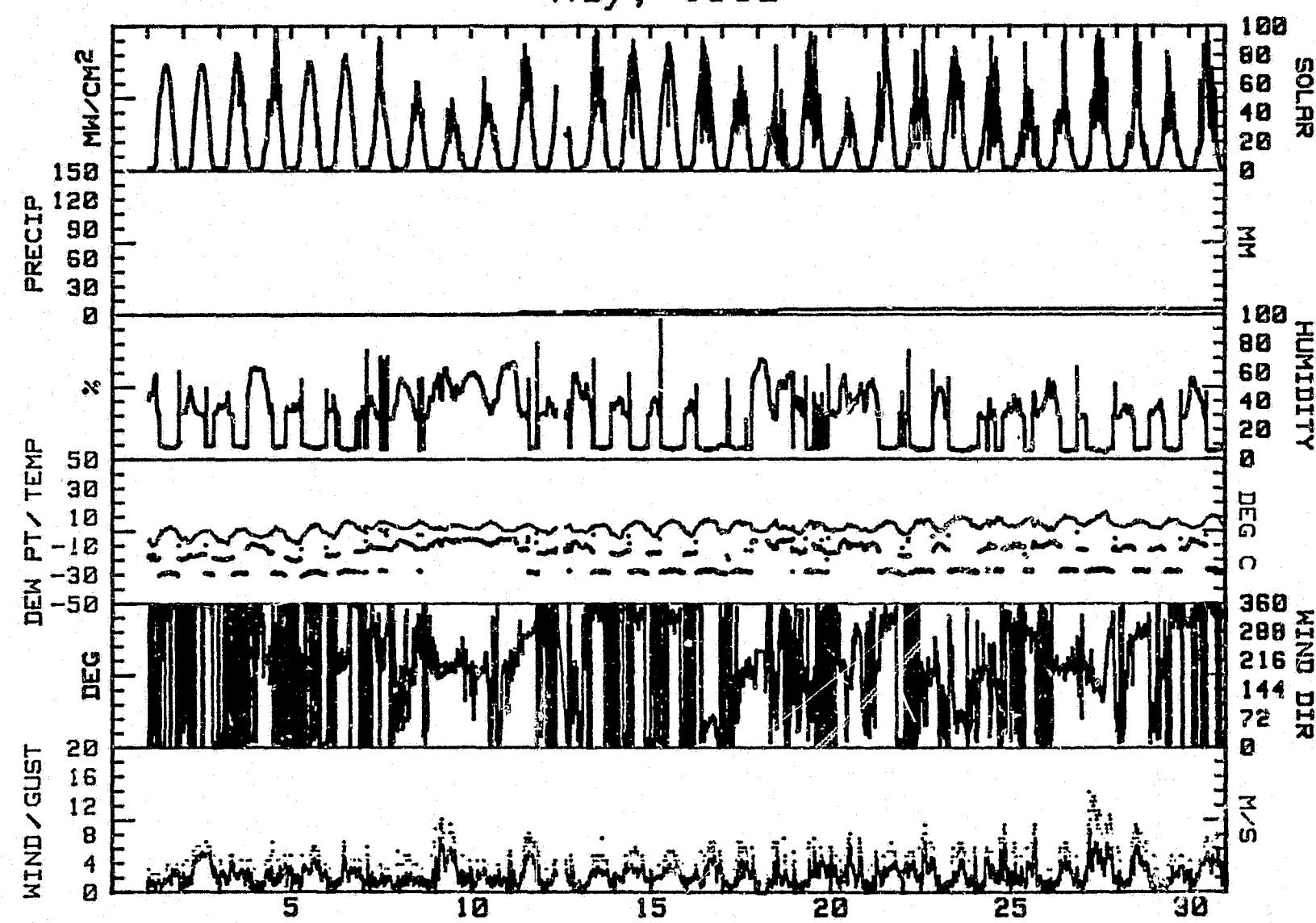
R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

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

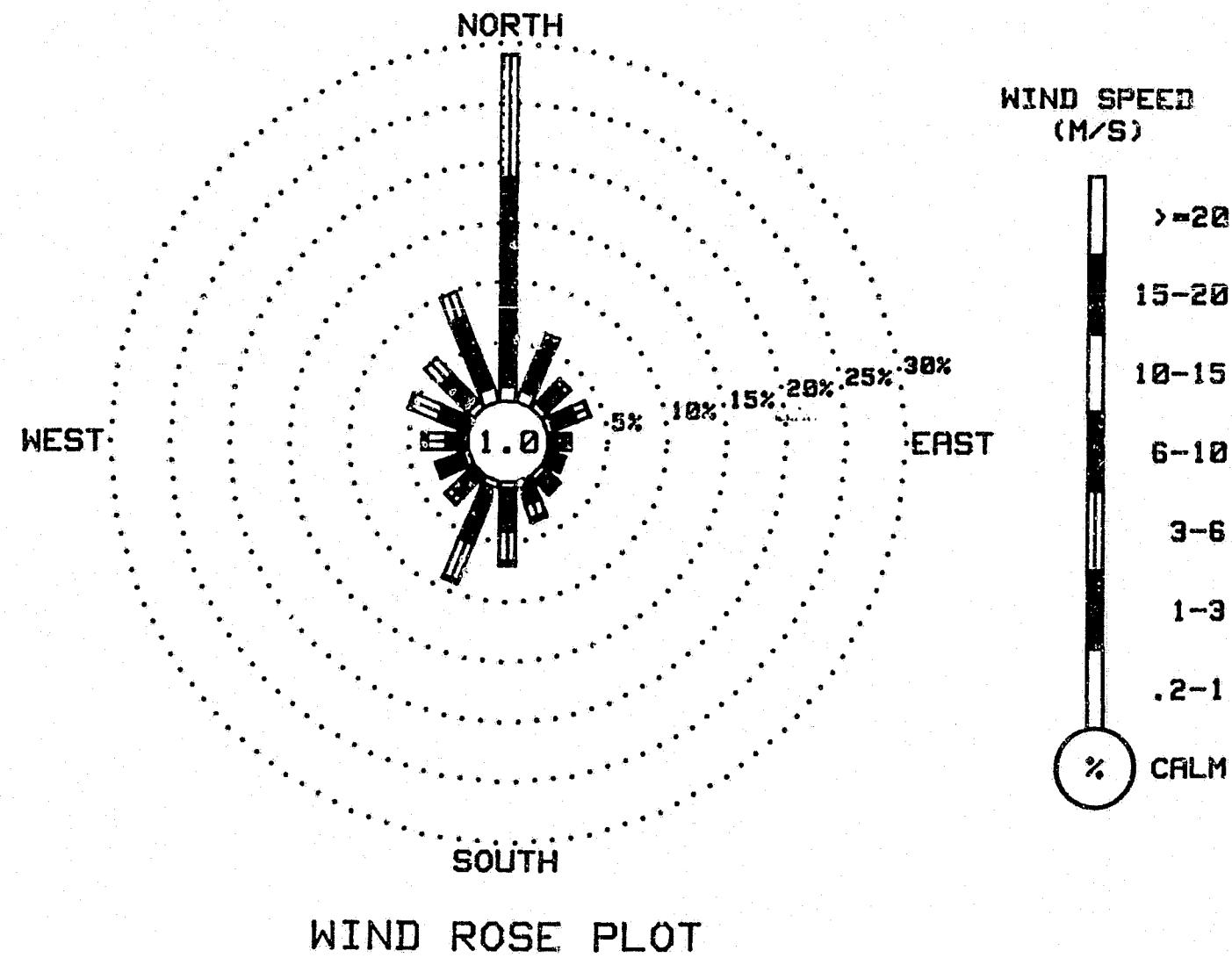
DIRECTION	VELOCITY (M/S)								TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER		
N	1.22	17.43	10.27	.07	0.00	0.00	0.00	0.00	28.99
NNE	1.02	4.65	.54	0.00	0.00	0.00	0.00	0.00	6.21
NE	.64	2.14	.58	.03	0.00	0.00	0.00	0.00	3.39
ENE	.58	2.03	1.19	.03	0.00	0.00	0.00	0.00	3.83
E	.34	1.12	.44	0.00	0.00	0.00	0.00	0.00	1.90
ESE	.27	1.12	.20	0.00	0.00	0.00	0.00	0.00	1.59
SE	.54	1.19	.34	.10	0.00	0.00	0.00	0.00	2.17
SSE	.34	1.73	1.22	.34	0.00	0.00	0.00	0.00	3.63
S	.51	3.59	2.48	.34	0.00	0.00	0.00	0.00	6.92
SSW	.61	4.98	3.29	.24	0.00	0.00	0.00	0.00	9.12
SW	.27	2.37	.71	.03	0.00	0.00	0.00	0.00	3.39
WSW	.51	2.00	.41	0.00	0.00	0.00	0.00	0.00	2.92
W	.37	1.42	1.63	.41	.69	0.00	0.00	0.00	3.83
WNW	.34	2.41	2.54	.14	0.00	0.00	0.00	0.00	5.43
NW	.68	3.19	1.97	0.00	0.00	0.00	0.00	0.00	5.83
NNW	1.32	6.34	2.17	0.00	0.00	0.00	0.00	0.00	9.83
CALM									1.02
TOTAL	9.56	57.71	29.98	1.73	0.00	0.00	0.00	0.00	100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2949 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



R & M CONSULTANTS, INC.

## SUSTAINABLE HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING JUNE, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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.	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	.6	-14.0	33	356	1.5	346	3.2	3	0300	5.1	-7.5	40	344	1.1	012	3.8	2	0300	2.3	-13.2	31	004	3.4	004	6.3	3
0600	6.8	****	7	353	.8	000	3.8	32	0600	4.5	-4.5	52	185	.9	227	4.4	10	0600	3.4	-27.9	8	004	4.3	005	6.3	20
0900	13.3	-27.4	4	029	.3	358	3.2	67	0900	5.5	-4.1	30	359	.5	246	1.9	11	0900	5.7	-22.6	7	358	4.3	353	8.3	25
1200	15.5	-28.1	3	226	2.2	214	7.0	73	1200	5.9	-4.3	48	320	1.2	304	3.2	10	1200	6.8	-26.8	7	358	4.7	359	7.6	86
1500	15.2	-26.1	4	335	3.2	233	7.6	29	1500	4.3	-5.8	48	339	1.9	358	7.6	17	1500	8.4	-27.2	6	350	4.3	357	8.3	68
1800	11.7	-26.6	5	295	3.5	284	7.6	7	1800	5.4	-10.5	31	005	5.1	010	8.3	9	1800	8.9	-26.8	6	354	3.9	341	7.0	34
2100	9.7	-26.2	6	011	1.7	026	7.0	1	2100	3.0	-9.7	39	350	2.5	022	5.7	2	2100	6.2	-27.2	7	004	2.4	002	6.3	3
2400	8.3	-27.3	6	023	2.2	054	6.3	1	2400	2.6	-13.4	30	347	1.9	305	3.8	2	2400	.8	-13.4	34	357	1.7	349	4.4	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.	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	.1	-13.3	36	346	.1	021	3.2	4	0300	4.5	****	34	141	1.1	118	4.4	2	0300	5.6	-27.7	7	201	2.6	169	14.0	3
0600	3.7	-10.1	36	168	.8	197	2.5	35	0600	5.6	-10.8	30	205	1.1	196	5.1	17	0600	10.2	-27.6	5	200	5.0	180	14.6	47
0900	9.6	-26.3	6	181	1.1	171	7.0	69	0900	10.3	-27.6	5	189	5.2	175	8.9	60	0900	12.5	-26.0	5	176	6.4	178	15.9	79
1200	12.3	-26.1	5	177	3.9	171	7.0	57	1200	11.3	-26.9	5	166	5.3	169	9.5	25	1200	15.3	-28.2	3	167	5.8	167	14.0	35
1500	13.6	-27.2	4	209	3.3	189	7.0	55	1500	12.2	-26.2	5	157	5.3	154	10.8	21	1500	14.5	-26.6	4	167	6.9	159	14.0	21
1800	12.3	-26.1	5	222	2.9	225	6.3	12	1800	13.6	-27.2	4	148	5.4	156	9.5	20	1800	13.6	-27.2	4	155	5.8	152	13.3	11
2100	7.4	-27.9	6	275	3.0	271	7.6	2	2100	9.6	-26.3	6	154	8.3	155	13.3	2	2100	11.8	-26.5	5	142	5.1	135	14.0	2
2400	5.9	-27.5	7	162	1.3	240	5.1	1	2400	9.0	-26.8	6	162	7.7	160	14.6	1	2400	6.0	-2.9	53	191	1.3	156	9.5	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.	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	5.0	-4.1	52	166	1.4	168	3.2	3	0300	1.8	-7.6	50	004	.9	338	2.5	3	0300	2.3	****	41	052	.2	015	2.5	3
0600	6.0	-3.4	51	358	.4	354	3.8	13	0600	4.9	****	39	314	1.1	354	5.7	20	0600	6.8	-10.6	28	191	1.1	200	5.1	24
0900	7.7	-2.4	49	351	2.3	343	5.1	30	0900	9.6	-26.3	6	355	1.5	356	3.2	31	0900	8.8	-8.8	28	179	3.3	170	12.1	27
1200	11.1	-7.3	27	166	1.0	147	13.3	22	1200	11.8	-26.5	5	357	1.4	342	4.4	47	1200	8.8	-8.4	29	156	4.9	150	12.1	***
1500	8.9	-3.1	43	152	5.3	159	15.2	27	1500	13.9	-27.0	4	007	1.0	299	5.7	34	1500	11.1	-27.0	5	149	3.9	155	8.9	***
1800	5.9	-7.1	39	276	2.2	274	10.2	19	1800	13.2	-27.5	4	229	1.9	192	4.4	20	1800	12.1	-26.3	5	124	1.5	154	7.0	***
2100	5.8	-4.7	47	015	1.5	000	4.4	2	2100	10.1	-27.7	5	319	1.8	298	4.4	3	2100	11.0	-27.1	5	154	2.8	135	8.9	***
2400	4.6	****	42	015	1.3	000	3.2	1	2400	7.8	****	3	318	1.3	297	6.3	1	2400	5.3	****	44	164	2.9	153	8.9	***

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING June, 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 C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	4.3	*****	48	296	.5	320	2.5 ***	0300	8.5	-27.1	6	154	5.0	147	11.4 ***	0300	7.2	-28.1	6	132	5.1	129	12.7 ***
0600	9.2	-8.1	29	196	1.5	253	4.4 ***	0600	9.2	-26.6	6	192	3.0	155	14.6 ***	0600	8.0	-27.5	6	143	5.4	152	11.4 ***
0900	11.5	-26.7	5	179	4.2	156	17.1 ***	0900	7.7	-27.7	6	141	7.8	141	13.3 ***	0900	9.9	-27.9	5	163	5.1	140	10.2 ***
1200	11.4	-26.8	5	163	6.6	185	17.8 ***	1200	9.2	-26.6	6	137	6.8	138	15.2 ***	1200	12.0	-26.4	5	159	6.9	158	12.7 ***
1500	13.6	-27.2	4	159	7.1	165	15.2 ***	1500	10.9	-27.1	5	139	3.6	134	9.5 ***	1500	11.1	-27.0	5	157	8.5	149	15.9 ***
1800	12.4	-26.1	5	166	7.5	158	14.6 ***	1800	9.7	-26.2	6	149	4.6	158	11.4 ***	1800	3.8	-11.5	32	226	2.9	171	12.7 ***
2100	9.2	-26.6	6	159	6.3	144	12.1 ***	2100	9.6	-26.3	6	129	1.9	147	11.4 ***	2100	3.2	-6.0	51	137	.7	140	5.1 ***
2400	9.2	-26.6	6	167	4.4	165	13.3 ***	2400	7.3	-28.0	6	138	5.8	145	13.3 ***	2400	3.2	-7.7	45	033	.4	008	3.2 ***

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
DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	2.2	-10.5	39	015	.5	298	2.5 ***	0300	3.4	-13.5	28	001	2.3	017	3.8 ***	0300	3.6	-7.3	45	277	3.4	289	8.9 ***
0600	4.5	*****	30	001	.9	016	2.5 ***	0600	6.6	-26.9	7	356	1.7	351	3.2 ***	0600	2.3	-8.5	45	290	3.7	301	7.6 ***
0900	7.7	-27.7	6	318	1.0	293	3.2 ***	0900	10.6	-27.4	5	360	3.2	359	5.7 ***	0900	2.8	-8.6	43	196	1.3	292	6.3 ***
1200	9.3	-26.5	6	295	1.6	308	5.1 ***	1200	13.1	-27.5	4	359	3.4	004	5.7 ***	1200	3.4	-7.5	45	264	1.9	278	7.0 ***
1500	10.4	-27.5	5	340	1.9	335	5.1 ***	1500	12.4	-26.1	5	138	1.0	169	8.9 ***	1500	3.5	-8.0	43	173	1.9	174	5.7 ***
1800	11.0	-27.1	5	308	1.9	294	4.4 ***	1800	10.8	-27.2	5	172	2.7	168	7.6 ***	1800	3.4	-6.6	48	220	2.1	294	7.0 ***
2100	8.1	*****	6	332	1.9	316	4.4 ***	2100	7.7	-8.1	32	227	2.0	196	6.3 ***	2100	3.5	-6.8	47	295	3.8	290	8.9 ***
2400	4.0	-12.6	29	358	1.1	316	2.5 ***	2400	5.0	-7.0	42	227	2.1	261	7.0 ***	2400	3.3	-6.2	50	297	2.9	288	7.0 ***

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 C	%	DEG. M/S	DEG. M/S	MW	DEG C	DEG C	%	DEG. M/S	DEG. M/S	MW

0300	3.4	-6.1	50	103	.9	112	3.8 ***	0300	4.3	-6.7	45	331	2.3	337	5.7 ***	0300	3.9	-10.3	35	004	3.7	000	5.7 ***
0600	3.4	-6.6	48	354	.8	042	5.1 ***	0600	4.2	-6.5	46	044	1.4	098	5.7 ***	0600	6.4	-10.1	30	002	3.2	001	6.3 ***
0900	5.0	-6.0	45	287	1.6	301	6.3 ***	0900	6.0	-6.7	40	022	1.8	013	3.8 ***	0900	11.1	-27.0	5	359	5.1	359	7.6 ***
1200	5.9	-5.8	43	296	3.6	302	7.0 ***	1200	9.4	-7.4	30	012	2.7	003	6.3 ***	1200	9.6	-4.2	38	009	1.9	354	6.3 ***
1500	5.7	-6.3	42	285	5.6	286	9.5 ***	1500	11.9	-26.4	5	002	4.3	007	8.3 ***	1500	8.2	-1.4	51	199	4.2	196	8.9 ***
1800	6.3	-6.8	39	299	3.8	303	7.6 ***	1800	12.3	-26.1	5	360	4.0	010	8.3 ***	1800	7.9	-1.9	50	263	1.4	232	3.8 ***
2100	5.4	-7.2	40	310	3.5	303	8.3 ***	2100	9.5	-26.4	6	353	3.0	001	5.7 ***	2100	7.6	-9.5	55	326	1.1	320	3.2 ***
2400	5.1	-6.9	42	007	1.9	329	7.6 ***	2400	4.7	-9.6	35	003	2.5	014	5.1 ***	2400	6.0	****	58	342	1.3	329	3.8 ***

## R. &amp; M. CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR DENALI 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.	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	3.5	-4.7	55	016	.9	003	2.5	***	0300	5.0	-3.3	55	330	.7	324	5.1	***	0300	4.2	-8.3	40	016	1.1	051	3.2	***
0600	8.0	****	41	005	.9	353	2.5	***	0600	3.0	-6.2	51	028	1.2	002	4.4	***	0600	5.0	****	38	347	.6	349	3.2	***
0900	10.9	-7.5	27	279	.8	212	3.2	***	0900	4.7	-7.9	40	085	.3	241	6.3	***	0900	7.8	-27.6	6	303	1.8	311	5.1	***
1200	13.5	-27.3	4	181	1.7	177	3.8	***	1200	5.9	-8.2	36	262	2.9	247	7.0	***	1200	11.3	-26.9	5	307	2.3	300	5.1	***
1500	12.9	-27.7	4	254	1.2	334	11.4	***	1500	6.8	-10.6	28	288	3.5	279	5.7	***	1500	12.2	-26.2	5	298	2.1	307	5.1	***
1800	12.3	-26.1	5	180	5.2	187	8.3	***	1800	6.1	-9.9	31	302	3.1	309	5.7	***	1800	11.7	-26.6	5	002	1.9	345	4.4	***
2100	8.3	-4.3	41	180	3.6	157	7.6	***	2100	5.3	-10.2	32	325	2.1	319	5.1	***	2100	9.1	-26.7	6	298	2.5	292	5.1	***
2400	6.6	-1.8	55	155	.5	181	5.7	***	2400	4.4	-8.8	38	023	.7	325	3.8	***	2400	7.3	-10.6	27	003	1.1	283	5.1	***

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.	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	6.0	-6.7	40	013	.9	031	4.4	***	0300	4.6	-9.0	37	226	.3	334	3.8	***	0300	6.8	-10.6	28	344	2.1	328	3.8	***
0600	7.7	-9.4	29	348	2.1	353	3.8	***	0600	7.1	-8.6	32	359	1.9	011	3.8	***	0600	11.9	-26.4	5	340	2.5	324	3.8	***
0900	11.6	-26.6	5	353	2.1	351	3.8	***	0900	14.4	****	4	357	1.7	352	3.8	***	0900	17.0	-27.1	3	355	3.1	350	4.4	***
1200	12.6	-27.9	4	173	.4	207	5.7	***	1200	18.3	-28.7	2	238	1.4	233	6.3	***	1200	20.7	-27.1	2	322	1.5	263	6.3	***
1500	13.6	-27.2	4	187	1.6	163	5.1	***	1500	19.9	-27.6	2	217	2.7	204	5.7	***	1500	21.8	-29.2	1	311	1.7	334	5.7	***
1800	13.5	****	4	190	2.8	159	7.0	***	1800	19.3	-28.0	2	263	1.9	198	5.7	***	1800	21.9	-29.1	1	348	2.4	349	5.1	***
2100	11.1	-27.0	5	344	1.0	341	2.5	***	2100	14.4	-26.6	4	349	2.6	359	5.1	***	2100	15.9	-27.8	3	357	2.8	358	5.1	***
2400	8.5	-2.8	45	024	.7	329	3.8	***	2400	8.8	-26.9	6	351	1.3	037	3.8	***	2400	9.5	-26.4	6	001	2.3	348	5.1	***

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.	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	6.8	-26.8	7	353	2.7	356	5.1	***	0300	12.6	-27.9	4	109	.9	147	2.5	***	0300	8.4	-27.2	6	077	.7	040	2.5	***
0600	13.2	-27.5	4	002	3.0	003	5.1	***	0600	14.1	-26.8	4	167	.9	185	3.2	***	0600	13.9	-27.0	4	098	.9	147	3.2	***
0900	19.1	-28.2	2	356	2.5	002	4.4	***	0900	20.1	-27.5	2	186	4.5	179	9.5	***	0900	19.5	-27.9	2	163	4.0	160	9.5	***
1200	23.2	-28.3	1	341	1.5	284	5.1	***	1200	22.1	-29.0	1	181	6.1	181	9.5	***	1200	21.1	-29.7	1	174	6.1	169	9.5	***
1500	23.0	-28.4	1	018	1.9	004	4.4	***	1500	21.6	-29.3	1	179	4.6	177	8.3	***	1500	23.0	-28.4	1	174	5.6	169	12.1	***
1800	21.8	-29.2	1	184	.4	178	9.5	***	1800	22.0	-29.1	1	171	4.4	172	9.5	***	1800	20.3	-27.4	2	167	8.8	169	13.3	***
2100	18.7	****	2	065	1.2	085	5.7	***	2100	18.7	-28.4	2	145	5.7	147	10.8	***	2100	18.6	-28.5	2	137	6.4	138	13.3	***
2400	12.8	-27.8	4	056	.4	007	3.2	***	2400	11.5	****	5	176	2.2	138	7.0	***	2400	16.7	-27.3	3	132	8.1	140	17.8	***

## R &amp; M CONSULTANTS, INC.

## SUSITNA HYDROELECTRIC PROJECT

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

DAY 28

DAY 29

DAY 30

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	M/S	MW	

0300	13.8	-27.1	4	139	10.4	142	17.1	***	0300	5.1	-7.5	40	203	1.3	283	7.6	***	0300	*****	*****	**	***	****	***	****	***
0600	11.9	-26.4	5	143	7.7	131	17.8	***	0600	6.1	-8.4	35	196	1.5	169	3.8	***	0600	*****	*****	**	***	****	***	****	***
0900	13.1	-27.5	4	156	9.3	162	14.6	***	0900	*****	*****	**	284	.4	251	3.8	***	0900	*****	*****	**	***	****	***	****	***
1200	15.9	-27.8	3	156	8.2	144	12.7	***	1200	12.0	-26.4	5	188	1.3	170	10.2	***	1200	*****	*****	**	***	****	***	****	***
1500	12.9	-27.7	4	158	8.0	151	13.3	***	1500	*****	*****	**	***	*****	140	8.3	***	1500	*****	*****	**	***	****	***	****	***
1800	10.8	-27.2	5	263	3.3	296	9.3	***	1800	*****	*****	**	***	*****	***	***	***	1800	*****	*****	**	***	****	***	****	***
2100	9.0	-26.8	6	297	2.2	277	8.3	***	2100	*****	*****	**	***	*****	***	***	***	2100	*****	*****	**	***	****	***	****	***
2400	6.7	-6.8	38	087	1.1	033	6.3	***	2400	*****	*****	**	***	*****	***	***	***	2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.  
SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR DENALI WEATHER STATION  
DATA TAKEN DURING June, 1982

DAY	MAX. TEMP. DEG C	MIN. TEMP. DEG C	MEAN TEMP. DEG C	RES. WIND DIR. DEG	RES. WIND SPD. M/S	AVG. WIND SPD. M/S	MAX. GUST DIR. DEG	MAX. GUST P'VAL SPD. M/S	MEAN RH %	MEAN DEG C	DAY'S PRECIP MM	SOLAR ENERGY WH/SQM	
1	16.7	.6	8.7	305	1.0	2.4	233	7.6	N	8	-25.5	0.0	6591 1
2	8.8	2.3	5.6	350	1.6	2.1	010	8.3	N	39	-8.5	1.2	2308 2
3	9.0	.7	4.9	359	3.6	3.6	353	8.3	N	14	-22.9	0.0	8055 3
4	14.3	-1.3	6.5	207	1.6	2.5	271	7.6	S	10	-25.1	0.0	6668 4
5	14.1	4.2	9.2	162	4.8	5.0	160	14.6	SSE	9	-24.3	0.0	4040 5
6	16.4	5.2	10.8	171	4.6	5.2	178	15.9	SSE	8	-25.4	0.0	5583 6
7	12.7	4.0	8.4	141	.2	2.8	159	15.2	N	42	-5.6	.8	2745 7
8	14.5	.8	7.7	326	1.0	1.8	297	6.3	N	17	-21.0	0.0	6165 8
9	12.4	2.3	7.4	158	2.5	3.1	170	12.1	SSE	24	-13.7	.2	4160 9
10	14.4	3.9	9.2	166	4.6	5.0	185	17.8	SSE	14	-21.1	0.0	***** 10
11	11.1	6.1	8.6	145	4.7	5.2	138	15.2	SE	6	-27.1	0.0	***** 11
12	13.1	2.5	7.8	156	4.0	4.9	149	15.9	SSE	15	-22.1	.2	***** 12
13	11.5	.9	6.2	329	1.2	1.6	308	5.1	N	14	-22.3	0.0	***** 13
14	13.8	3.1	8.5	334	.6	2.9	169	8.9	N	14	-21.8	0.0	***** 14
15	4.8	2.2	3.5	269	2.0	2.9	289	8.9	WNW	45	-7.6	2.2	***** 15
16	7.3	3.2	5.3	304	2.3	3.0	286	9.5	WNW	43	-6.6	.4	***** 16
17	13.0	3.6	8.3	003	2.6	2.9	007	8.3	N	27	-14.3	0.0	***** 17
18	12.5	3.3	7.9	345	1.5	3.1	196	8.9	N	37	-8.6	2.0	***** 18
19	14.8	3.1	9.0	188	1.2	2.4	334	11.4	S	25	-15.1	3.8	***** 19
20	7.9	3.0	5.5	305	1.4	2.3	247	7.0	WNW	39	-8.0	6.0	***** 20
21	12.2	4.0	8.1	322	1.5	1.9	311	5.1	WNW	16	-20.6	0.0	***** 21
22	14.4	5.8	10.1	328	.3	1.9	159	7.0	N	13	-21.8	0.0	***** 22
23	20.6	4.3	12.5	305	.9	2.2	233	6.3	N	12	-21.8	0.0	***** 23
24	22.9	6.1	14.5	345	2.2	2.5	263	6.3	N	5	-26.8	0.0	***** 24
25	23.9	6.7	15.3	005	1.5	2.2	178	9.5	N	3	-28.0	0.0	***** 25
26	23.2	10.4	16.8	171	3.5	3.8	147	10.8	S	2	-28.1	0.0	***** 26
27	23.9	8.4	16.2	154	4.7	5.2	140	17.8	S	2	-28.0	0.0	***** 27
28	16.6	6.7	11.7	155	5.1	6.7	131	17.8	SSE	5	-26.5	0.0	***** 28
29	13.4	5.1	9.3	193	1.1	2.3	170	10.2	SSE	27	-13.1	0.0	***** 29
30	*****	*****	*****	***	***	***	***	***	***	**	*****	****	***** 30
MONTH	23.9	-1.3	9.1	173	.7	3.2	185	17.8	N	18	-19.4	16.8	46313

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 17.1

GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 14.6

GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 15.9

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 &amp; M CONSULTANTS, INC.

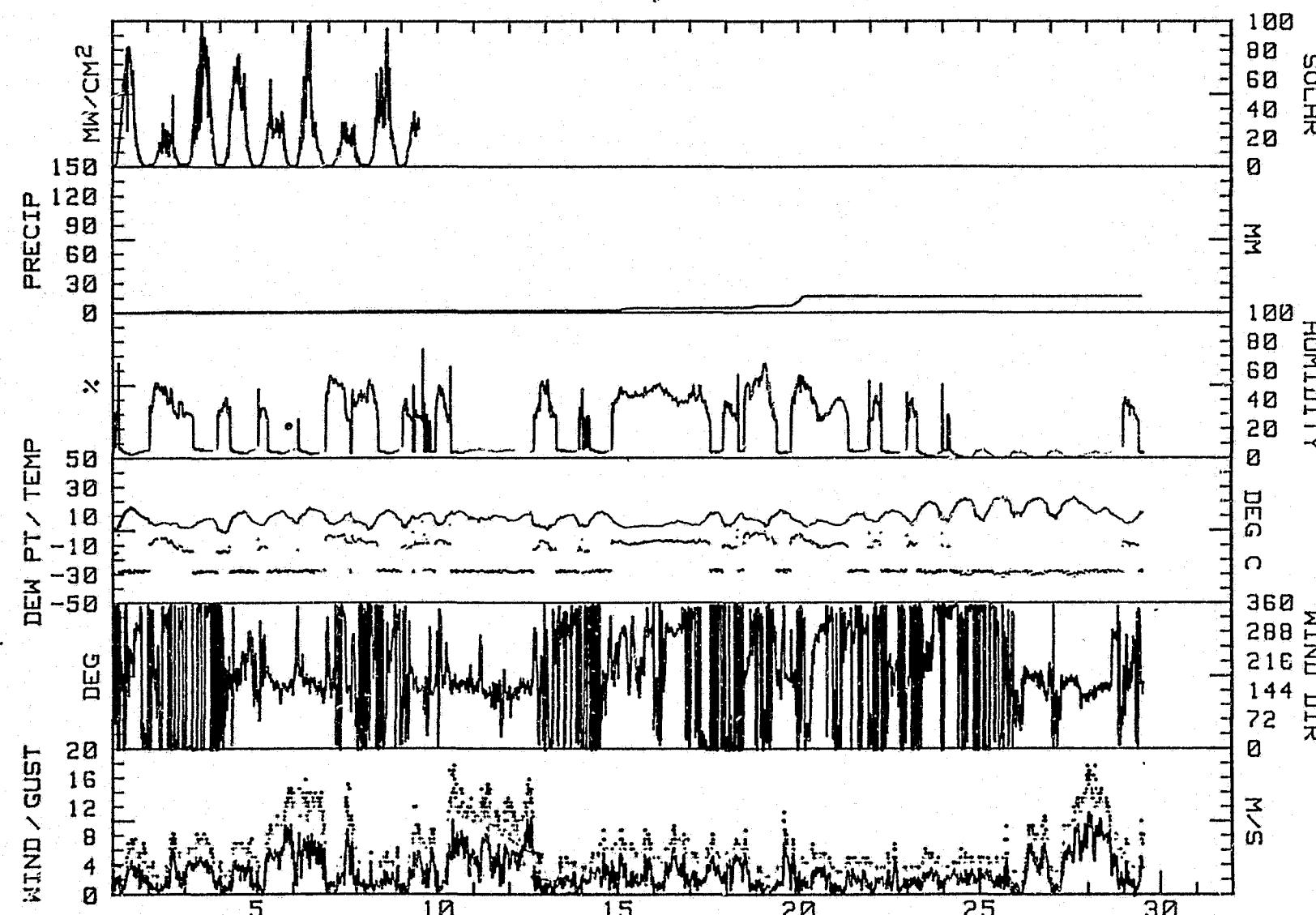
## SUSITNA HYDROELECTRIC PROJECT

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

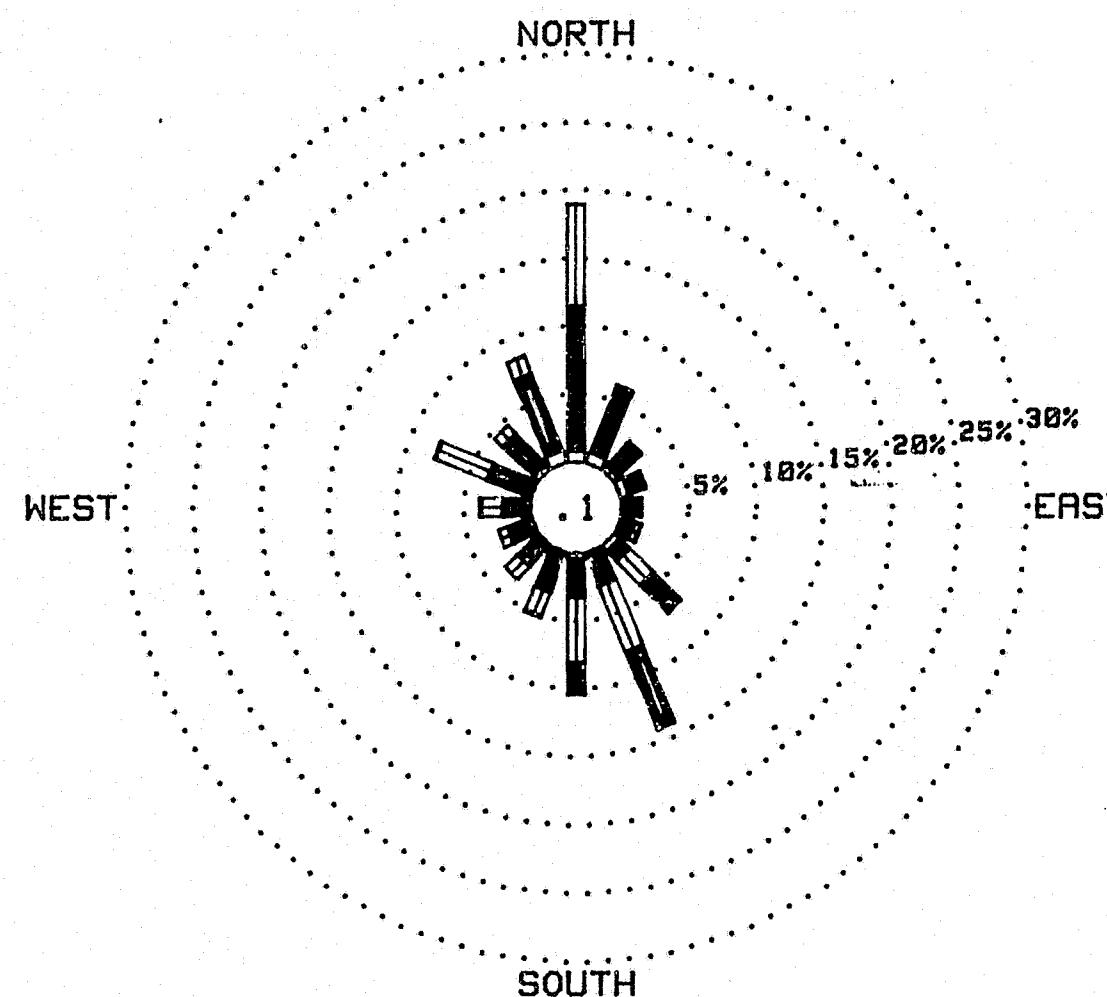
DIRECTION	VELOCITY (M/S)							TOTAL
	0.2 TO 1.0	1.0 TO 3.0	3.0 TO 6.0	6.0 TO 10.0	10.0 TO 15.0	15.0 TO 20.0	20.0 OR GREATER	
	1.0	3.0	6.0	10.0	15.0	20.0		
N	.80	10.63	7.41	.04	0.00	0.00	0.00	18.88
NNE	.80	5.00	.29	0.00	0.00	0.00	0.00	6.10
NE	.40	2.26	.18	0.00	0.00	0.00	0.00	2.85
ENE	.66	1.24	.07	0.00	0.00	0.00	0.00	1.97
E	.33	.99	.22	0.00	0.00	0.00	0.00	1.53
ESE	.26	.84	.47	.07	0.00	0.00	0.00	1.64
SE	.55	1.02	2.48	2.67	.22	0.00	0.00	6.94
SSE	.26	2.37	5.22	5.81	.37	0.00	0.00	14.02
S	.40	2.85	4.78	2.26	.04	0.00	0.00	10.34
SSW	.29	2.85	1.86	.11	0.00	0.00	0.00	5.11
SW	.37	1.79	1.28	0.00	0.00	0.00	0.00	3.43
WSW	.29	1.61	.69	0.00	0.00	0.00	0.00	2.59
W	.26	1.86	1.53	.15	0.00	0.00	0.00	3.80
WNW	.37	3.18	4.13	.11	0.00	0.00	0.00	7.78
NW	.40	3.25	.88	0.00	0.00	0.00	0.00	4.53
NNW	.95	6.06	1.35	.04	0.00	0.00	0.00	8.40
CALM								.07
TOTAL	7.38	47.81	32.87	11.25	.62	0.00	0.00	100.00

NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT  
2738 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

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



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



WIND ROSE PLOT

s8/q4

NO DATA FOR  
JULY 1982  
AT  
DENALI CLIMATE STATION

s8/q5

NO DATA FOR  
AUGUST 1982  
AT  
DENALI CLIMATE STATION

s8/q6

NO DATA FOR  
SEPTEMBER 1982  
AT  
DENALI CLIMATE STATION

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