1091

LIBRARY
ALASKA DEPT. OF FISH & GAME
333 Raspberry Rd.
Anchorage, Alaska 99518-1599
Merged With
A.R.L.I.S.
ANCHORAGE, ALASKA
Est. 1997

SUSITNA
HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION
PROJECT No. 7114

ARLIS
3 3755 000 36654 2

PROCESSED CLIMATIC DATA
OCTOBER 1982 - SEPTEMBER 1983

VOLUME IV
WATANA STATION
(No. 0650)

R&M CONSULTANTS, INC.
ENGINEERS GEOLOGISTS PLANNERS SURVEYORS

UNDER CONTRACT TO

ARZA-EBASCO
SITNA JOINT VENTURE

FINAL REPORT

JUNE 1984
DOCUMENT No. 1091

TK
1425
.S8
A23
no.1091

ALASKA POWER AUTHORITY

Document No. 1091
Susitna File No. 4.2.2.1

TK
1425
.S8
A23
no. 1091

SUSITNA HYDROELECTRIC PROJECT

PROCESSED CLIMATIC DATA
OCTOBER 1982 - SEPTEMBER 1983

VOLUME 4
WATANA STATION (No. 0650)

Report by

R&M Consultants, Inc.

Under Contract to
Harza-Ebasco Susitna Joint Venture

Prepared for
Alaska Power Authority

Final Report
June 1984

3 3755 000 36654 2

ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

NOTICE

ANY QUESTIONS OR COMMENTS CONCERNING

THIS REPORT SHOULD BE DIRECTED TO

THE ALASKA POWER AUTHORITY

SUSITNA PROJECT OFFICE

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

TASK 4 - HYDROLOGY

PROCESSED CLIMATIC DATA (1983)
OCTOBER 1982 - SEPTEMBER 1983

VOLUME INDEX

VOLUME 1: 0610 - SUSITNA GLACIER STATION
VOLUME 2: 0620 - DENALI STATION
VOLUME 3: 0640 - KOSINA CREEK STATION
VOLUME 4: 0650 - WATANA STATION
VOLUME 5: 0660 - DEVIL CANYON STATION
VOLUME 6: 0665 - SHERMAN STATION
VOLUME 7: 0686.5 - EKLUTNA LAKE STATION

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

PROCESSED CLIMATIC DATA - WATANA STATION
OCTOBER 1982 - SEPTEMBER 1983

TABLE OF CONTENTS PAGE

Volume Index		ii
List of Figures		iv
Acknowledgments		v
Addendum		vi
I.	BACKGROUND	I-1
	A. Purpose	I-1
	B. History of Watana Station (No. 0650)	I-1
II.	ANNUAL DATA SUMMARIES - WATANA STATION	II-1
III.	REPORT PREPARATION	III-1
	A. Description of Symbols Used in Annual and Monthly Summaries	III-1
	B. Data Computation Standards (Climate)	III-3
IV.	INTERPRETATION OF DATA - WATER YEAR 1983	IV-1
	A. General Notes on Interpreting Data	IV-1
	B. Notes on Interpreting Watana Station Data	IV-6
V.	MONTHLY CLIMATIC DATA SUMMARIES Watana Station - Water Year 1983	V-1
VI.	LONGWAVE RADIATION DATA SUMMARIES Watana Station - Water Year 1983	VI-1

LIST OF FIGURES

Figure	Description	Page
I-1	Station Location Map	I-2

Acknowledgments

These climatic data were collected under contract to Acres American, Incorporated (through February 1983) and under contract to Harza-Ebasco Joint Venture (after February) for the Alaska Power Authority's Susitna Hydroelectric Feasibility Study. The data recorders are Model 5100 Weather Wizards manufactured by Meteorology Research, Incorporated (MRI), now part of Belfort Instrument Company. All sensors were supplied by MRI or were replacements obtained from MRI's suppliers. 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, Len Story, Bob Butera, Carl Schoch, and Jeff Coffin, using computer programs developed by Mark Holmstrand. The computer hardware used was a Hewlett-Packard 9845B system. Review comments were provided by Khalid Jawed of Harza-Ebasco.

ADDENDUM

Subsequent to preparation of the final report and prior to publication, adjustments were made to some of this station's humidity data. Data were adjusted for the months where the RH sensor was seriously out of calibration. The revised mean daily values for both relative humidity and dewpoint are presented in the following table.

June 1984

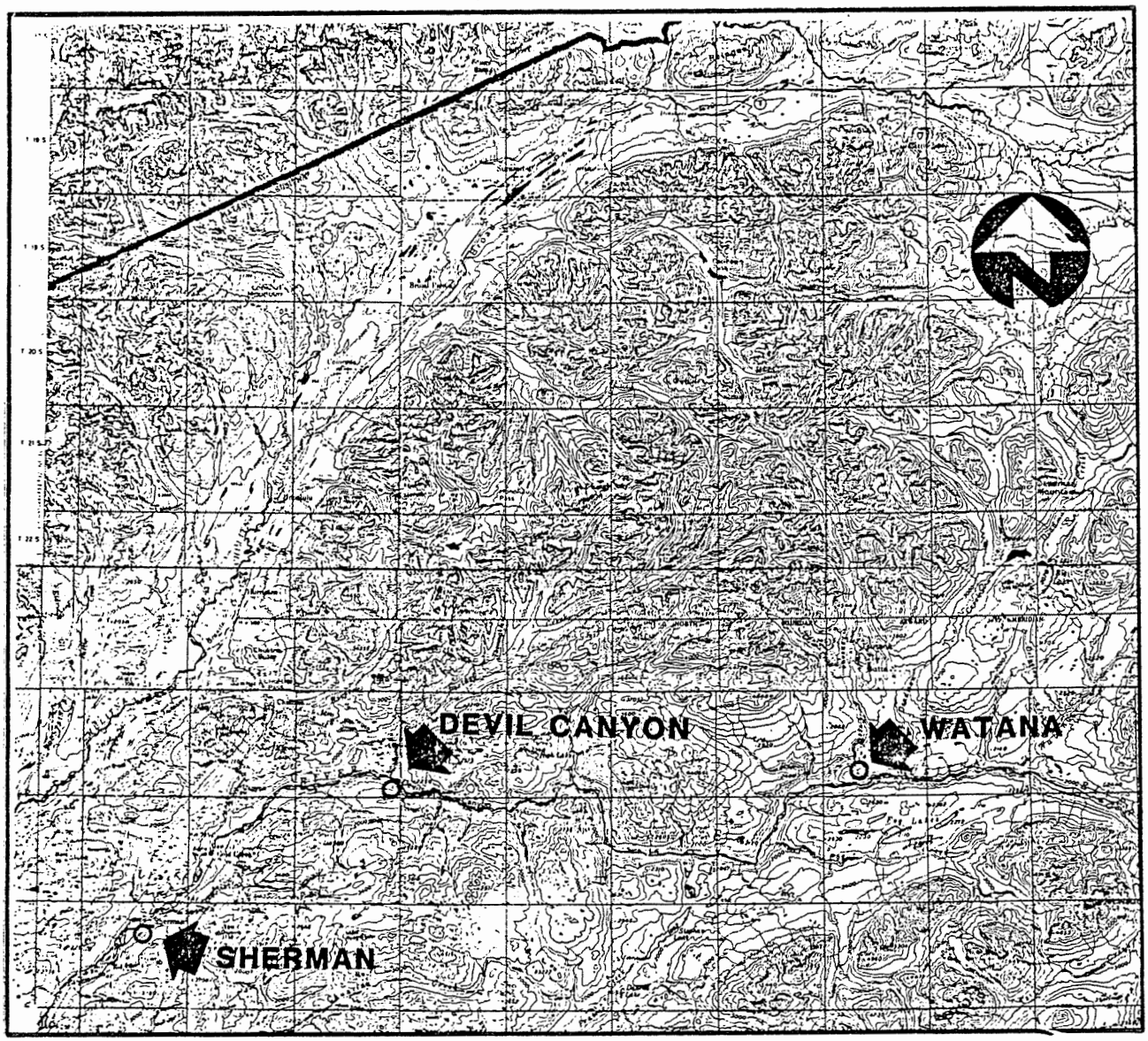
ADDENDUM

Revised RH and Dewpoint Data

STATION: WATANA **YEAR: 1983**

DAY	*April MEAN RH %	*April MEAN DP DEG C	*May MEAN RH %	*May MEAN DP DEG C	*June MEAN RH %	*June MEAN DP DEG C	*July MEAN RH %	*July MEAN DP DEG C	*August MEAN RH %	*August MEAN DP DEG C	september MEAN RH %	september MEAN DP DEG C	DAY
1	58	-9.1	52	-6.1	41	-1.4	**	*****	52	6.0	**	*****	1
2	54	-11.6	**	*****	69	6.5	**	*****	40	1.4	**	*****	2
3	59	-10.5	**	*****	**	*****	**	*****	41	1.8	35	-11.1	3
4	60	-6.3	**	*****	**	*****	**	*****	**	*****	**	*****	4
5	63	-6.5	58	-3.5	57	2.0	**	*****	**	*****	**	*****	5
6	58	-10.9	54	-3.8	39	-4.3	**	*****	60	4.4	**	*****	6
7	57	-11.9	45	-5.2	42	-3.6	**	*****	47	4.9	62	-1.3	7
8	58	-11.6	46	-5.3	47	-2.7	**	*****	6	-27.6	79	-.1	8
9	69	-12.1	51	-2.4	44	-3.4	**	*****	60	4.1	55	-1.9	9
10	54	-17.7	41	-6.5	46	-2.1	**	*****	44	1.3	50	-3.2	10
11	63	-18.4	41	-6.6	66	4.2	**	*****	37	.5	51	-4.0	11
12	60	-6.9	54	-2.2	50	1.1	**	*****	**	*****	48	-4.2	12
13	**	*****	47	-1.4	41	-.8	**	*****	63	2.9	58	-3.2	13
14	46	-7.5	50	-.3	50	2.1	**	*****	**	*****	70	-1.8	14
15	**	*****	49	-1.0	**	*****	**	*****	**	*****	60	-4.4	15
16	62	-6.0	54	-1.8	51	2.2	**	*****	49	1.2	43	-8.2	16
17	53	-9.9	**	*****	34	-1.5	**	*****	52	2.3	48	-8.5	17
18	58	-7.1	63	-.5	32	.0	**	*****	38	-2.4	44	-9.5	18
19	47	-10.0	47	-3.0	58	6.4	**	*****	32	-3.3	52	-5.2	19
20	60	-7.4	**	*****	49	4.3	**	*****	**	*****	81	2.8	20
21	53	-6.3	**	*****	44	4.5	**	*****	**	*****	86	4.3	21
22	56	-4.8	**	*****	55	7.5	**	*****	**	*****	**	*****	22
23	63	-2.7	**	*****	52	4.8	**	*****	**	*****	**	*****	23
24	49	-4.6	50	-2.9			**	*****	**	*****	**	*****	24
25	51	-3.4	52	-1.5	49	4.7	**	*****	**	*****	**	*****	25
26	50	-3.9	**	*****	59	8.2	**	*****	57	3.4	**	*****	26
27	49	-3.7	54	-.3	**	*****	**	*****	**	*****	**	*****	27
28	57	-1.8	50	2.2	60	7.4	**	*****	**	*****	**	*****	28
29	**	*****	50	4.4	51	5.5	**	*****	**	*****	**	*****	29
30	40	-8.3	54	6.5	46	3.5	**	*****	**	*****	**	*****	30
31			**	*****			**	*****	**	*****			31
MONTH	55	-8.2	50	-2.0	46	1.6	**	*****	46	.1	57	-3.7	MONTH

* NOTE: Data for April, May, June, July, and August were not adjusted.



TALKEETNA MTS. AND HEALY QUADRANGLES APPROX. SCALE 1" = 11 MILES

CLIMATE STATIONS

UPPER SUSITNA BASIN

Station Location

Figure I-1

PREPARED BY:

R&M CONSULTANTS, INC.
ENGINEERS GEOLOGISTS PLANNERS SURVEYORS

PREPARED FOR:

HARZA-EBASCO
SUSITNA JOINT VENTURE

II. ANNUAL DATA SUMMARIES

WATANA STATION (No. 0650)

SUMMARY OF CLIMATE DATA RECORDED AT WATANA STATION (NO. 650)
WATER YEAR 1983

Month	Temperature Max. (°C)	Temperature Min. (°C)	Temperature Mean (°C)	Wind Res. Dir. (°True)	Wind Res. Speed (m/sec)	Wind Avg. Speed (m/sec)	Wind Max. Gust Dir. (°True)	Wind Max. Gust Speed (m/sec)	Wind P'val. Dir. (True)	Mean RH (%)	Mean DP (°C)	Precip. (mm)	Total Solar Energy (WH/m2)	Month
OCT	M	M	M	056M	2.7M	3.0M	079M	11.4M	ENE(M)	M	M	4.2	38,729M	OCT
NOV	-1.4M	-24.7M	-10.7M	063	3.1	3.3	073	14.0	ENE	M	M	0.2	21,573	NOV
DEC	2.7	-24.2	-10.4	068	4.4	4.7	089	14.6	ENE	M	M	7.0	12,068	DEC
JAN	-2.2M	-34.4M	-14.2M	064M	4.5M	4.8M	065M	14.6M	ENE(M)	M	M	2.8M	17,675M	JAN
FEB	0.3M	-25.4M	-10.0M	065M	4.1M	4.3M	068M	15.2M	ENE(M)	M	M	M	38,982M	FEB
MAR	M	M	M	M	M	M	M	M	M	M	M	M	M	MAR
APR	10.1M	-17.0M	-1.1M	045M	1.7M	2.5M	274M	14.6M	ENE(M)	M	M	2.4	171,764M	APR
MAY	20.1M	-3.6M	5.3M	021M	0.7M	2.6M	275M	10.2M	N(M)	M	M	15.2M	157,304M	MAY
JUN	26.1M	2.1M	10.5M	270M	1.0M	2.7M	270M	9.5M	W(M)	M	M	39.4M	204,082M	JUN
JUL	M	M	M	M	M	M	M	M	M	M	M	113.4	M	JUL
AUG	M	M	M	M	M	M	M	M	M	M	M	117.8M	M	AUG
SEP	M	M	M	M	M	M	M	M	M	M	M	M	M	SEP
Annual	M	M	M	M	M	M	M	M	M	M	M	M	M	Annual

Note: Refer to Section III of report for explanation of symbols used.

SUMMARY OF CLIMATE DATA RECORDED AT WATANA STATION (NO. 650)
WATER YEAR 1982

Month	Temperature Max. (°C)	Temperature Min. (°C)	Temperature Mean (°C)	Wind Res. Dir. (°True)	Wind Res. Speed (m/sec)	Wind Avg. Speed (m/sec)	Wind Max. Gust Dir. (°True)	Wind Max. Gust Speed (m/sec)	Wind P'val. Dir. (True)	Mean RH (%)	Mean DP (°C)	Precip. (mm)	Total Solar Energy (WH/m2)	Month
OCT	4.5M	-13.6M	-2.1M	049M	2.8M	3.2M	067M	12.7M	NE(M)	M	M	25.0M	38,063M	OCT
NOV	2.7M	-24.3M	-10.4M	058M	3.2M	3.8M	085M	14.6M	ENE(M)	M	M	5.6M	16,996M	NOV
DEC	1.7	-32.5	-13.7	058M	3.2M	3.6M	090M	15.9M	ENE(M)	M	M	7.0	6725M	DEC
JAN	-8.1M	-33.8M	-19.6M	063M	3.7M	4.0M	054M	15.2M	ENE(M)	M	M	0.0M	7640M	JAN
FEB	M	M	M	M	M	M	M	M	M	M	M	M	M	FEB
MAR	M	M	M	M	M	M	M	M	M	M	M	M	M	MAR
APR	6.8M	-21.2M	-4.5M	038M	1.9M	3.2M	240M	10.8M	NNE(M)	M	M	7.2M	129,469M	APR
MAY	15.6	-27.2	2.3	325	0.6	2.4	231	10.2	WSW	M	M	25.8	147,231M	MAY
JUN	M	M	M	M	M	M	M	M	M	M	M	87.4M	164,494	JUN
JUL	26.4M	0.7M	10.8M	260M	1.6M	2.4M	240M	10.2M	W(M)	M	M	109.2M	127,956M	JUL
AUG	20.1M	1.8M	10.0M	301M	0.7M	2.0M	237M	9.5M	W(M)	M	M	58.2M	128,035M	AUG
SEP	14.5M	-5.6M	5.0M	062M	0.9M	2.4M	094M	14.0M	E(M)	M	M	100.8M	67,240M	SEP
Annual	M	M	M	M	M	M	M	M	M	M	M	M	M	Annual

* Months when RH values were reported in the annual report but where subsequent review indicated the data were unusable.

Note: Refer to Section III of report for explanation of symbols used.

s12/o20

SUMMARY OF CLIMATE DATA RECORDED AT WATANA STATION (NO. 650)
WATER YEAR 1981

Month	Temperature Max. (°C)	Temperature Min. (°C)	Temperature Mean (°C)	Wind Res. Dir. (°True)	Wind Res. Speed (m/sec)	Wind Avg. Speed (m/sec)	Wind Max. Gust Dir. (°True)	Wind Max. Gust Speed (m/sec)	Wind P'val. Dir. (True)	Mean RH (%)	Mean DP (°C)	Precip. (mm)	Total Solar Energy (WH/m2)	Month
OCT	M	M	M	M	M	M	M	M	M	M	M	M	M	OCT
NOV	1.7	-21.1	-7.2	057	3.0	3.2	069	12.7	ENE	M	M	2.0	M	NOV
DEC	3.8	-36.7	-21.1	072	3.2	3.5	078	14.0	ENE	M*	M*	0.2	M	DEC
JAN	3.5	-17.7	-4.5	062	3.8	4.2	085	14.6	ENE	40M	-16.3M	1.6	M	JAN
FEB	M	M	M	M	M	M	M	M	M	M	M	M	M	FEB
MAR	7.4M	-16.4M	-4.3M	058M	2.9M	3.5M	070M	15.2M	ENE(M)	M*	M*	18.4M	85,181M	MAR
APR	9.4	-16.8	-4.3	037	1.7	2.6	073	10.2	ENE	M*	M*	1.2	166,270	APR
MAY	22.1	-2.2	7.6	255	0.3	2.6	248	12.1	WSW	M	M	44.0	168,715	MAY
JUN	22.7	-0.1	9.3	241	1.7	2.9	335	12.1	WSW	M	M	129.8	177,820	JUN
JUL	17.0M	1.2M	10.3M	248	1.4	2.5	228	14.6	WSW	M*	M*	170.6	119,359	JUL
AUG	M	M	M	351	1.7	2.7	349	11.6	N	M*	M*	165.6	111,586	AUG
SEP	14.5M	-13.3M	4.4M	057M	1.6M	2.3M	217M	10.8M	ENE(M)	M*	M*	77.2M	76,148M	SEP
Annual	M	M	M	M	M	M	M	M	M	M	M	M	M	Annual

* Months when RH values were reported in the annual report but where subsequent review indicated the data were unusable.

Note: Refer to Section III of report for explanation of symbols used.

s12/o21

SUMMARY OF CLIMATE DATA RECORDED AT WATANA STATION (NO. 650)
WATER YEAR 1980

Month	Temperature			Wind										Month
	Max. (°C)	Min. (°C)	Mean (°C)	Res. Dir. (°True)	Res. Speed (m/sec)	Avg. Speed (m/sec)	Max. Gust Dir. (°True)	Max. Gust Speed (m/sec)	P'val. Dir. (True)	Mean RH (%)	Mean DP (°C)	Precip. (mm)	Total Solar Energy (WH/m2)	
OCT														OCT
NOV														NOV
DEC														DEC
JAN						STATION INSTALLED 4/8/80								JAN
FEB														FEB
MAR														MAR
APR	9.0M	-13.0M	-0.7M	051M	2.3M	3.1M	097M	15.9M	ENE(M)	M	M	3.2M	108,979M	APR
MAY	16.0M	-5.0M	4.6M	205M	0.2M	3.1M	098M	16.5M	WSW(M)	M	M	14.6M	148,684M	MAY
JUN	M	M	M	M	M	M	M	M	M	M	M	M	M	JUN
JUL	23.9M	4.5M	11.9M	240M	1.3M	2.6M	263M	10.2M	WSW(M)	M*	M*	107.6M	162,765M	JUL
AUG	M	M	M	M	M	M	M	M	M	M	M	M	M	AUG
SEP	M	M	M	M	M	M	M	M	M	M	M	M	M	SEP
Annual	M	M	M	M	M	M	M	M	M	M	M	M	M	Annual

* Months when RH values were reported in the annual report but where subsequent review indicated the data were unusable.

Note: Refer to Section III of report for explanation of symbols used.

III. REPORT PREPARATION

A. DESCRIPTION OF SYMBOLS USED IN ANNUAL AND MONTHLY SUMMARIES

Annual Summary

Blank entries for monthly values indicate the station had not yet been installed at the site or that it had been removed prior to that month. Installation and removal dates are noted on the table as well.

M — Insufficient or partial data. M follows average and/or total values if 1-9 daily values were missing data for all or part of the day. M appears alone for the month if 10 or more daily values were missing or contained missing data. Parentheses surround the M where other letters may cause confusion (i.e. in prevailing direction). M follows average and/or total values for the year if any month was missing data. M appears alone for the year if any month was missing enough data to require it to have an M alone or if three or more months were missing any data.

Monthly Summaries

Blank entries for three-hourly, daily, or monthly values (generally just for relative humidity or dewpoint) indicate the R.H. and D.P. data have been deleted for the period. For further explanation, refer to the section "Interpretation of Data."

M — Insufficient or partial data. M follows average and/or total values if any readings for the period were missing and would have been required for determination of the table value. M follows the summary values for the month if 1-9 daily values had M's appended to them or had asterisks in their place. M appears alone in place of the monthly values if all daily values had blank entries or asterisks. Parentheses surround the M where other letters may cause confusion (i.e in prevailing direction).

**** — Erroneous or missing data (may be from 2 to 6 asterisks, depending on number of digits possible in the value). Appears in place of the value if all readings required for determination of the table value were missing.

\- — A dash in the hourly precipitation table indicates the volume for that hour is not known, but the cumulative total of precipitation over the interval of consecutive dashed hours is included in the next hour where a value is reported. Similarly, a dash for precipitation in the monthly summary table indicates the volume for that day is not known, but the cumulative total over the interval of consecutive dashed days is included in the next day where a value is reported.

B. DATA COMPUTATION STANDARDS (CLIMATE)

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 (current and preceding) consecutive hourly readings. When either of these hourly precipitation readings is invalid, no value is reported for the current hour.

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 month 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 Centigrade.

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 centigrade, or when either the temperature or R.H. reading is invalid.

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 data ranges assumed valid, based on reasonable expectations for the parameters in south-central Alaska; data outside these ranges are not used:

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

   Temperature: -50 through +35 °C

   Wind Speed: 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. Precipitation during recording interval (15 or 30 minutes) should not exceed 30 mm.

   Solar: 0 through 150 milliwatts/cm^2

   Gust: 0 through 99.9 m/sec

   Battery: 9 through 14.5 volts

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

   Temperature: ±1°C
   Wind Speed: ±0.5 meters per second
   Wind Direction: ±1% of full scale
   Relative Humidity: ±6%

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

Solar Radiation: ±5mw cm^{-2}

Tape Recorder Error Rate: 1 bit in 10^7

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

DIRECTION	COMPASS HEADING
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

IV. INTERPRETATION OF DATA

A. GENERAL - Notes on Interpreting Data

1. General

a. Many of the sensors or the methods of measuring various parameters have peculiarities that affect how the data should be interpreted. The user is encouraged to become familiar with the methods of summation for each parameter and each table. These are described in the section "Data Computation Standards."

b. The estimates of usable data for the current year in Table IV.1 at the end of this section were prepared by reviewing the published summary tables for each month. Precipitation estimates came from the hourly table; estimates for usable percentages of temperature, relative humidity, and solar radiation data were based on the 3-hour summaries; wind estimates came from comparison with the other parameters and a cursory review of the raw-data printout; and usable longwave radiation estimates were from the raw data.

c. An enhancement that has been added to this year's series of reports is use of symbols to indicate where data are missing from parameter totals or averages in the summary tables. This is intended to assist the data user in evaluating the quality of the data.

Estimates that are below 90% are reported to the nearest 5%, estimates above 90% are to the nearest 1%. If the data are nearly all good, except for infrequent "bugs," this is

indicated by a "99 + " value. If the estimate is quite rough, this is denoted by a "±" after the value.

2. **Precipitation** - Precipitation data for most stations are reported for April through September only. The stations do not have heaters in their precipitation sensors (tipping buckets), so they are unable to record precipitation when the temperature is below freezing. The sensors are calibrated to tip for 0.2 mm of rainfall and not for snowfall. The sub-freezing temperatures may cause a loss or a delay of the recorded precipitation. Winds frequently blow snow away from or out of (or occasionally into) the collector, and snow collected in the bucket may not be melted and recorded until the next occurrence of warm weather, possibly days or weeks later. The months of October through March very often have sub-freezing temperatures on nearly every day of the month, so their precipitation records have been omitted. It should be noted that even in the months where precipitation data are reported (i.e. April through September), the occurrence of sub-freezing temperatures could affect the timing and the recorded amount of precipitation. The user should exercise caution and make note of the concurrent temperatures in interpreting the precipitation records.

   An exception to the normal system of recording winter precipitation is at the Watana Station (No. 0650). That site is equipped with a Wyoming wind gage to eliminate the effects of the wind on the snow, and it also has an AC-powered heater on the precipitation bucket to melt snow that falls into it. The Watana data are thus published for the whole year. Details on the Watana data are included in "Notes on Interpreting Watana Station Data," in the Watana report.

3. **Relative Humidity and Dewpoint** - The relative humidity (R.H.) sensors used are printed circuit elements which sense changes in R.H. by changes in impedance. The sensors, manufactured by Phys-Chem Research Corporation, have chemically-treated surfaces which degrade with time, and are thus very difficult to keep in calibration. Many of the months throughout the year (and at all stations) therefore display significant variations in R.H. patterns. Though the data are generally of poor quality throughout the 1983 year, they are believed to be useful as **indicators** of the true humidity and have for that reason been left in the report.

When the calibration of the R.H. sensor is too high, readings near the top end (i.e. approaching 100%) may go "over the top" and be read as, say, 110% (if the calibration is high by 10 points). Having only two digits in which to record the R.H., the Weather Wizard will report this as "10," which will drastically affect the computation of instantaneous dewpoint, average R.H., and average dewpoint values. The graphical plot of R.H. will also be misleading, with periodic "spikes" down to very low values. Each plot may be interpreted, however, by mentally adjusting the entire plot downward an appropriate amount to keep the maximum values at 100%. The approximate amount of such adjustment for each month is noted in the following section, "Notes on Interpreting Watana Station Data". Because the R.H. and dewpoint values in the monthly summary tables are numerical averages, they are not easily interpreted and have been deleted for the days when RH was "overtopped". Values in the three-hour summaries have been retained since they are instantaneous readings; they should, however, be adjusted by the same amount indicated for the plots.

An additional consideration with respect to dewpoint is the fact that it is not computed when the reported wind speed falls below

1 m/sec, due to inadequate aspiration of the R.H. sensor. This typically causes elimination of at least one dewpoint value on nearly every day of data-collection. However, to avoid undue congestion in the table, daily values have not been individually noted as containing missing records; only the monthly average has been so designated. The same applies to R.H.

4. **Solar Radiation** - Daily and monthly solar radiation values are the cumulative total energy, computed from all **valid** readings for the period. Either the daily or monthly value can be significantly above or below the true energy value if there are large segments of missing readings (i.e. from the period of very low intensity at night or the period of very high intensity at mid-day). A check should be made, therefore, of the "Usable Data" table and of the graphical plot to get a feel for the frequency and timing of lost solar radiation data. Caution should be used when a significant amount of data is missing.

   Another frequent concern in the processing of solar data is the presence of non-zero minimum values. Since the sensors have a stated accuracy of ±1% of the full-scale value of 140 mW/cm^2, they often record a reading of 0 (during night) as 1 or even 2 mW/cm^2. This also can bias the daily or monthly totals, making the computed energy much higher than the true solar energy. This type of error in the data is difficult to adjust automatically, but the user can compensate for it in his interpretation by reviewing the instantaneous radiation readings printed in the 3-hour summary tables. If the 3-hour values never drop below 1, even in the winter time, the sensor is very likely reading high. An error of +1 mW/cm^2 on every reading will cause the computed daily total energy to be high by 240 watt-hr./cm^2. The user can adjust the numbers used accordingly.

5. **Wind Speed and Direction** - The wind frequency summary table in each month's report notes the number of wind observations used in preparing the table. Since data for this year have all been recorded at 15-minute intervals, there were 4 readings recorded per hour and 96 readings per day. This gives a maximum possible number of observations for each month as follows (dependent on the number of days in the month):

Month	Max. Possible # of Observations
October, December, January, March May, July, August (31 days)	2976
November, April, June, September (30 days)	2880
February (28 days)	2688
February in leap years (29 days)	2784

B. Notes on Interpreting WATANA Station Data

1. **General: March, August - September** - Many individual precipitation values were lost, particularly in August, but the cumulative amounts at the ends of various periods were recoverable. Cases where cumulative amounts are represented are denoted by dashes (rather than asterisks) preceding the values. The August plot for precipitation is not representative at all of the actual data. All data were lost from August 27 to September 2 when the station was pulled for annual maintenance. The unit was pulled again on September 21 for factory repairs.

2. **Precipitation** - As noted in the previous section, the Watana site has a Wyoming wind gage to permit more accurate catch of snowfall during wind-driven storms. There is also an electric heater and insulation around the tipping bucket precipitation gage to melt the snow and record "tips" of 0.2 mm water content.

   Several segments of the 1982-83 winter period contained suspiciouly low precipitation amounts. Unmelted snow was discovered inside the gage in early December, at which time more insulation was added. However, data for October and November are considered poor, due to inadequate heat output. Also, the heater was discovered on April 11 to be disconnected. It is uncertain how long this situation had existed, but a record was made on January 19 when the temperature was -7°C. Thus, January is assumed to be "fair" quality data. February and March data are all questionable and have been discarded. Early April data are also questionable but have been retained in the record.

3. **Relative Humidity** - As discussed in the preceding section of general notes, many of the R.H. data for the year were considered unreliable or required some "judgment" in their use. Due to calibration problems with the R.H. sensors, some of the data should be adjusted prior to application. The amount of adjustment for each month applicable is listed below, and an example of the interpretation is explained afterward. Many of the RH data were deleted because they were too errotic, especially at night.

Month	Adjustment to Graphical R.H. Values
July	-10 R.H. Points
September	-20

Example: In July, the readings peak over the top at about "110 percent" in the graphical plot (The plot does not go to 110, but readings of "10" are equivalent to 110 percent). This value is assumed to correspond to a **true** R.H. of 100 percent. Therefore, 10 points should be subtracted from all the plotted R.H. values. Values from 0-10 should be read as 100-110 (and therefore adjusted to 90-100). The graphical plot may thus be interpreted semi-quantitatively. The numerical values (daily averages), however, are more difficult to interpret and have been deleted from the tables.

4. **Solar Radiation** - The minimum (nightly) value for solar radiation intensity is generally 1 and frequently 2 mw/cm^2 throughout the year. As explained in the General Notes (Section IV.A), this gives daily totals that are too high by 240 (for high by 1) or 480 (for high by 2) watt-hours per day. Inspection should be made of the night-time values in the 3-hour tables (to see whether "1" or "2" appears in place of "0"), and then the daily and monthly totals should be adjusted accordingly.

s4/gg6

TABLE IV.1

SUSITNA HYDROELECTRIC PROJECT - CLIMATE DATA PROCESSING

APPROXIMATE PERCENTAGES OF USABLE DATA

Station: Watana

Water Year: 1983

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YEAR
Temperature	90	99	100	94	96	60	85	90	95	90	25	39	80
Wind Speed	85	100	100	94	96	60±	85±	90	95±	90	25	40±	80
Wind Direction	55	100	100	94	96	60±	85±	90	95±	90	25	40±	78
Relative Humidity	0	35	55	75	80	55	55	40	50	35	10	35	44
Precipitation	100±	100±	100±	94	0	0	50	90	96	100	65	69	72
Solar Radiation	75	100	100	94	96	60	85	90	95	90	25	40	79
Peak Gust	85	100	100	94	96	65±	85±	90	95±	90	25	40±	80
Longwave	0±	65	100	94	96	60±	85±	90	55	0	0	38±	57

V. MONTHLY CLIMATIC DATA SUMMARIES

WATANA STATION, WATER YEAR 1983

V. MONTHLY CLIMATIC DATA SUMMARIES

WATANA STATION, WATER YEAR 1983

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

DATE	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	DATE
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	.2	0.0	.2	.2	.2	28
29	0.0	.2	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.1	*****	**	***	***	***	***	1
0600	-.7	*****	**	***	***	***	***	1
0900	.9	*****	**	133M	.5M	100M	1.9M	19
1200	2.6	*****	**	126	1.1	122	2.5	18
1500	3.4	*****	**	205	.1	139	2.5	15
1800	.3	*****	**	284	1.6	271	3.8	1
2100	0.0	*****	**	354M	.6M	350M	1.9M	1
2400	-.8	*****	**	***	****	***	****	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.8	*****	**	***	****	***	****	1
0600	-1.7	*****	**	***	****	***	****	1
0900	1.1	*****	**	115M	1.4M	102M	3.2M	33
1200	*****	*****	**	103	1.4	070	3.2	26
1500	*****	*****	**	111	1.9	110	4.4	11
1800	-.1	*****	**	008	1.1	351	3.2	1
2100	-1.9	*****	**	009	1.2	038	2.5	1
2400	-2.0	*****	**	018	1.4	034	2.5	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.9	*****	**	029	1.1	004	2.5	1
0600	-2.5	*****	**	068	1.5	059	3.2	1
0900	-1.0	*****	**	077	1.9	072	3.8	15
1200	1.1	*****	**	096	2.2	094	5.1	24
1500	1.3	*****	**	052	2.5	049	5.1	10
1800	-.4	*****	**	038	3.1	035	5.7	1
2100	-1.0	*****	**	032	3.4	031	6.3	1
2400	-2.2	*****	**	045	3.3	045	6.3	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.1	*****	**	039	2.8	039	5.7	1
0600	-2.8	*****	**	034	3.1	035	5.7	1
0900	-1.6	*****	**	038	3.5	040	6.3	17
1200	.6	*****	**	038	4.0	028	6.3	45
1500	1.2	*****	**	053	4.5	046	7.6	28
1800	-.9	*****	**	066	3.5	056	6.3	1
2100	-1.2	*****	**	061	2.7	059	4.4	1
2400	-1.6	*****	**	065	2.6	075	4.4	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.1	*****	**	075	3.1	080	5.1	1
0600	-2.2	*****	**	058	3.3	061	5.7	1
0900	-2.3	*****	**	040	4.2	030	7.0	26
1200	*****	*****	**	036	5.3	035	8.9	43
1500	-.9	*****	**	036	5.6	034	8.9	16
1800	-3.0	*****	**	031	4.3	040	7.0	1
2100	-3.4	*****	**	031	4.0	033	7.6	1
2400	-3.3	*****	**	022	3.2	024	6.3	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.7	*****	**	034	2.6	027	5.1	1
0600	-2.9	*****	**	065	3.0	058	5.7	1
0900	-1.0	*****	**	067	4.3	069	7.0	18
1200	.3	*****	**	059	5.5	064	8.3	24
1500	.1	*****	**	046	5.3	050	8.3	15
1800	-2.0	*****	**	039	5.0	039	8.3	1
2100	-2.0	*****	**	038	5.1	036	7.6	1
2400	-1.6	*****	**	047	4.5	047	7.0	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.0	*****	**	064	4.9	063	7.6	1
0600	-2.9	*****	**	064	4.7	064	7.6	1
0900	-2.7	*****	**	071	5.2	073	8.9	7
1200	-1.6	*****	**	076	5.6	080	8.9	17
1500	*****	*****	**	077	5.0	084	8.3	9
1800	-1.5	*****	**	067	2.1	076	7.0	1
2100	-2.0	*****	**	259	1.8	254	4.4	1
2400	-2.4	*****	**	038	.4	181	1.9	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.0	*****	**	269	1.3	248	5.1	1
0600	-4.6	*****	**	257	4.5	265	8.9	1
0900	-3.7	*****	**	259M	4.3M	257M	8.3M	20
1200	*****	*****	**	***	****	274	6.3	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	-2.1	*****	**	292M	1.2M	292M	2.5M	12
1200	-9.9	*****	**	290	.7	321	1.9	13
1500	-6.8	*****	**	282	1.3	281	2.5	6
1800	-9.8	*****	**	265	1.9	260	3.2	1
2100	-7.8	*****	**	269	2.4	266	3.2	1
2400	-3.0	*****	**	257	3.1	257	4.4	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.5	*****	**	271M	2.3M	266M	3.8M	1
0600	-4.0	*****	**	***	****	***	****	1
0900	-4.7	*****	**	005M	2.3M	000M	3.8M	8
1200	-2.5	*****	**	301	.6	002	1.9	15
1500	-3.3	*****	**	100M	.2M	077M	1.9M	7
1800	-6.0	*****	**	***	****	***	****	1
2100	-6.3	*****	**	***	****	***	****	1
2400	-6.7	*****	**	***	****	***	****	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.8	*****	**	***	****	***	****	1
0600	-6.2	*****	**	***	****	***	****	1
0900	-4.2	*****	**	***	****	***	****	10
1200	-3.3	*****	**	***	****	***	****	14
1500	-2.7	*****	**	***	****	***	****	4
1800	-2.5	*****	**	***	****	***	****	1
2100	-2.0	*****	**	***	****	***	****	1
2400	-2.5	*****	**	***	****	***	****	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.7	*****	**	084	4.5	084	7.0	1
0600	-3.1	*****	**	059	3.5	076	5.7	1
0900	-1.3	*****	**	052	4.8	063	7.6	10
1200	.1	*****	**	069	5.9	079	11.4	12
1500	.9	*****	**	070	4.9	084	8.3	9
1800	.9	*****	**	061	3.9	070	8.3	1
2100	.7	*****	**	069	4.2	072	7.0	1
2400	-3.7	*****	**	028	4.6	034	8.3	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.5	*****	**	031	2.7	029	8.3	1
0600	-6.6	*****	**	047	3.2	038	6.3	1
0900	-7.3	*****	**	084	2.5	097	5.1	10
1200	-5.8	*****	**	086	1.5	071	4.4	27
1500	-5.9	*****	**	124	1.2	138	2.5	10
1800	-6.8	*****	**	024	.9	095	1.9	1
2100	-6.9	*****	**	000	1.5	358	2.5	1
2400	-6.6	*****	**	022	1.0	035	1.9	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.2	*****	**	080	.8	065	1.9	1
0600	-7.6	*****	**	046	1.0	062	2.5	1
0900	-8.3	*****	**	081	1.6	089	3.2	11
1200	-4.8	*****	**	075	1.9	064	3.8	21
1500	*****	*****	**	090	3.2	096	5.1	12
1800	-6.9	*****	**	073	3.1	089	5.1	1
2100	-11.7	*****	**	025	2.0	012	3.8	1
2400	-10.5	*****	**	045	1.1	012	3.2	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.5	*****	**	010	2.4	001	3.8	1
0600	-17.1	*****	**	019	2.2	001	4.4	1
0900	-11.5	*****	**	052	1.2	065	2.5	28
1200	*****	*****	**	109	1.2	116	2.5	43
1500	*****	*****	**	067	1.3	046	2.5	17
1800	-10.1	*****	**	012	2.3	009	3.8	1
2100	-10.0	*****	**	036	1.9	021	4.4	1
2400	-6.1	*****	**	053	3.9	073	7.6	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.9	*****	**	071	5.9	079	8.9	1
0600	-6.1	*****	**	067	5.7	071	8.3	1
0900	-5.8	*****	**	060	5.1	062	7.6	8
1200	-5.8	*****	**	078	6.4	086	10.2	14
1500	-5.4	*****	**	069	5.8	066	8.9	8
1800	-4.8	*****	**	061	4.3	066	7.0	1
2100	-4.4	*****	**	057	3.8	059	5.1	1
2400	-4.0	*****	**	064	3.7	063	5.7	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	089	.9	087	3.2	1
0600	*****	*****	**	080	.8	069	1.9	1
0900	-3.2	*****	**	009	1.1	021	2.5	14
1200	-1.6	*****	**	317	1.0	356	1.9	21
1500	*****	*****	**	286	1.1	284	2.5	16
1800	-4.5	*****	**	010	.8	014	3.2	1
2100	-6.0	*****	**	020	2.2	029	3.2	1
2400	-5.6	*****	**	012	2.6	017	3.8	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.6	*****	**	015	2.2	346	3.8	1
0600	-9.1	*****	**	036	1.7	061	3.8	1
0900	-9.3	*****	**	069	1.3	077	3.2	15
1200	-3.3	*****	**	085	.8	110	2.5	35
1500	-1.4	*****	**	001	.2	051	1.9	25
1800	-5.8	*****	**	015	1.5	006	3.2	1
2100	-6.5	*****	**	016	1.4	009	2.5	1
2400	-6.0	*****	**	060	1.2	045	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.3	*****	**	076	1.0	048	1.9	1
0600	-6.5	*****	**	066	1.1	035	3.2	1
0900	*****	*****	**	091	1.2	092	3.2	7
1200	-2.6	*****	**	067	1.4	055	3.2	11
1500	*****	*****	**	029	1.4	047	2.5	6
1800	4.3	*****	**	075	1.0	109	3.2	***
2100	3.4	*****	**	058	1.1	108	3.2	***
2400	1.8	*****	**	066	2.0	037	3.8	***

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.0	*****	**	082	1.9	086	4.4	***
0600	-.2	*****	**	051	1.9	023	3.8	***
0900	-4.2	*****	**	073	2.1	069	3.8	***
1200	*****	*****	**	081	3.3	088	5.7	***
1500	*****	*****	**	059	1.8	088	5.7	***
1800	0.0	*****	**	074	1.6	091	5.1	***
2100	.1	*****	**	020	3.4	016	7.0	***
2400	-2.2	*****	**	023	4.5	026	8.9	***

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.2	*****	**	030	4.7	030	8.3	***
0600	*****	*****	**	045	3.4	028	6.3	***
0900	*****	*****	**	082	3.3	083	6.3	***
1200	*****	*****	**	061	4.6	047	7.6	***
1500	*****	*****	**	038	5.7	036	8.9	***
1800	-5.3	*****	**	037	5.5	035	8.3	***
2100	-5.3	*****	**	038	5.6	042	8.9	***
2400	-6.7	*****	**	043	5.8	045	8.9	***

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.8	*****	**	046	6.1	047	8.9	***
0600	-8.6	*****	**	066	6.4	071	9.5	***
0900	-7.9	*****	**	065	5.6	050	8.3	***
1200	*****	*****	**	055	5.4	058	8.3	***
1500	-9.2	*****	**	042	5.9	044	8.3	***
1800	-8.8	*****	**	042	5.7	042	8.9	***
2100	-5.8	*****	**	043	6.8	047	9.5	***
2400	-9.3	*****	**	058	5.7	059	10.2	***

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.9	*****	**	050	6.0	043	8.9	***
0600	-10.0	*****	**	053	5.9	057	8.9	***
0900	-5.8	*****	**	053	5.5	054	8.3	***
1200	-9.2	*****	**	065	6.2	075	8.9	***
1500	-7.8	*****	**	062	5.2	065	7.6	***
1800	-12.8	*****	**	065	5.1	064	8.9	***
2100	-14.3	*****	**	075	5.3	082	8.9	***
2400	-15.3	*****	**	082	5.8	089	8.3	***

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.4	*****	**	072	5.7	074	7.6	***
0600	-14.5	*****	**	066	4.8	082	7.6	***
0900	-14.5	*****	**	071	5.5	075	8.9	***
1200	-10.1	*****	**	076	5.3	088	8.3	***
1500	-12.2	*****	**	069	4.4	076	7.0	***
1800	-13.4	*****	**	066	3.2	080	5.7	***
2100	-15.8	*****	**	033	1.9	065	3.8	***
2400	-14.0	*****	**	035	1.9	057	4.4	***

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-13.3	*****	**	080	2.3	068	4.4	***
0600	-13.3	*****	**	078	2.5	060	3.8	***
0900	-13.5	*****	**	092	1.5	070	3.8	***
1200	-7.4	*****	**	052	.5	090	3.2	***
1500	-4.7	*****	**	103	2.3	071	5.1	***
1800	-10.4	*****	**	068	3.0	050	6.3	***
2100	-12.8	*****	**	091	3.5	106	6.3	***
2400	-12.1	*****	**	101	2.8	095	5.7	***

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-13.5	*****	**	054	1.7	047	4.4	***
0600	-12.0	*****	**	075	3.2	073	7.0	***
0900	-12.6	*****	**	084	4.1	085	7.0	***
1200	-15.3	*****	**	088	4.9	097	8.9	***
1500	-16.3	*****	**	098	4.9	093	8.9	***
1800	-21.1	*****	**	088	4.5	087	8.3	***
2100	-20.5	*****	**	082	1.5	116	4.4	***
2400	-22.7	*****	**	013	2.5	009	3.8	***

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-24.0	*****	**	010	2.6	006	3.8	1
0600	-27.9	*****	**	035	2.1	017	3.8	1
0900	-23.2	*****	**	072	1.7	090	3.2	15
1200	*****	*****	**	070	2.6	063	5.1	26
1500	-18.5	*****	**	072	2.6	083	5.1	7
1800	-21.6	*****	**	048	2.8	060	4.4	1
2100	-19.0	*****	**	044	3.6	058	7.0	1
2400	-21.1	*****	**	072	4.9	082	8.3	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-20.9	*****	**	065	5.6	063	8.3	1
0600	-18.1	*****	**	067	6.3	063	8.9	1
0900	-20.9	*****	**	073	6.6	072	9.5	5
1200	-16.6	*****	**	073	5.7	067	8.9	12
1500	-17.2	*****	**	073	4.1	073	6.3	4
1800	-16.6	*****	**	080	2.4	089	5.1	1
2100	-16.5	*****	**	095	.9	066	1.9	1
2400	-16.2	*****	**	143	.3	093	1.9	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-15.4	*****	**	115	.2	336	1.9	1
0600	-14.9	*****	**	316	.9	281	2.5	1
0900	-12.9	*****	**	298	1.1	347	2.5	8
1200	-10.3	*****	**	296	1.3	301	3.2	26
1500	-17.8	*****	**	294m	.5m	306m	2.5m	11
1800	-19.8	*****	**	***	****	***	****	1
2100	-20.0	*****	**	***	****	***	****	1
2400	-22.3	*****	**	***	****	***	****	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-30.0	*****	**	***	****	***	****	1
0600	*****	*****	**	***	****	***	****	1
0900	-20.8	*****	**	***	****	***	****	13
1200	-18.1	*****	**	***	****	***	****	24
1500	-17.7	*****	**	***	****	***	****	10
1800	*****	*****	**	***	****	***	****	1
2100	-22.6	*****	**	***	****	***	****	1
2400	-22.7	*****	**	***	****	***	****	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-22.8	*****	**	***	****	***	****	1
0600	-23.3	*****	**	***	****	***	****	1
0900	-21.9	*****	**	***	****	***	****	11
1200	-13.5	*****	**	043m	4.0m	345m	7.0m	18
1500	-13.7	*****	**	062	5.7	075	8.3	4
1800	-15.0	*****	**	056	6.1	062	9.5	1
2100	-14.8	*****	**	053	6.6	056	10.2	1
2400	-13.4	*****	**	056	7.0	056	10.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	3.7	-2.1	.8	218M	.1M	.6M	271M	3.8M	SE(M)	**	*****	0.0	1830	1
2	2.2M	-2.0M	.1M	062M	.9M	1.0M	110M	4.4M	N(M)	**	*****	0.0	2278	2
3	1.8	-2.6	-.4	052	2.2	2.4	031	6.3	NE	**	*****	.4	1480	3
4	1.9	-3.3	-.7	049	3.3	3.4	046	7.6	NE	**	*****	0.0	2890	4
5	-.1M	-3.5M	-1.8M	040	4.0	4.1	035	8.9	NNE	**	*****	0.0	2780	5
6	1.1	-3.5	-1.2	049	4.3	4.4	064	8.3	NE	**	*****	0.0	2005	6
7	-.8M	-3.8M	-2.3M	069	3.3	3.8	073	8.9	ENE	**	*****	0.0	985	7
8	-2.3M	-5.7M	-4.0M	260M	3.8M	3.5M	265M	8.9M	WSW(M)	**	*****	0.0	2229M	8
9	-1.2M	-10.9M	-6.1M	276M	1.4M	1.6M	257M	4.4M	W(M)	**	*****	0.0	1468M	9
10	-.9	-7.3	-4.1	297M	.6M	1.1M	266M	3.8M	W(M)	**	*****	0.0	1085	10
11	-1.9	-9.9	-5.9	***	****	3.5	***	****	***	**	*****	.2	930	11
12	1.8	-4.2	-1.2	062	4.4	4.6	079	11.4	ENE	**	*****	.2	1080	12
13	-3.3	-18.1	-10.7	052	1.5	2.0	029	8.3	N	**	*****	0.0	1435	13
14	-4.1M	-14.5M	-9.3M	068	1.7	1.9	096	5.1	E	**	*****	0.0	1513	14
15	-4.0M	-17.2M	-10.6M	039	1.8	2.2	073	7.6	N	**	*****	0.0	2619	15
16	-3.2	-11.3	-7.3	067	5.1	5.1	086	10.2	ENE	**	*****	0.0	1020	16
17	-.5M	-7.6M	-4.1M	012	1.0	1.4	017	3.8	NNE	**	*****	0.0	1640	17
18	-.3	-11.0	-5.7	036	1.2	1.5	346	3.8	N	**	*****	0.0	2100	18
19	5.1M	-6.6M	-.8M	065	1.2	1.5	037	3.8	E	**	*****	0.0	1056M	19
20	4.1M	-4.7M	-.3M	052	2.3	2.7	026	8.9	NNE	**	*****	0.0	******	20
21	-.1M	-7.5M	-3.8M	044	4.7	4.9	036	8.9	NE	**	*****	0.0	******	21
22	-3.3M	-12.1M	-7.7M	052	5.9	6.0	059	10.2	NE	**	*****	0.0	******	22
23	-4.5	-16.0	-10.3	063	5.5	5.7	043	8.9	ENE	**	*****	0.0	******	23
24	-6.4	-16.8	-11.6	066	4.0	4.2	075	8.9	ENE	**	*****	0.0	******	24
25	-4.0	-14.6	-9.3	086	2.2	2.5	050	6.3	ENE	**	*****	0.0	******	25
26	-11.1	-22.7	-16.9	080	3.2	3.6	097	8.9	E	**	*****	0.0	******	26
27	-17.3M	-27.9M	-22.6M	054	2.7	2.9	082	8.3	ENE	**	*****	0.0	1550	27
28	-16.2	-21.2	-18.7	072	3.9	4.0	072	9.5	ENE	**	*****	3.0	730	28
29	-10.3	-22.3	-16.3	302M	.7M	1.4M	301M	3.2M	WNW(M)	**	*****	.4	1505	29
30	-15.1M	-32.8M	-24.0M	***	****	1.6	***	****	***	**	*****	0.0	1488	30
31	-13.1	-24.3	-18.7	056M	6.2M	4.4M	056M	10.2M	NE(M)	**	*****	0.0	1035	31
MONTH	5.1M	-32.8M	-7.6M	056M	2.7M	3.0M	079M	11.4M	ENE(M)	**	*****	4.2	38729M	

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

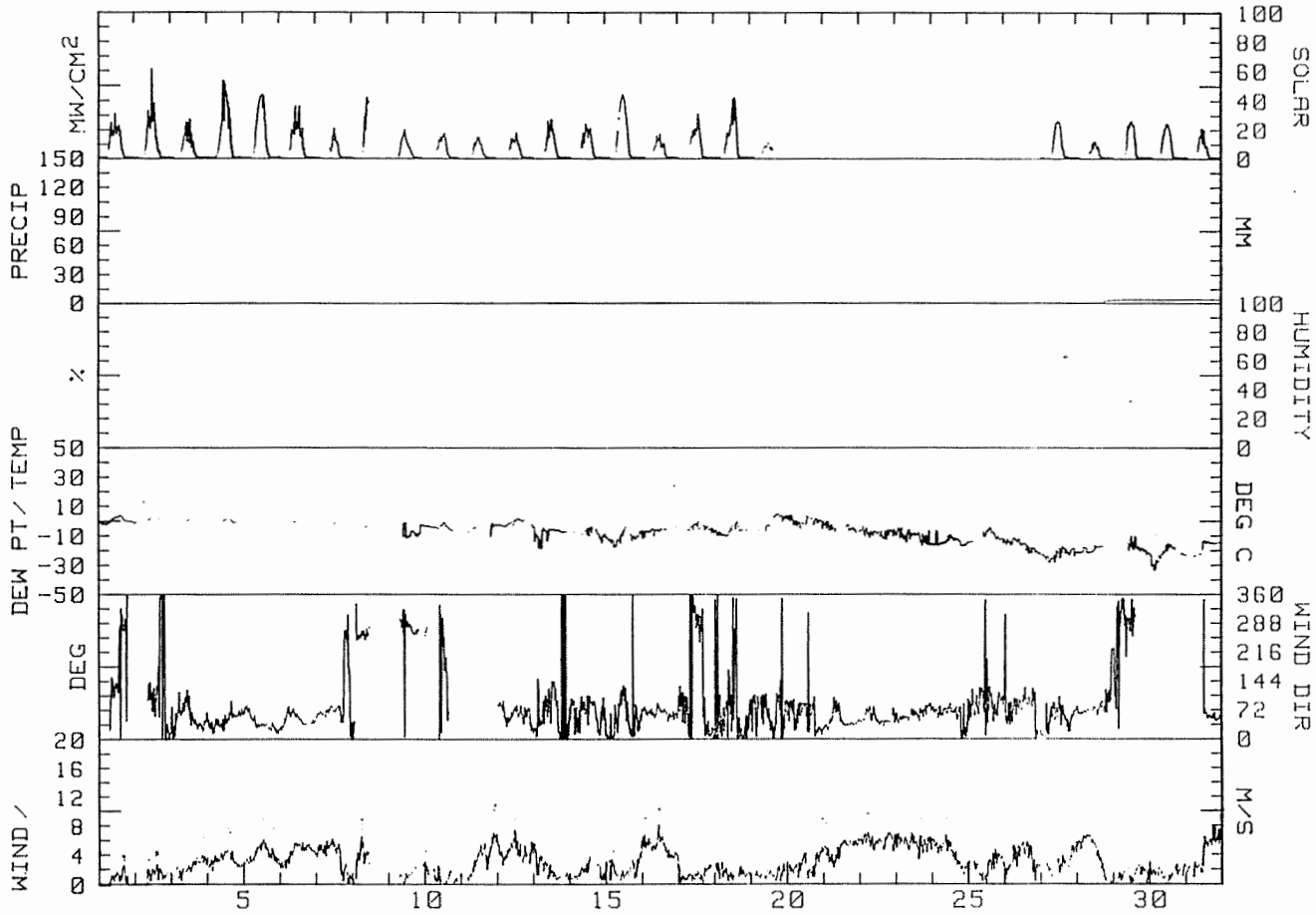
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

October, 1982



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING October, 1982

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.73	5.13	.32	0.00	0.00	0.00	0.00	6.18
NNE	.57	6.34	4.93	0.00	0.00	0.00	0.00	11.84
NE	.93	4.97	12.32	3.72	0.00	0.00	0.00	21.94
ENE	1.13	8.08	16.28	3.80	0.00	0.00	0.00	29.29
E	1.25	5.98	5.29	.53	0.00	0.00	0.00	13.05
ESE	.97	2.71	.85	0.00	0.00	0.00	0.00	4.53
SE	.24	1.37	.08	0.00	0.00	0.00	0.00	1.70
SSE	.32	.12	0.00	0.00	0.00	0.00	0.00	.44
S	.36	0.00	0.00	0.00	0.00	0.00	0.00	.36
SSW	.16	0.00	0.00	0.00	0.00	0.00	0.00	.16
SW	.44	.04	0.00	0.00	0.00	0.00	0.00	.48
WSW	.16	.20	.77	0.00	0.00	0.00	0.00	1.13
W	.48	2.02	.44	.04	0.00	0.00	0.00	2.99
WNW	.40	1.98	0.00	0.00	0.00	0.00	0.00	2.38
NW	.81	.24	0.00	0.00	0.00	0.00	0.00	1.05
NNW	.36	.53	.04	0.00	0.00	0.00	0.00	.93
CALM								1.54
TOTAL	9.33	39.72	41.33	8.08	0.00	0.00	0.00	100.00

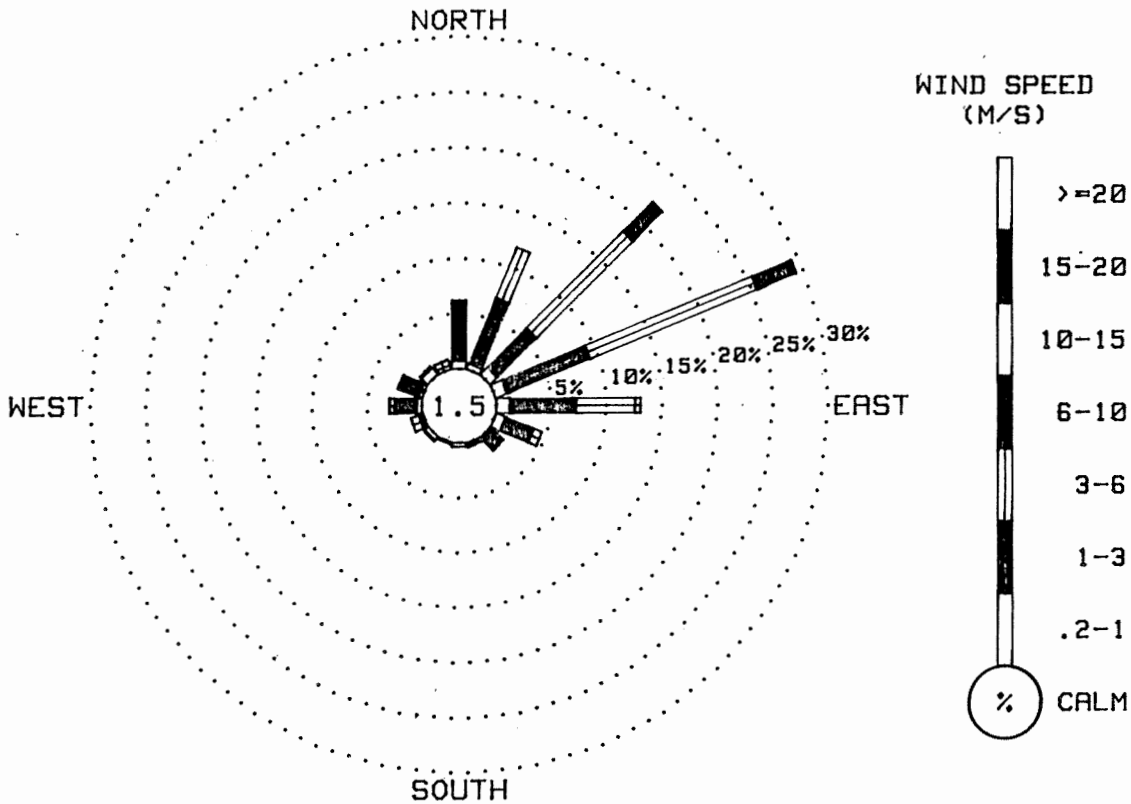
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2475 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

October, 1982



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

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

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.2	*****	**	062	7.6	065	11.4	1
0600	-9.7	*****	**	060	7.0	067	10.8	1
0900	-6.7	*****	**	075	8.0	073	14.0	13
1200	-5.6	*****	**	065	5.7	072	10.8	16
1500	-7.5	*****	**	082	7.5	084	11.4	6
1800	*****	*****	**	087	7.1	095	12.7	1
2100	-9.1	*****	**	078	4.9	084	8.9	1
2400	-13.2	*****	**	062	3.4	056	6.3	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	038	2.9	064	6.3	1
0600	-4.1	*****	**	061	1.5	050	3.8	1
0900	-4.2	*****	**	280	1.0	286	2.5	4
1200	-3.2	*****	**	105	1.0	113	2.5	8
1500	-3.5	*****	**	089	2.3	094	5.1	3
1800	-6.8	*****	**	082	2.8	089	4.4	1
2100	-8.6	*****	**	074	1.9	100	3.2	1
2400	-8.9	*****	**	064	1.4	091	3.2	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.0	*****	**	054	1.3	089	2.5	1
0600	-10.5	*****	**	064	1.0	019	1.9	1
0900	-8.9	*****	**	075	.8	067	2.5	3
1200	-5.7	*****	**	099	2.2	097	4.4	9
1500	-6.0	*****	**	084	3.8	068	7.0	2
1800	-6.1	*****	**	066	5.4	076	7.6	1
2100	-5.0	*****	**	062	4.2	051	7.0	1
2400	-5.3	*****	**	067	3.3	103	6.3	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.9	*****	**	059	4.1	064	7.0	1
0600	-7.4	*****	**	068	6.0	073	9.5	1
0900	-7.5	*****	**	068	5.5	068	10.2	7
1200	-4.8	*****	**	068	4.8	071	8.3	12
1500	-4.6	*****	**	065	3.5	065	5.1	3
1800	-8.7	*****	**	052	2.6	070	4.4	1
2100	-8.4	*****	**	042	2.9	046	5.1	1
2400	-8.4	*****	**	042	2.8	053	4.4	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.9	*****	**	046	2.8	045	3.8	1
0600	-9.8	*****	**	061	3.4	057	5.1	1
0900	-10.3	*****	**	075	2.9	062	5.1	5
1200	-10.8	*****	**	051	2.3	064	3.8	10
1500	-13.0	*****	**	026	2.3	026	4.4	4
1800	-12.0	*****	**	030	2.0	009	3.2	1
2100	-13.4	*****	**	060	1.7	060	3.2	1
2400	-15.7	*****	**	054	1.4	072	3.2	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-17.2	*****	**	076	1.6	074	2.5	1
0600	-18.0	*****	**	081	1.5	078	2.5	1
0900	-16.8	*****	**	084	1.4	090	2.5	13
1200	-16.0	*****	**	058	.6	108	1.9	26
1500	-11.3	*****	**	054	1.0	045	4.4	8
1800	-13.3	*****	**	047	1.3	037	3.8	1
2100	-17.6	*****	**	036	1.4	006	2.5	1
2400	-18.8	*****	**	068	1.4	079	3.2	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-19.5	*****	**	046	1.7	003	3.8	1
0600	-20.5	*****	**	078	2.0	083	3.2	1
0900	-20.2	*****	**	075	2.1	081	3.8	12
1200	-13.0	*****	**	072	1.9	059	5.7	27
1500	-14.3	*****	**	061	3.9	061	7.6	4
1800	-15.8	*****	**	059	4.7	069	8.9	1
2100	-16.1	*****	**	063	5.9	072	8.9	1
2400	-16.4	*****	**	064	7.0	064	9.5	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-15.2	*****	**	061	7.0	064	11.4	1
0600	-14.9	*****	**	066	6.8	066	10.2	1
0900	-13.6	*****	**	065	6.3	073	8.9	4
1200	-12.8	*****	**	063	6.0	064	8.9	7
1500	-11.2	*****	**	070	5.6	068	8.3	3
1800	-12.0	*****	**	067	3.9	067	7.0	1
2100	-12.3	*****	**	078	.3	038	1.9	1
2400	-11.8	*****	**	278	1.6	264	3.2	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.9	*****	**	289	2.7	288	5.7	1
0600	-17.7	*****	**	271	1.3	292	3.2	1
0900	-17.2	*****	**	318	1.0	284	2.5	3
1200	-8.7	*****	**	299	1.0	327	1.9	7
1500	-15.9	*****	**	281	.6	338	1.9	3
1800	-9.1	*****	**	342	.6	282	1.9	1
2100	-9.2	*****	**	015	.6	357	1.9	1
2400	-11.9	*****	**	095	.5	114	1.9	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-15.2	*****	**	065	1.4	062	2.5	1
0600	-15.6	*****	**	083	1.7	077	3.2	1
0900	-11.7	*****	**	063	2.6	055	6.3	3
1200	*****	*****	**	070	5.2	084	8.3	12
1500	-9.6	*****	**	067	5.2	075	8.3	2
1800	-8.8	*****	**	064	5.3	067	9.5	1
2100	-9.2	*****	**	060	5.4	061	8.3	1
2400	-8.3	*****	**	053	4.8	060	7.0	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.0	*****	**	049	4.8	047	7.0	1
0600	-7.0	*****	**	061	2.2	057	5.1	1
0900	-7.5	*****	**	092	.6	061	1.9	6
1200	-6.2	*****	**	082	.8	107	2.5	11
1500	-5.8	*****	**	083	.4	129	1.3	2
1800	-7.3	*****	**	080	1.1	068	3.2	1
2100	-6.4	*****	**	072	1.8	056	5.7	1
2400	-7.0	*****	**	062	3.9	075	7.6	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.9	-8.6	87	053	4.2	054	6.3	1
0600	-6.7	*****	**	050	4.8	052	7.6	1
0900	-6.1	*****	**	054	5.7	052	8.3	3
1200	-4.2	-9.4	67	064	6.2	068	9.5	10
1500	-3.4	-9.2	64	066	6.2	071	9.5	2
1800	-2.5	-9.1	65	075	7.6	082	12.1	1
2100	-1.6	-7.5	64	074	6.9	073	11.4	1
2400	-2.2	-7.9	65	081	6.1	079	8.9	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-4.2	-6.5	84	077	4.1	086	8.9	1
0600	-3.7	*****	**	063	3.7	064	6.3	1
0900	-3.5	*****	**	041	2.8	053	6.3	3
1200	-2.6	*****	**	047	3.9	056	6.3	10
1500	-2.0	*****	**	070	4.8	073	7.6	2
1800	-2.7	*****	**	058	4.1	060	8.3	1
2100	-3.9	*****	**	022	2.7	048	5.1	1
2400	-5.3	*****	**	346	1.6	003	3.2	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.7	*****	**	011	1.1	358	2.5	1
0600	-7.8	*****	**	047	1.2	023	2.5	1
0900	-7.9	*****	**	011	1.8	019	2.5	4
1200	-4.8	*****	**	027	.9	004	2.5	16
1500	-6.7	*****	**	025	.6	041	1.9	2
1800	-8.2	*****	**	045	1.0	037	1.9	1
2100	-10.2	*****	**	014	2.0	008	3.2	1
2400	-9.8	*****	**	040	1.2	006	3.2	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.4	*****	**	037	.9	003	3.2	1
0600	-6.7	-9.1	83	026	.9	352	2.5	1
0900	-7.7	-13.5	63	052	1.6	031	3.2	4
1200	-10.8	-15.7	67	070	1.4	055	2.5	17
1500	-11.1	-16.2	66	082	1.9	094	3.8	3
1800	-13.6	-16.6	78	061	1.8	084	3.8	1
2100	-13.8	*****	**	080	2.0	089	4.4	1
2400	-14.7	*****	**	072	2.0	074	3.8	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-17.7	*****	**	081	1.5	058	2.5	1
0600	-16.5	*****	**	079	1.6	085	3.2	1
0900	-16.6	-21.4	66	060	2.1	047	3.8	7
1200	-15.0	-21.2	59	084	1.3	095	5.1	17
1500	-15.7	-20.6	66	091	1.5	090	5.1	3
1800	-16.6	*****	94	073	1.4	078	3.8	1
2100	-17.5	-21.3	72	082	1.9	095	3.8	1
2400	-18.0	-21.6	73	066	2.6	073	5.7	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-18.3	-22.4	70	072	2.2	059	3.8	1
0600	-19.5	-23.4	71	065	2.3	073	4.4	1
0900	-19.2	-24.1	65	085	2.1	084	3.8	7
1200	-18.7	-24.3	61	084	2.5	090	4.4	18
1500	-18.7	-24.3	61	082	2.0	093	3.8	2
1800	-20.9	-26.4	61	072	1.9	076	3.8	1
2100	-22.0	-27.8	59	083	3.0	084	4.4	1
2400	-21.7	-27.7	58	069	2.3	063	4.4	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-22.8	-28.9	58	060	2.1	069	4.4	1
0600	-22.1	-29.1	53	058	2.2	054	4.4	1
0900	-23.6	-30.1	55	051	2.0	045	4.4	5
1200	-15.1	-26.3	38	065	2.7	077	6.3	17
1500	-18.2	-28.6	40	074	5.0	085	7.6	2
1800	-17.4	-27.9	40	062	3.5	073	7.0	2
2100	-22.6	-30.0	51	064	3.0	081	8.3	1
2400	-24.2	-31.5	51	082	2.4	083	5.7	2

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-23.8	-30.9	52	087	2.2	059	5.7	1
0600	-19.3	-28.3	45	082	3.9	073	7.6	1
0900	-19.5	-28.2	46	073	6.1	074	10.2	3
1200	-18.9	-28.4	43	074	7.8	079	10.8	13
1500	-19.4	-28.1	46	070	7.7	074	11.4	2
1800	-19.0	-28.0	45	060	7.0	067	11.4	1
2100	-18.6	-27.4	46	059	6.8	063	10.8	1
2400	-17.4	-26.8	44	068	4.5	058	7.6	2

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.6	-25.6	46	080	4.2	071	7.6	2
0600	-16.0	-24.5	48	082	3.2	067	5.7	1
0900	-14.6	-23.7	46	094	2.2	088	5.1	2
1200	-14.3	-23.0	48	095	2.0	071	4.4	6
1500	-14.0	-21.8	52	098	1.6	087	3.8	2
1800	-15.1	-21.1	60	100	2.0	105	3.8	1
2100	-15.2	-21.6	58	100	2.3	107	3.8	1
2400	-15.1	-21.5	58	100	2.1	100	3.8	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.3	-20.5	59	102	2.4	110	3.2	1
0600	-9.0	-15.8	58	072	2.9	069	5.7	1
0900	-9.1	-15.4	60	055	5.3	052	7.6	2
1200	-8.4	-15.0	59	058	5.0	058	7.6	8
1500	-7.9	-15.2	56	055	4.6	069	7.6	2
1800	-6.9	-14.7	54	045	4.4	050	7.6	1
2100	-9.4	-16.3	57	056	3.4	043	5.7	1
2400	-10.9	-16.7	62	082	2.0	074	4.4	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.[illegible]	-15.5	64	081	1.5	100	3.8	1
0600	-9.8	-15.3	64	065	1.8	053	4.4	1
0900	-9.8	-15.3	64	068	1.2	046	3.2	2
1200	-9.0	-14.9	62	089	1.4	098	3.2	8
1500	-8.[illegible]	-14.0	63	070	2.0	051	5.1	1
1800	-7.6	-13.2	64	055	2.1	051	4.4	1
2100	-5.3	-11.6	61	038	2.6	041	4.4	1
2400	-5.1	-11.2	62	023	2.8	034	4.4	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-4.6	-10.8	62	039	3.9	048	6.3	1
0600	-4.7	-10.4	64	058	4.8	059	7.0	1
0900	-4.8	-9.8	68	060	4.9	068	7.0	2
1200	-4.2	*****	**	062	4.8	065	6.3	6
1500	-3.0	-5.8	81	068	4.3	062	5.7	1
1800	-2.8	-6.6	75	046	3.8	068	5.7	1
2100	-3.0	-5.8	81	050	3.9	051	5.7	1
2400	-3.2	*****	**	057	4.5	062	6.3	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.5	*****	**	055	4.5	051	6.3	1
0600	-3.3	*****	**	056	4.3	054	5.7	1
0900	-3.3	*****	**	053	4.2	056	5.7	2
1200	-2.7	*****	**	052	4.3	050	5.7	12
1500	-3.4	*****	**	061	4.4	075	6.3	2
1800	-3.3	*****	**	067	4.6	082	7.0	1
2100	-3.6	*****	**	057	4.8	059	7.0	1
2400	-4.0	*****	**	061	5.0	069	7.0	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.4	*****	**	073	5.5	074	7.6	1
0600	-5.0	*****	**	070	5.3	071	7.0	1
0900	-4.2	*****	**	066	5.2	067	7.6	2
1200	-4.5	*****	**	093	2.8	073	6.3	7
1500	-7.1	*****	**	082	2.7	066	5.7	2
1800	-8.7	*****	**	085	4.3	083	7.0	1
2100	-8.2	-11.8	75	083	3.7	083	7.0	1
2400	-8.0	-12.8	68	070	6.6	081	9.5	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.0	-13.8	68	066	7.1	067	10.8	1
0600	-9.7	-14.7	67	067	7.1	067	10.2	1
0900	-10.4	-15.3	67	056	5.6	071	10.2	2
1200	-9.5	-15.0	64	062	6.3	064	9.5	7
1500	-9.3	-14.6	65	058	5.8	066	8.9	1
1800	-8.2	-13.4	66	055	4.8	063	7.6	1
2100	-7.5	-12.5	67	066	5.2	060	9.5	1
2400	-6.8	-10.1	77	062	3.8	069	6.3	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.9	*****	**	064	2.3	060	5.1	1
0600	-9.1	*****	**	081	1.7	065	3.8	1
0900	-4.2	-6.4	95	071	2.3	067	6.3	2
1200	-5.2	-9.3	73	054	3.9	065	7.0	7
1500	-9.2	*****	**	056	2.1	052	4.4	1
1800	-11.4	*****	**	076	1.7	082	3.2	1
2100	-12.9	*****	**	072	2.5	075	3.8	1
2400	-13.4	*****	**	072	2.0	070	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.3	*****	**	072	1.7	085	2.5	1
0600	-16.0	*****	**	079	1.9	068	3.2	1
0900	-16.1	*****	**	083	2.1	087	3.8	2
1200	-15.3	*****	**	089	1.6	089	3.2	8
1500	-14.0	*****	**	086	1.5	093	2.5	1
1800	-11.8	*****	**	071	1.1	020	2.5	1
2100	-9.4	*****	**	019	1.6	007	3.8	1
2400	-7.4	*****	**	059	1.9	060	4.4	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.5	*****	**	059	2.6	056	4.4	1
0600	-7.7	*****	**	062	3.4	065	5.1	1
0900	-8.0	*****	**	063	3.4	070	5.1	2
1200	-7.5	*****	**	054	3.9	059	6.3	5
1500	-7.6	*****	**	054	5.0	055	7.6	1
1800	-8.2	*****	**	062	2.1	043	7.0	1
2100	-9.2	*****	**	070	2.7	075	5.1	1
2400	-8.1	*****	**	050	4.5	053	6.3	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.3	*****	**	062	5.0	063	7.6	1
0600	-8.0	*****	**	079	1.4	060	5.7	1
0900	-10.4	*****	**	027	1.9	020	5.1	2
1200	-11.5	-14.0	92	021	2.9	012	5.7	4
1500	-12.4	-15.1	80	029	3.8	035	7.6	1
1800	-13.4	-13.9	96	036	4.1	024	9.3	1
2100	-14.8	-18.1	76	025	6.4	030	10.2	1
2400	-14.9	-16.3	89	026	6.2	023	9.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	-3.0M	-14.9M	-9.0M	072	6.3	6.4	073	14.0	ENE	**	*****	0.0	1010	1
2	-1.4M	-10.9M	-6.2M	068	1.5	2.0	064	6.3	E	**	*****	0.0	585	2
3	-4.3	-13.4	-8.9	071	2.7	2.9	076	7.6	ENE	**	*****	0.0	580	3
4	-4.3	-9.2	-6.8	060	4.0	4.1	068	10.2	ENE	**	*****	0.0	913	4
5	-8.4	-15.7	-12.1	052	2.3	2.4	057	5.1	NE	**	*****	0.0	965	5
6	-11.3	-20.5	-15.9	065	1.2	1.4	045	4.4	E	**	*****	0.0	1528	6
7	-12.6	-21.9	-17.3	064	3.6	3.7	064	9.5	ENE	**	*****	0.0	1515	7
8	-11.2	-16.5	-13.9	064	4.3	4.8	064	11.4	ENE	**	*****	0.0	523	8
9	-8.2	-18.5	-13.4	302	.8	1.2	288	5.7	WNW	**	*****	0.0	495	9
10	-8.3M	-16.7M	-12.5M	064	3.9	4.0	067	9.5	ENE	**	*****	.2	573	10
11	-5.4	-9.5	-7.5	063	1.9	2.0	075	7.6	ENE	**	*****	0.0	640	11
12	-1.6	-7.1	-4.4	066	5.9	6.0	082	12.1	ENE	68M	-9.1M	0.0	750	12
13	-1.5	-6.0	-3.8	054	3.2	3.6	086	8.9	NE	73M	-7.3M	0.0	643	13
14	-4.2	-10.2	-7.2	025	1.2	1.3	008	3.2	N	**	*****	0.0	798	14
15	-5.8	-17.6	-11.7	065	1.5	1.7	089	4.4	ENE	68M	-14.9M	0.0	920	15
16	-10.2	-19.4	-14.8	075	1.7	1.8	073	5.7	ENE	72M	-20.4M	0.0	1003	16
17	-16.2	-22.7	-19.5	077	2.3	2.3	073	4.4	E	63	-25.1	0.0	990	17
18	-14.5	-24.5	-19.5	066	2.8	3.0	081	8.3	ENE	47	-28.8	0.0	1003	18
19	-16.8	-24.7	-20.8	070	5.7	5.8	074	11.4	ENE	46	-28.6	0.0	785	19
20	-13.3	-17.9	-15.6	091	2.4	2.5	071	7.6	E	52	-23.2	0.0	505	20
21	-6.6	-15.1	-10.9	061	3.6	3.8	052	7.6	NE	58	-16.4	0.0	520	21
22	-5.1	-11.2	-8.2	056	1.8	2.0	051	5.1	E	62	-14.0	0.0	458	22
23	-2.7	-5.5	-4.1	056	4.3	4.4	059	7.0	ENE	71M	-8.5M	0.0	435	23
24	-1.6	-4.2	-2.9	058	4.5	4.5	082	7.0	NE	**	*****	0.0	620	24
25	-3.3	-10.9	-7.1	076	4.5	4.6	081	9.5	ENE	73M	-11.6M	0.0	515	25
26	-5.8	-11.6	-8.7	062	5.7	5.7	067	10.8	ENE	66	-13.9	0.0	558	26
27	-3.8	-14.5	-9.2	066	2.3	2.4	065	7.0	ENE	73M	-9.2M	0.0	518	27
28	-7.2	-16.6	-11.9	071	1.6	1.7	060	4.4	E	**	*****	0.0	558	28
29	-7.0	-9.4	-8.2	058	3.4	3.5	055	7.6	NE	**	*****	0.0	385	29
30	-6.9	-15.2	-11.1	035	3.8	4.1	030	10.2	NNE	77M	-16.6M	0.0	380	30
MONTH	-1.4M	-24.7M	-10.7M	063	3.1	3.3	073	14.0	ENE	62M	-16.5M	.2	21573	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 12.1
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 11.4
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 13.3
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 12.1

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

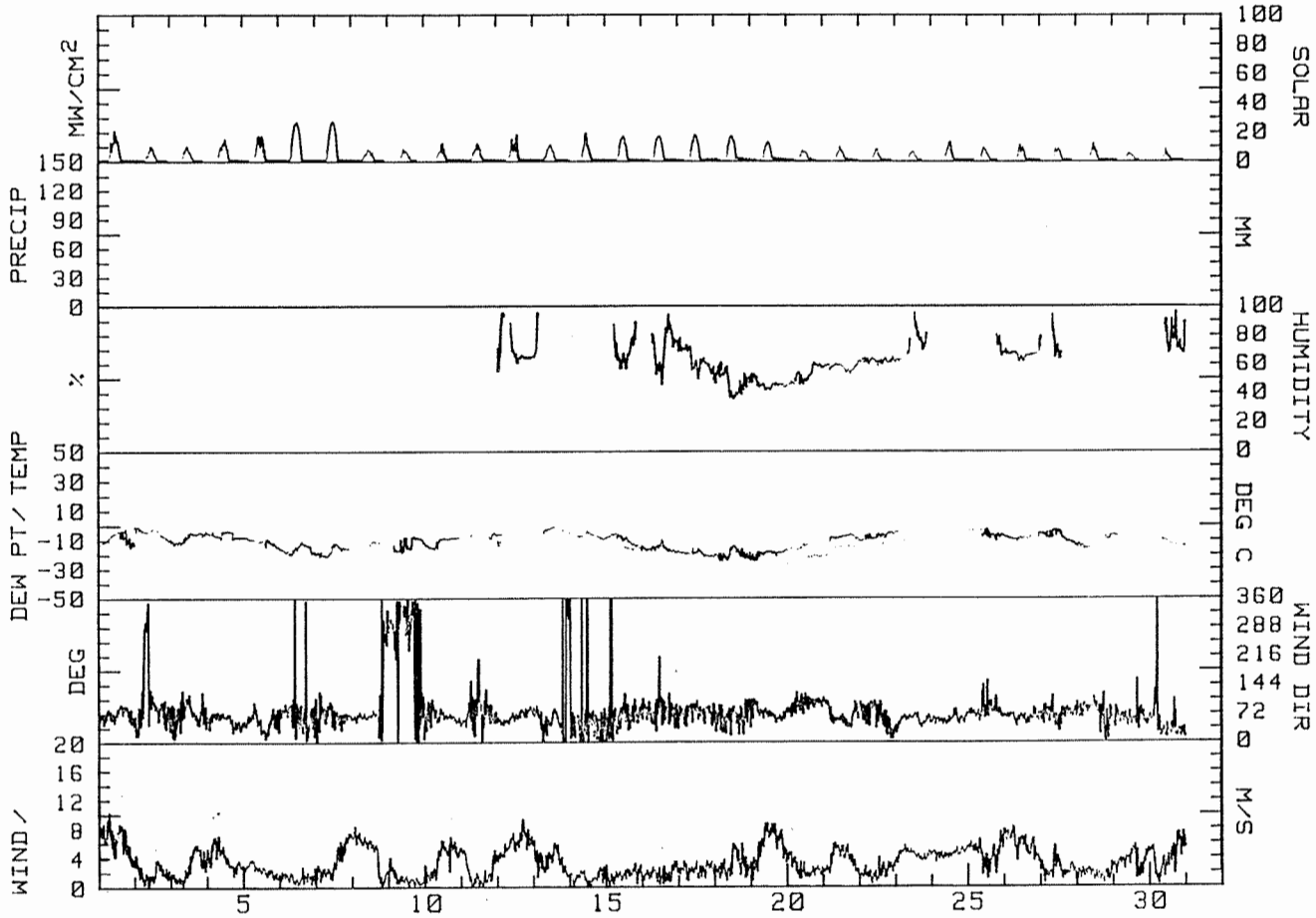
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

November, 1982



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING November, 1982

DIRECTION	VELOCITY (M/S) 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	TOTAL
N	.69	2.26	0.00	0.00	0.00	0.00	0.00	2.95
NNE	.42	4.03	1.67	.56	0.00	0.00	0.00	6.67
NE	1.08	7.67	12.64	.56	0.00	0.00	0.00	21.94
ENE	1.18	12.08	18.61	9.34	0.00	0.00	0.00	41.22
E	.90	13.30	3.44	1.22	.03	0.00	0.00	18.89
ESE	.66	2.78	.21	0.00	0.00	0.00	0.00	3.65
SE	.21	.24	.03	0.00	0.00	0.00	0.00	.49
SSE	.07	.07	0.00	0.00	0.00	0.00	0.00	.14
S	.07	0.00	0.00	0.00	0.00	0.00	0.00	.07
SSW	.14	.03	0.00	0.00	0.00	0.00	0.00	.17
SW	.07	.03	0.00	0.00	0.00	0.00	0.00	.10
WSW	.07	.17	0.00	0.00	0.00	0.00	0.00	.24
W	.10	.49	.03	0.00	0.00	0.00	0.00	.63
WNW	.28	.94	.07	0.00	0.00	0.00	0.00	1.28
NW	.07	.28	0.00	0.00	0.00	0.00	0.00	.35
NNW	.35	.38	0.00	0.00	0.00	0.00	0.00	.73
CALM								.49
TOTAL	6.35	44.76	36.70	11.67	.03	0.00	0.00	100.00

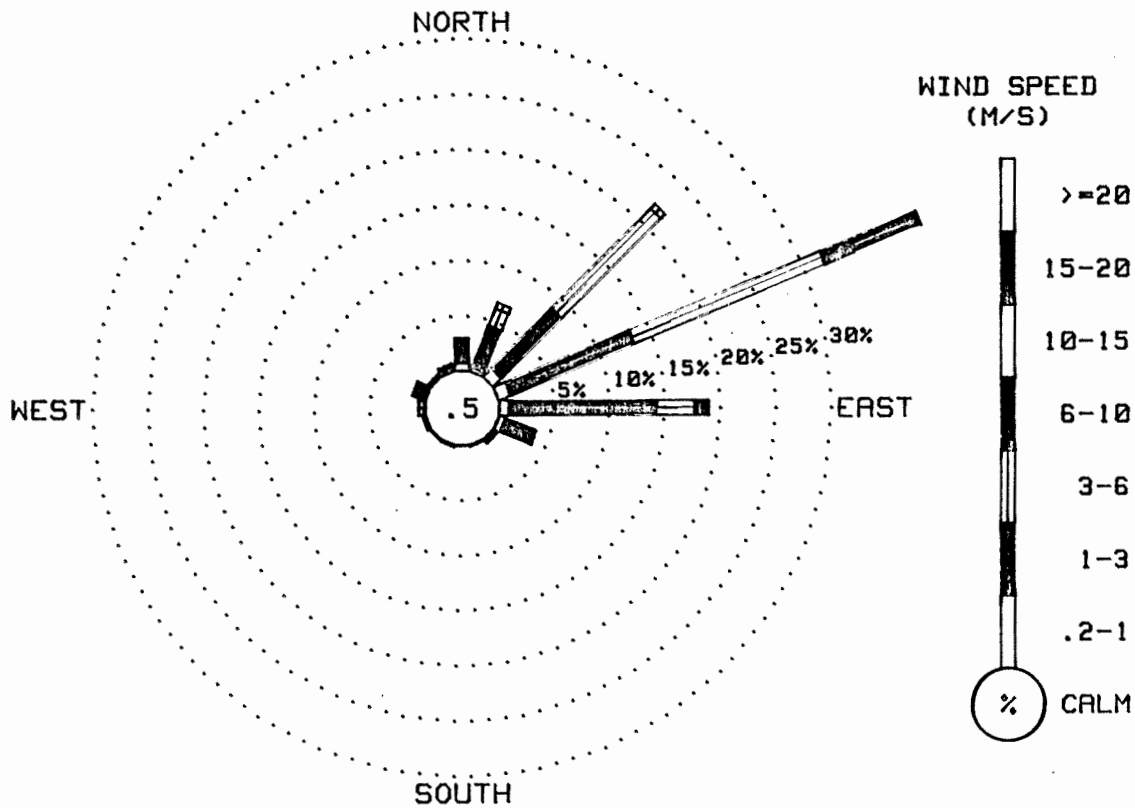
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2880 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

November, 1982



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

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

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-15.0	-19.6	68	018	5.4	019	8.9	1
0600	-15.7	-19.1	75	021	5.7	025	10.8	1
0900	-16.8	-21.6	66	030	4.7	029	7.6	2
1200	-17.0	-22.4	63	021	5.6	026	9.5	5
1500	-18.5	-23.3	66	025	5.5	025	8.9	1
1800	-18.5	-24.0	62	038	6.3	041	8.9	1
2100	-19.7	-25.1	62	045	6.8	037	10.8	1
2400	-18.0	-23.7	61	062	4.9	056	7.6	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-17.1	-22.6	62	063	5.8	066	9.5	1
0600	-18.0	-23.7	61	075	6.7	071	10.2	1
0900	-18.0	-23.7	61	074	6.6	076	9.5	2
1200	-17.9	-25.0	54	064	5.6	067	9.5	8
1500	-20.0	-26.1	58	057	4.4	062	7.6	1
1800	-18.6	-24.8	58	069	3.6	066	8.3	1
2100	-19.3	-25.7	57	074	6.0	076	9.5	1
2400	-23.3	-28.9	60	085	3.9	080	8.3	2

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-19.3	-25.1	60	091	4.0	081	7.6	1
0600	-19.4	-25.4	59	076	5.9	073	8.9	1
0900	-20.5	-26.0	[illegible]	093	3.6	093	8.9	2
1200	-20.0	-26.3	57	105	3.5	094	6.3	8
1500	-18.3	-24.1	60	104	4.3	076	7.6	1
1800	-19.6	-25.4	60	092	3.5	093	7.0	1
2100	-19.4	-25.0	61	073	5.7	065	8.3	1
2400	-20.0	-25.6	61	068	6.8	074	9.5	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-20.6	-26.3	60	064	7.7	063	10.2	1
0600	-21.0	-26.5	61	061	7.1	067	10.2	1
0900	-20.4	-26.3	59	066	7.3	066	10.2	2
1200	-19.1	-25.7	56	059	6.2	061	9.5	7
1500	-19.9	-25.8	59	058	2.8	059	5.1	1
1800	-24.1	-28.9	64	085	2.1	088	5.7	1
2100	-15.8	-22.0	59	063	4.9	052	8.9	1
2400	-15.7	-21.7	60	058	6.7	054	9.5	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.7	-20.5	61	060	7.4	062	10.2	1
0600	-13.5	-17.9	69	065	7.0	074	9.5	1
0900	-11.9	-14.5	81	058	6.6	064	8.9	1
1200	-10.4	-13.5	78	058	6.4	062	8.9	5
1500	-9.7	-13.8	72	064	6.6	063	8.9	1
1800	-9.1	-13.0	73	063	6.7	058	8.9	1
2100	-8.1	-11.3	78	061	6.6	073	9.5	1
2400	-7.6	-10.8	78	054	6.0	054	8.3	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.6	-11.1	76	052	5.9	058	8.3	1
0600	-9.1	-14.1	67	053	6.3	060	8.9	1
0900	-9.2	-14.5	65	061	6.8	063	8.9	2
1200	-9.4	-15.1	63	062	7.0	063	8.9	8
1500	-10.6	-15.2	69	058	6.8	061	10.2	1
1800	-10.1	-14.5	70	054	6.9	063	9.5	1
2100	-7.9	-11.7	74	061	6.8	057	12.1	1
2400	-5.4	-11.3	63	047	5.6	050	12.1	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.2	-6.8	89	066	7.4	053	12.7	1
0600	-4.2	*****	**	086	7.7	085	13.3	1
0900	-3.1	*****	**	086	8.7	089	14.6	1
1200	-1.2	*****	**	085	8.5	084	12.7	4
1500	-1.4	*****	**	087	7.7	090	14.0	1
1800	-1.3	*****	**	080	5.7	091	10.8	1
2100	-1.7	*****	**	077	6.5	078	10.2	1
2400	-2.1	*****	**	081	5.2	084	9.5	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.0	*****	**	082	3.4	089	5.7	1
0600	-3.0	*****	**	084	3.3	090	7.0	1
0900	-4.5	*****	**	076	.8	076	3.2	1
1200	-3.3	*****	**	044	.9	063	3.2	4
1500	-2.0	*****	**	070	4.9	059	7.6	1
1800	-1.3	*****	**	078	7.0	079	12.1	1
2100	-1.2	*****	**	076	6.9	078	10.8	1
2400	-1.7	*****	**	109	2.3	091	8.3	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.3	*****	**	280	3.8	279	7.0	1
0600	-5.3	*****	**	119	.5	233	3.8	1
0900	-6.4	*****	**	025	.3	090	2.5	1
1200	-11.5	*****	**	074	1.6	075	2.5	5
1500	-12.8	*****	**	071	1.8	097	3.2	1
1800	-13.0	*****	**	073	1.4	084	4.4	1
2100	-14.4	*****	**	073	1.9	080	3.2	1
2400	-16.1	*****	**	074	2.1	079	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-16.2	*****	**	074	2.4	077	3.8	1
0600	-16.8	*****	**	075	2.2	079	4.4	1
0900	-17.4	*****	**	096	2.9	085	4.4	1
1200	-8.9	*****	**	093	2.7	086	6.3	5
1500	-9.4	-15.3	62	090	3.0	071	5.7	1
1800	-9.5	-16.0	59	069	4.8	066	8.9	1
2100	-13.1	-15.8	80	071	4.5	057	8.3	1
2400	-8.5	-13.9	65	060	5.0	053	8.3	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-9.7	-14.8	66	049	5.6	050	7.6	1
0600	-9.0	-14.4	65	053	6.6	063	9.5	1
0900	-9.4	-14.5	66	055	7.1	059	10.2	1
1200	-9.0	-14.2	66	068	8.4	067	13.3	4
1500	-9.1	-14.1	67	065	6.7	061	10.2	1
1800	-9.4	-14.4	67	063	6.4	062	9.5	1
2100	-9.8	-14.7	67	070	7.0	080	9.5	1
2400	-7.6	-12.8	66	075	5.7	063	8.3	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-6.6	*****	**	090	5.2	089	10.2	1
0600	-7.7	-12.6	68	074	7.2	084	14.0	1
0900	-8.0	-12.8	68	071	8.0	079	12.7	1
1200	-8.0	-13.2	66	055	7.2	077	11.4	4
1500	-7.8	-12.8	67	046	6.6	054	10.8	1
1800	-7.4	-11.7	71	059	7.4	075	12.1	1
2100	-8.8	*****	**	081	8.5	083	13.3	1
2400	-6.8	*****	**	055	6.2	065	10.2	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-4.3	*****	**	061	5.9	071	10.8	1
0600	-5.9	*****	**	086	6.0	090	10.2	1
0900	-6.1	*****	**	070	5.9	063	10.2	1
1200	-4.5	*****	**	082	6.8	085	10.2	5
1500	-5.4	*****	**	058	4.2	092	10.8	1
1800	-3.9	*****	**	065	5.8	079	10.8	1
2100	-3.7	*****	**	073	7.2	077	12.1	1
2400	-5.0	*****	**	056	5.1	078	8.9	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-7.5	*****	**	055	5.4	053	7.6	1
0600	-7.0	*****	**	061	5.2	067	7.6	1
0900	-7.0	*****	**	082	3.9	080	7.0	1
1200	-9.0	*****	**	105	2.9	108	6.3	4
1500	-7.7	-12.4	69	095	3.1	108	5.1	1
1800	-6.6	-9.2	82	091	3.3	096	5.1	1
2100	-9.8	-10.9	92	065	2.9	086	4.4	1
2400	-2.9	-10.9	54	089	3.3	091	8.9	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-3.5	-10.3	59	065	5.5	075	8.3	1
0600	-5.1	-10.6	65	053	4.8	052	7.0	1
0900	-4.4	-10.0	65	066	6.0	074	9.5	1
1200	-4.2	-7.6	77	072	6.1	076	8.9	6
1500	-5.0	-7.8	81	065	4.9	075	8.3	1
1800	-5.2	*****	**	056	5.7	061	8.3	1
2100	-5.9	*****	**	063	6.1	066	8.9	1
2400	-8.3	*****	**	094	4.1	076	7.0	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-11.8	*****	**	091	2.3	104	4.4	1
0600	-5.0	-9.6	70	068	5.6	074	10.8	1
0900	-6.3	-10.7	71	070	6.7	075	12.1	1
1200	-6.3	-11.2	68	060	6.0	062	8.9	5
1500	-6.6	-11.9	66	070	6.9	067	10.2	1
1800	-6.0	-11.1	67	062	5.9	062	8.3	1
2100	-6.9	-11.8	68	059	5.5	061	7.6	1
2400	-6.7	-11.4	69	051	5.5	055	7.6	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-6.8	-10.5	75	060	5.4	054	7.6	1
0600	-6.8	-10.3	76	058	2.6	082	5.1	1
0900	-9.6	*****	**	054	1.7	041	3.2	1
1200	-9.0	*****	**	085	1.9	092	3.2	6
1500	-7.8	*****	**	090	1.8	077	3.2	1
1800	-9.0	*****	**	093	1.3	080	2.5	1
2100	-10.1	*****	**	081	1.7	091	2.5	1
2400	-12.2	*****	**	059	2.3	056	4.4	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	-12.5	*****	**	076	1.6	072	3.2	1
0600	-13.6	*****	**	067	1.3	074	2.5	1
0900	-13.8	*****	**	052	1.6	057	3.8	1
1200	-13.5	*****	**	086	1.3	063	2.5	5
1500	-7.7	*****	**	069	3.4	068	6.3	1
1800	-7.5	*****	**	070	5.0	067	7.6	1
2100	-7.9	*****	**	064	5.3	066	7.6	1
2400	-10.1	*****	**	064	5.1	073	7.6	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.3	-12.5	91	059	4.5	052	7.0	1
0600	-12.1	-13.7	88	058	3.9	046	6.3	1
0900	-11.8	-15.3	75	073	4.8	063	8.9	1
1200	-11.7	-16.6	67	061	6.0	062	8.3	4
1500	-10.8	-16.3	64	059	6.7	064	8.3	1
1800	-10.5	-16.4	62	056	6.4	069	8.3	1
2100	-9.4	-16.3	57	056	6.4	050	8.3	1
2400	-8.9	-16.5	54	054	6.6	055	10.2	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.9	-16.8	53	055	6.6	049	9.5	1
0600	-10.6	-17.7	56	055	6.5	064	9.5	1
0900	-11.5	-17.7	60	059	5.6	057	7.6	1
1200	-10.8	-16.8	61	074	4.7	077	7.6	7
1500	-13.4	-18.6	65	075	3.0	075	6.3	1
1800	-16.6	*****	**	090	1.9	095	3.8	1
2100	-15.5	-17.3	86	073	3.3	077	6.3	1
2400	-15.1	-18.2	77	080	2.9	084	5.7	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.3	*****	**	091	2.1	085	3.8	1
0600	-18.0	*****	**	082	1.5	082	2.5	1
0900	-18.2	*****	**	082	2.1	091	3.8	1
1200	-18.0	-22.8	66	077	2.6	069	4.4	9
1500	-18.9	-20.7	86	070	1.9	088	3.8	1
1800	-20.1	-21.5	89	067	2.7	069	5.1	1
2100	-20.9	-22.5	87	072	2.4	080	5.1	1
2400	-21.8	-24.5	79	083	2.5	079	3.8	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-21.3	-23.4	83	086	2.4	082	3.2	1
0600	-22.4	-25.3	77	089	2.1	094	3.8	1
0900	-21.8	-24.5	79	093	2.2	099	4.4	1
1200	-14.6	-19.5	66	090	3.9	092	8.3	10
1500	-15.9	-20.3	69	074	5.9	079	9.5	1
1800	-17.0	-21.6	67	075	6.1	067	9.5	1
2100	-17.5	-22.0	68	066	6.2	076	9.5	1
2400	-17.7	-22.3	67	059	5.7	060	8.9	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.6	-21.6	65	059	5.8	062	7.6	1
0600	-15.2	-20.5	64	056	6.0	060	8.9	1
0900	-14.7	-20.2	63	061	6.9	061	9.5	1
1200	-15.1	-21.3	59	065	6.9	068	8.9	7
1500	-16.0	-21.6	62	062	6.1	061	8.3	1
1800	-15.5	-21.3	61	065	4.8	061	8.3	1
2100	-15.0	-20.3	64	065	5.4	063	8.9	1
2400	-14.9	-19.6	67	068	2.4	074	6.3	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.4	-19.3	66	077	2.6	071	6.3	1
0600	-10.1	-14.9	68	057	4.8	058	7.0	1
0900	-10.1	-15.2	66	063	5.2	053	7.6	1
1200	-11.4	-17.0	63	070	5.0	064	7.6	6
1500	-16.6	-21.1	68	095	3.2	087	5.7	1
1800	-17.7	-21.8	70	090	2.3	079	5.1	1
2100	-17.3	-21.6	69	102	2.2	111	3.8	1
2400	-16.8	*****	**	095	1.8	108	3.2	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.3	-17.3	92	089	1.4	053	3.2	1
0600	-17.2	-19.1	85	086	1.8	077	3.8	1
0900	-17.0	-18.9	85	066	1.7	053	3.2	1
1200	-17.1	-20.6	74	090	2.4	093	3.8	6
1500	-16.4	-18.2	86	097	3.3	095	5.1	1
1800	-12.2	-12.9	95	087	2.9	063	7.6	1
2100	-12.4	-16.2	73	060	6.0	062	8.9	1
2400	-13.3	-14.3	92	055	6.5	055	9.5	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.3	-15.6	76	051	6.8	059	10.2	1
0600	-11.9	-15.6	74	056	6.4	058	8.9	1
0900	-10.2	-13.5	77	052	6.4	054	9.5	1
1200	-7.5	-10.8	77	067	7.6	069	10.8	5
1500	-7.3	-9.6	84	073	7.3	078	11.4	1
1800	-5.5	*****	**	067	5.7	074	8.9	1
2100	-3.1	*****	**	064	6.1	078	10.2	1
2400	-2.5	*****	**	067	7.2	065	11.4	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.9	*****	**	074	7.3	077	11.4	1
0600	-1.7	*****	**	070	6.1	078	10.2	1
0900	-3.6	*****	**	092	3.3	076	7.0	1
1200	-1.4	*****	**	080	5.5	078	11.4	3
1500	-.9	*****	**	079	5.4	081	8.3	1
1800	-.3	*****	**	091	5.0	094	8.3	1
2100	.2	*****	**	102	7.3	105	12.1	1
2400	-.1	*****	**	095	6.2	098	12.7	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.6	*****	**	088	3.4	088	5.1	1
0600	.5	*****	**	081	3.2	078	5.7	1
0900	.1	*****	**	081	4.2	077	7.0	1
1200	.4	*****	**	087	4.4	082	7.0	3
1500	.4	*****	**	089	3.6	088	5.7	1
1800	1.5	*****	**	087	4.0	088	6.3	1
2100	2.0	*****	**	078	4.1	092	7.0	1
2400	2.4	*****	**	078	6.1	080	9.5	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.1	*****	**	076	5.9	075	10.2	1
0600	2.0	*****	**	081	6.2	076	10.2	1
0900	-.6	*****	**	094	2.1	080	9.5	1
1200	0.0	*****	**	067	3.1	078	7.0	5
1500	.3	*****	**	082	4.7	083	7.0	1
1800	.2	*****	**	074	4.7	083	8.3	1
2100	-2.4	*****	**	108	.4	074	3.8	1
2400	-2.7	*****	**	055	.4	353	2.5	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.7	*****	**	227	1.1	254	5.7	1
0600	-2.7	*****	**	266	3.6	265	6.3	1
0900	-4.2	*****	**	257	1.7	246	5.1	1
1200	-4.2	*****	**	095	1.3	120	3.2	3
1500	-6.3	*****	**	103	1.8	096	3.2	1
1800	-8.6	*****	**	067	1.4	014	3.2	1
2100	-9.1	*****	**	043	1.4	061	2.5	1
2400	-10.7	*****	**	074	1.3	035	2.5	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.1	*****	**	068	1.1	046	3.2	1
0600	-6.4	*****	**	079	1.9	070	5.1	1
0900	-7.0	*****	**	044	2.0	051	3.8	1
1200	-9.0	*****	**	036	1.5	004	3.2	7
1500	-9.4	*****	**	077	1.4	100	3.2	1
1800	-11.2	*****	**	078	2.6	091	5.7	1
2100	-4.1	*****	**	054	4.3	050	7.0	1
2400	-4.6	*****	**	058	4.4	053	7.0	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	-14.4	-19.7	-17.1	032	5.5	5.7	025	10.8	NNE	66	-21.9	0.0	448	1
2	-17.1	-23.9	-20.5	070	5.3	5.4	071	10.2	ENE	59	-24.8	0.0	498	2
3	-17.7	-24.2	-21.0	085	4.5	4.8	074	9.5	ENE	60	-26.3	.2	483	3
4	-15.1	-24.1	-19.6	063	5.6	5.6	063	10.2	ENE	60	-25.6	0.0	463	4
5	-7.4	-15.6	-11.5	061	6.6	6.7	062	10.2	ENE	72	-15.1	0.0	395	5
6	-5.3	-10.8	-8.1	057	6.5	6.6	057	12.1	NE	69	-13.4	.8	458	6
7	-.9	-5.9	-3.4	082	7.1	7.2	089	14.6	E	80M	-8.4M	2.8	358	7
8	-1.0	-4.8	-2.9	079	3.6	3.8	079	12.1	ENE	**	*****	.4	360	8
9	-2.4	-17.2	-9.8	059	.8	2.0	279	7.0	ENE	**	*****	0.0	420	9
10	-8.3	-18.4	-13.4	076	3.4	3.5	066	8.9	E	66M	-15.5M	0.0	375	10
11	-7.6	-10.2	-8.9	063	6.6	6.7	067	13.3	ENE	66	-14.3	0.0	345	11
12	-5.8	-9.2	-7.5	066	6.8	7.1	084	14.0	ENE	69M	-12.4M	0.0	368	12
13	-3.3	-6.9	-5.1	070	5.7	6.0	077	12.1	ENE	**	*****	0.0	375	13
14	-2.9	-10.8	-6.9	077	3.6	3.8	091	8.9	E	70M	-12.1M	0.0	358	14
15	-2.8	-10.6	-6.7	066	5.3	5.4	074	9.5	ENE	70M	-9.2M	0.0	383	15
16	-4.5	-11.8	-8.2	065	5.5	5.6	075	12.1	ENE	70M	-11.0M	0.0	380	16
17	-6.2	-12.2	-9.2	068	2.3	2.4	054	7.6	E	75M	-10.5M	0.0	355	17
18	-7.3	-15.9	-11.6	067	3.1	3.1	067	7.6	ENE	**	*****	0.0	363	18
19	-8.7	-14.6	-11.7	059	5.7	5.7	055	10.2	ENE	69	-15.9	0.0	350	19
20	-8.9	-17.5	-13.2	066	4.2	4.4	049	9.5	ENE	65M	-17.6M	0.0	410	20
21	-14.8	-21.9	-18.4	077	2.2	2.3	069	5.1	ENE	83M	-21.4M	0.0	463	21
22	-14.4	-22.7	-18.6	075	4.2	4.4	079	9.5	ENE	74	-22.4	0.0	475	22
23	-14.3	-20.0	-17.2	062	5.5	5.6	061	9.5	ENE	64	-21.2	0.0	405	23
24	-9.4	-18.0	-13.7	076	3.3	3.4	053	7.6	E	69M	-18.3M	0.0	390	24
25	-11.6	-18.1	-14.9	073	3.1	3.3	055	9.5	E	85	-17.5	0.0	385	25
26	-2.5	-13.4	-8.0	062	6.6	6.7	078	11.4	ENE	78M	-13.6M	0.0	358	26
27	.4	-3.8	-1.7	085	5.7	5.8	098	12.7	E	**	*****	0.0	303	27
28	2.7	-.3	1.2	083	4.1	4.2	080	9.5	E	**	*****	2.8	290	28
29	2.6	-3.1	-.3	078	3.4	3.7	075	10.2	E	**	*****	0.0	348	29
30	-1.6	-11.8	-6.7	088	.1	1.9	265	6.3	E	**	*****	0.0	313	30
31	-4.1	-12.5	-8.3	061	2.3	2.5	050	7.0	ENE	**	*****	0.0	400	31
MONTH	2.7	-24.2	-10.4	068	4.4	4.7	089	14.6	ENE	69M	-16.7M	7.0	12068	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 10.8
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 12.7
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 12.7
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 10.8

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

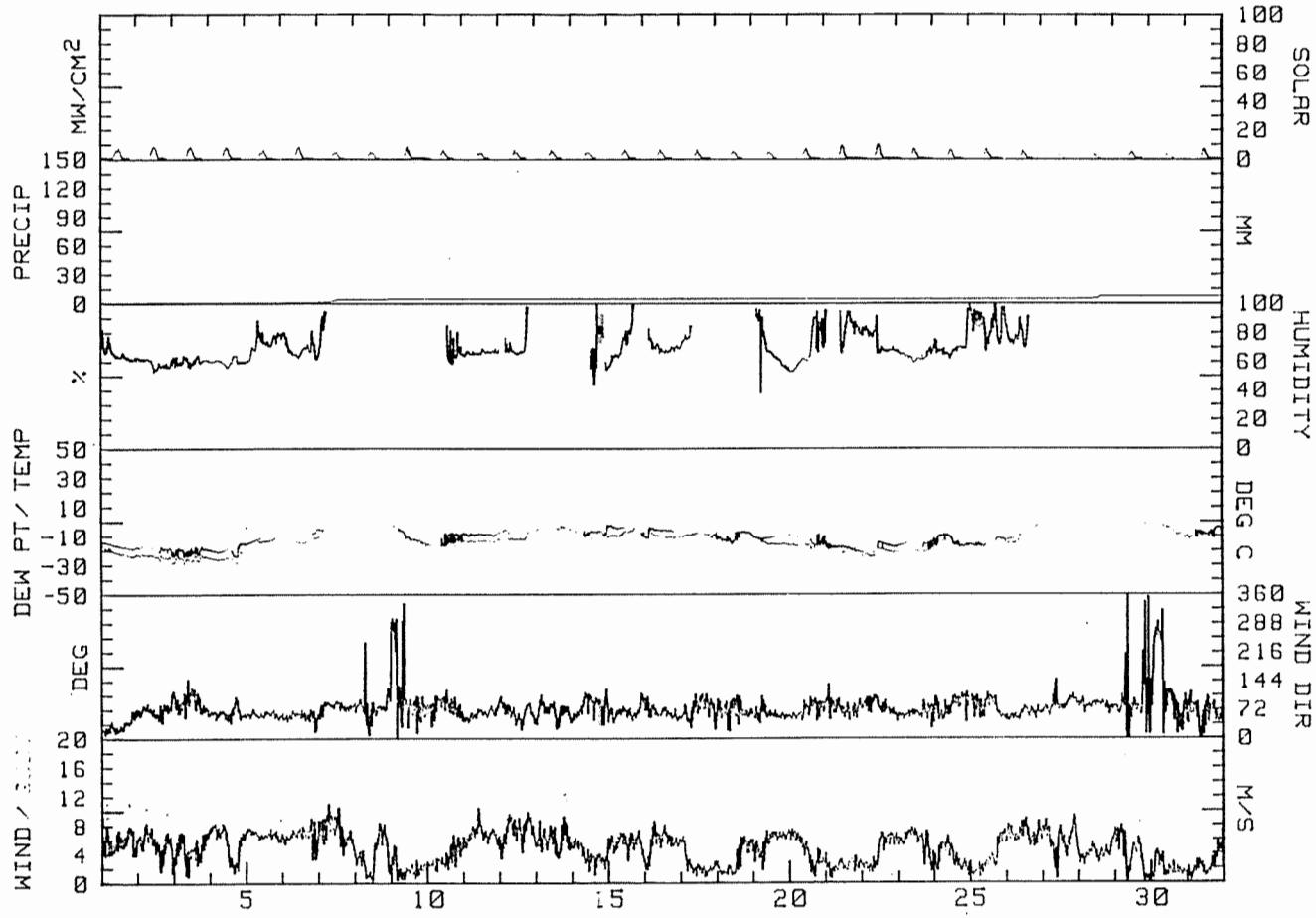
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

December, 1982



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING December, 1982

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.03	.40	0.00	.03	0.00	0.00	0.00	.47
NNE	.20	1.08	2.08	.47	0.00	0.00	0.00	3.83
NE	.34	2.32	6.75	7.33	0.00	0.00	0.00	16.73
ENE	.37	7.29	15.19	22.08	.03	0.00	0.00	44.96
E	.57	10.72	9.61	4.97	.10	0.00	0.00	25.97
ESE	.20	2.96	1.98	.20	0.00	0.00	0.00	5.34
SE	.17	.30	.03	0.00	0.00	0.00	0.00	.50
SSE	.20	.07	.03	0.00	0.00	0.00	0.00	.30
S	.03	0.00	0.00	0.00	0.00	0.00	0.00	.03
SSW	.07	.03	0.00	0.00	0.00	0.00	0.00	.10
SW	.13	.13	0.00	0.00	0.00	0.00	0.00	.27
WSW	0.00	.10	.30	0.00	0.00	0.00	0.00	.40
W	.03	.03	.57	0.00	0.00	0.00	0.00	.64
WNW	.03	.13	.10	0.00	0.00	0.00	0.00	.27
NW	0.00	.03	0.00	0.00	0.00	0.00	0.00	.03
NNW	.03	.07	0.00	0.00	0.00	0.00	0.00	.10
CALM								.03
TOTAL	2.42	25.67	36.66	35.08	.13	0.00	0.00	100.00

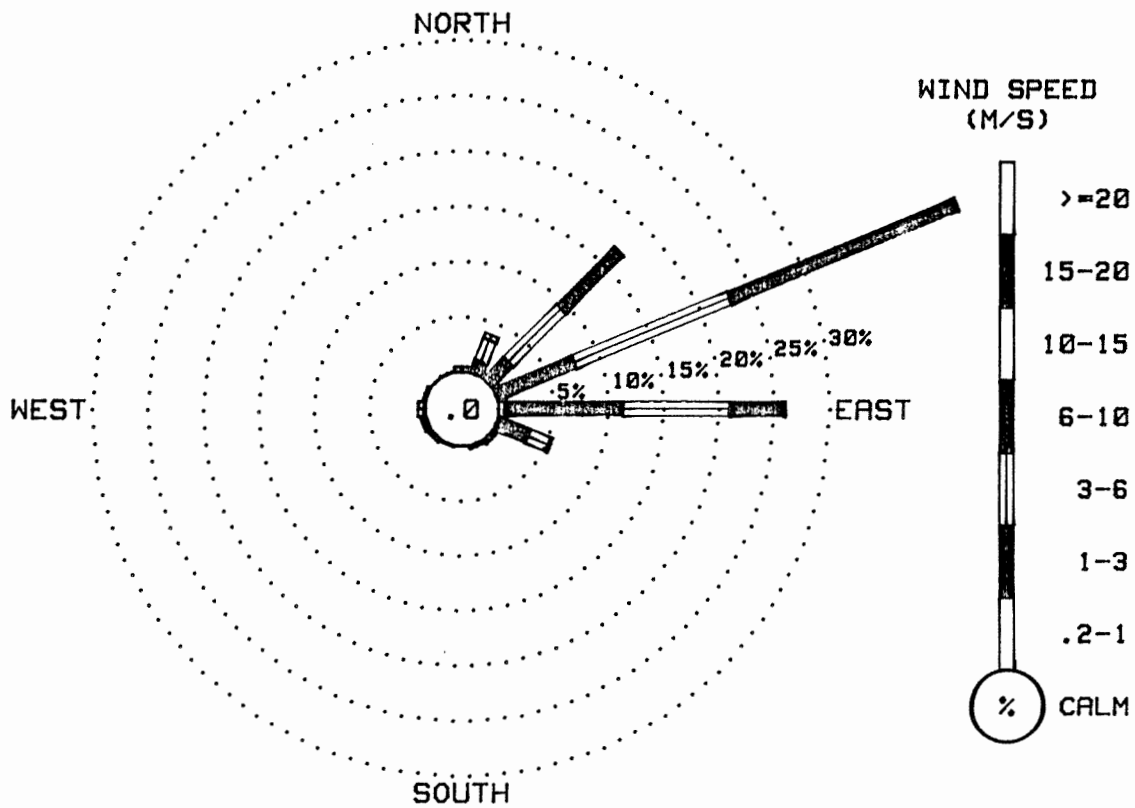
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2976 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

December, 1982



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

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

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-4.5	*****	**	057	4.6	064	7.0	1
0600	-4.8	*****	**	069	5.0	080	7.6	1
0900	-4.5	*****	**	057	5.3	050	7.6	1
1200	-3.6	*****	**	062	5.8	063	8.3	8
1500	-2.9	*****	**	070	5.2	074	7.0	1
1800	-2.8	*****	**	062	4.8	062	7.6	1
2100	-3.8	*****	**	072	6.2	073	8.9	1
2400	-4.2	*****	**	063	5.8	072	10.2	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.0	*****	**	056	5.0	047	7.0	1
0600	-5.5	*****	**	067	5.1	071	7.0	1
0900	-5.5	*****	**	067	4.9	065	7.0	1
1200	-5.1	*****	**	064	4.5	074	6.3	7
1500	-5.4	*****	**	061	4.3	065	6.3	1
1800	-6.1	*****	**	066	4.7	065	7.6	1
2100	-6.5	*****	**	061	5.2	059	8.3	1
2400	-7.1	*****	**	056	4.9	071	7.6	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.7	*****	**	057	4.7	056	7.0	1
0600	-8.4	*****	**	057	4.7	037	7.6	1
0900	-9.2	*****	**	050	5.2	053	8.3	1
1200	-9.6	*****	**	042	6.1	041	8.3	4
1500	-10.1	*****	**	045	5.5	051	8.3	1
1800	-10.4	-15.3	67	064	3.6	022	6.3	1
2100	-10.5	-18.3	53	060	4.2	090	7.6	1
2400	-10.5	-20.2	45	058	4.1	046	7.0	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.5	-16.6	66	085	4.6	071	6.3	1
0600	-13.5	-24.9	38	067	4.4	080	7.0	1
0900	-15.1	-26.6	37	067	3.9	066	6.3	1
1200	-15.9	-27.7	36	061	2.9	045	5.7	7
1500	-18.5	-29.1	39	049	2.1	057	5.1	2
1800	-22.3	-27.2	64	087	2.3	049	5.7	1
2100	-25.3	-29.1	70	096	2.4	098	6.3	1
2400	-25.5	-29.8	67	099	3.3	106	5.1	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-25.5	-30.0	66	099	3.9	104	5.1	1
0600	-25.7	-30.1	66	101	3.5	100	5.1	1
0900	-26.6	-31.2	65	096	2.5	098	4.4	1
1200	-25.9	-33.3	50	088	2.6	085	5.1	8
1500	-20.2	-29.1	45	090	4.0	086	7.0	2
1800	-20.8	-30.2	43	082	4.6	069	7.0	2
2100	-22.8	-31.3	46	082	4.7	078	7.0	1
2400	-22.1	-30.6	46	099	3.5	094	5.7	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-26.1	-34.1	47	066	4.5	054	7.0	1
0600	-25.5	-32.9	50	068	4.0	074	7.0	2
0900	-21.9	-30.0	48	059	5.0	044	8.9	2
1200	-20.8	-26.7	59	059	5.7	047	8.9	6
1500	-21.3	-27.0	60	051	6.3	043	10.2	1
1800	-21.0	-26.2	63	044	7.4	044	10.2	1
2100	-21.4	-27.1	60	041	7.6	038	10.2	1
2400	-22.6	-28.0	61	042	8.3	040	11.4	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-23.4	-29.9	55	039	8.2	042	11.4	1
0600	-23.6	-30.1	55	039	8.1	031	11.4	1
0900	-24.1	-30.0	58	056	7.0	062	12.1	1
1200	-23.7	-30.6	53	066	6.2	054	9.5	7
1500	-24.8	-31.4	54	061	5.2	077	8.3	2
1800	-25.9	-32.3	55	055	3.3	052	8.9	1
2100	-23.1	-29.8	54	053	3.9	058	7.6	1
2400	-22.1	-27.9	59	060	5.9	060	8.9	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-23.9	-29.6	59	069	6.4	059	9.5	1
0600	-25.7	-32.5	53	051	5.4	048	8.9	1
0900	-26.3	-33.4	51	065	7.0	060	10.2	1
1200	-26.7	-33.8	51	073	5.7	068	9.5	8
1500	-27.8	-34.6	52	071	5.0	059	9.5	2
1800	-27.6	-34.6	51	108	2.9	105	6.3	2
2100	-26.7	-33.6	52	103	4.0	081	8.3	1
2400	-27.0	-33.5	54	092	5.3	098	7.6	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-30.8	-36.9	55	104	3.8	086	7.6	1
0600	-31.7	-37.9	54	107	2.8	092	5.7	1
0900	-34.0	-39.9	55	107	2.7	109	5.1	1
1200	-28.2	-36.2	46	094	2.1	094	7.0	8
1500	-27.6	-35.7	46	079	5.9	078	8.9	2
1800	-32.9	-39.2	53	089	2.6	073	7.0	1
2100	-30.3	-37.5	49	073	1.8	079	5.1	1
2400	-30.6	-38.0	48	051	2.9	066	5.7	2

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	-18.4	-38.0	16	015M	4.2M	010M	8.9M	1
2400	-20.8	-30.4	42	078	5.1	093	8.9	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-21.7	-31.5	41	067	5.2	078	8.3	2
0600	-24.2	-33.8	41	067	4.6	081	7.6	2
0900	-22.5	-32.7	39	067	5.6	067	9.5	2
1200	-22.8	-33.3	38	067	5.7	079	8.9	10
1500	-22.6	-32.3	41	057	6.2	057	8.9	2
1800	-22.2	-32.2	40	053	6.9	056	9.5	2
2100	-24.7	-34.0	42	056	7.2	052	10.8	1
2400	-23.6	-33.5	40	068	5.0	059	9.5	2

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-25.0	-34.5	41	071	5.7	062	8.9	1
0600	-23.7	-33.3	41	063	7.6	059	13.3	1
0900	-22.3	-32.6	39	067	8.1	060	12.7	2
1200	-22.7	-32.9	39	059	8.5	060	11.4	9
1500	-22.7	-32.7	40	052	8.2	057	12.1	2
1800	-23.5	-33.4	40	063	8.5	071	12.1	1
2100	-22.7	-31.7	44	076	7.0	070	10.2	1
2400	-22.7	-31.9	43	080	4.8	080	9.5	2

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-23.3	-31.7	46	044	2.3	084	4.4	1
0600	-20.8	-29.9	44	077	2.6	105	4.4	1
0900	-22.0	-30.5	46	095	2.8	105	5.7	2
1200	-14.3	-23.0	48	069	6.1	069	10.8	7
1500	-15.9	-21.9	60	075	5.8	060	10.2	2
1800	-16.1	-23.3	54	067	7.7	069	11.4	1
2100	-17.6	-25.1	52	063	7.7	066	10.8	1
2400	-18.7	-25.7	54	057	5.9	069	9.5	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-18.6	-25.4	55	040	4.2	050	7.0	1
0600	-20.3	-26.6	57	067	1.8	043	4.4	1
0900	-14.0	-20.3	59	078	2.8	080	7.6	2
1200	-10.1	-16.0	62	070	6.2	062	9.5	6
1500	-7.9	-13.9	62	074	5.9	073	9.5	1
1800	-12.3	-17.3	66	092	3.6	059	7.0	1
2100	-5.6	-11.9	61	076	3.5	047	7.0	1
2400	-8.4	-15.4	57	055	4.0	078	8.9	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.9	-16.4	59	058	6.6	066	10.2	1
0600	-10.1	-16.2	61	068	6.5	072	8.9	1
0900	-8.2	-14.2	62	072	6.1	077	8.9	1
1200	-7.5	-13.1	64	063	5.3	063	7.6	7
1500	-6.2	-11.5	66	063	5.2	073	8.3	2
1800	-7.2	-11.7	70	058	4.0	050	7.0	1
2100	-7.2	-11.2	73	072	3.3	083	5.7	1
2400	-7.7	*****	**	089	1.4	078	4.4	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.0	*****	80	002	.2	125	1.9	1
0600	-9.7	*****	68	057	.3	316	1.9	1
0900	-9.8	-15.5	63	028	.9	097	1.9	2
1200	-11.5	*****	**	007	1.8	000	3.2	8
1500	-12.6	*****	**	015	1.9	009	3.2	2
1800	-9.0	*****	**	042	1.6	084	4.4	1
2100	-7.3	-9.6	84	059	4.3	058	7.0	1
2400	-6.0	-10.7	69	055	5.8	067	8.3	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.0	*****	**	066	4.6	060	7.0	1
0600	-4.8	-8.7	74	047	6.4	044	9.5	1
0900	-6.3	-10.5	72	058	6.4	048	10.2	2
1200	-6.4	-12.1	64	040	5.4	051	8.9	9
1500	-5.2	-10.9	64	033	5.7	034	10.2	2
1800	-5.5	-11.4	63	058	5.8	075	12.1	1
2100	-4.5	-10.1	65	061	6.5	074	11.4	1
2400	-5.8	-9.5	75	084	8.0	078	12.1	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.4	-10.4	73	062	5.3	072	9.5	1
0600	-7.3	*****	**	075	2.8	067	7.6	1
0900	-8.0	*****	**	125	.7	110	2.5	1
1200	-6.8	*****	**	253	5.2	256	9.5	6
1500	-8.8	*****	**	259	2.6	278	5.1	2
1800	-9.0	-12.4	76	213	.6	237	1.9	1
2100	-9.0	-13.6	69	096	2.1	089	3.8	1
2400	-8.9	*****	**	054	2.1	065	4.4	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.0	-11.8	74	046	4.9	042	7.0	1
0600	-9.4	-13.5	72	055	5.4	046	7.6	1
0900	-9.2	-13.6	70	042	5.1	046	7.0	2
1200	-9.4	-14.4	67	048	6.0	061	8.9	10
1500	-9.3	-14.6	65	049	5.7	052	8.3	2
1800	-9.8	-15.3	64	043	5.5	044	7.6	1
2100	-9.2	-15.5	60	048	5.6	049	8.3	1
2400	-9.7	-16.2	59	048	5.5	060	7.6	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.3	-16.5	56	051	6.2	047	7.6	1
0600	-9.8	-17.4	54	044	6.1	056	8.3	1
0900	-9.2	-18.0	49	051	5.9	051	8.3	2
1200	-7.8	-19.5	39	046	5.6	053	7.6	11
1500	-9.1	-20.6	39	045	6.1	048	8.3	2
1800	-9.3	-20.8	39	046	5.3	058	8.3	2
2100	-11.1	-21.9	41	039	4.1	044	7.6	2
2400	-14.3	-23.2	47	057	1.8	030	3.8	2

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.4	-23.8	45	069	2.7	052	6.3	1
0600	-16.2	-24.7	48	069	2.4	062	5.1	1
0900	-12.5	-22.9	42	084	3.3	083	7.0	2
1200	-7.1	-20.8	33	077	4.5	083	8.3	12
1500	-5.1	-19.4	32	088	4.0	082	8.3	3
1800	-9.7	-22.8	34	076	4.5	083	7.6	1
2100	-6.9	-20.3	34	087	1.3	073	5.7	2
2400	-9.7	-22.8	34	064	6.1	083	9.5	2

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.2	-22.6	33	074	2.9	063	7.0	1
0600	-13.4	-24.2	40	072	3.3	088	5.7	1
0900	-12.6	-23.8	39	086	4.9	085	6.3	3
1200	-10.7	-23.6	34	089	3.4	093	5.7	12
1500	-11.4	-24.3	34	074	2.9	047	5.1	3
1800	-11.5	-24.7	33	089	3.1	093	5.1	1
2100	-10.5	-33.6	13	060	3.9	061	7.0	1
2400	-12.4	-35.1	13	063	4.9	070	8.3	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.8	-22.3	33	069	5.8	063	10.2	2
0600	-11.1	-24.0	34	068	6.1	095	11.4	1
0900	-10.9	-23.5	35	055	5.5	071	9.5	3
1200	-12.3	-25.1	34	051	6.7	064	10.8	13
1500	-13.3	-25.0	37	066	7.5	068	11.4	3
1800	-11.5	-23.7	36	056	7.2	063	12.1	1
2100	-9.3	-22.1	35	065	5.2	062	8.9	1
2400	-10.2	-22.6	36	066	4.6	076	9.5	2

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.9	-25.0	36	067	8.2	065	13.3	1
0600	-14.2	-25.5	38	069	8.6	069	12.7	2
0900	-14.5	-25.5	39	061	9.3	059	12.7	3
1200	-13.0	-24.2	39	065	8.5	070	12.7	9
1500	-12.6	-23.5	40	055	7.8	058	11.4	3
1800	-13.0	-23.6	41	065	7.2	062	10.8	2
2100	-13.0	-23.3	42	078	6.0	090	11.4	2
2400	-8.7	-19.7	41	068	4.1	078	8.3	2

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.7	-20.3	42	057	5.0	072	9.5	1
0600	-8.9	-18.5	46	066	8.2	069	12.7	1
0900	-10.5	-18.3	53	065	9.0	079	13.3	2
1200	-7.1	-14.6	55	067	9.4	065	14.6	10
1500	-8.8	-16.2	55	076	7.0	070	12.7	3
1800	-8.9	-16.1	56	082	6.5	062	10.8	1
2100	-7.9	-14.9	57	075	7.4	098	11.4	1
2400	-6.7	-14.2	55	067	7.1	079	11.4	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.9	-16.0	61	075	5.4	075	9.5	1
0600	-12.6	*****	67	096	2.7	090	5.7	1
0900	-12.1	-17.0	67	074	1.1	071	3.2	3
1200	-11.6	-17.0	64	060	1.6	092	3.8	7
1500	-7.5	-13.1	64	087	2.3	076	5.1	3
1800	-8.1	-13.9	63	072	5.1	075	8.9	1
2100	-7.4	-12.8	65	053	4.5	056	8.3	1
2400	-8.4	*****	**	070	2.7	058	5.1	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.7	*****	**	090	1.3	054	2.5	1
0600	-6.2	*****	**	071	1.2	087	2.5	1
0900	-5.8	*****	**	074	1.4	088	2.5	2
1200	-5.9	*****	**	096	1.4	108	3.2	10
1500	-6.5	*****	**	089	1.5	068	3.2	4
1800	-7.3	*****	**	075	1.8	074	3.2	1
2100	-9.0	*****	**	074	1.6	095	3.8	1
2400	-9.2	*****	**	036	1.6	020	3.8	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.4	*****	**	040	1.9	050	3.8	1
0600	-13.2	*****	**	057	2.0	065	3.8	1
0900	-15.1	*****	**	068	1.6	069	3.2	3
1200	-12.3	-16.5	71	087	1.4	098	3.8	15
1500	-11.7	-14.9	77	069	2.1	083	3.8	5
1800	-12.2	*****	**	085	2.9	099	4.4	1
2100	-13.2	*****	**	090	3.1	097	5.7	1
2400	-14.2	*****	**	075	3.4	068	5.7	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.3	*****	**	055	5.2	052	8.3	1
0600	-10.8	-13.0	84	054	6.1	056	8.9	1
0900	-8.5	-12.0	76	057	6.4	057	10.2	4
1200	-8.6	-14.0	65	059	6.6	058	9.5	12
1500	-10.2	-14.4	71	063	6.7	063	10.2	4
1800	-9.5	-11.1	88	060	6.6	056	8.3	1
2100	-8.4	-9.5	92	061	6.7	071	9.5	1
2400	-6.6	*****	**	057	6.6	064	8.9	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.1	-8.7	76	053	5.7	067	8.9	1
0600	-2.8	-8.2	66	053	3.0	031	6.3	1
0900	-3.8	-9.6	64	067	5.6	069	9.5	3
1200	-3.3	-10.2	59	070	6.3	080	9.5	17
1500	-3.9	-10.9	58	066	6.3	075	10.8	4
1800	-4.7	-11.3	60	063	5.9	076	10.8	1
2100	-2.2	-9.3	58	062	6.3	061	10.2	1
2400	-6.9	-12.7	63	072	2.7	081	7.6	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	-2.6	-5.7	-4.2	064	5.3	5.4	072	10.2	ENE	**	*****	0.0	425	1
2	-4.2	-7.1	-5.7	062	4.8	4.8	059	8.3	ENE	**	*****	0.0	410	2
3	-6.6	-11.5	-9.1	053	4.7	4.8	053	8.3	NE	58M	-17.3M	1.6	348	3
4	-10.6	-25.7	-18.2	076	3.1	3.3	080	7.0	E	51	-25.7	0.0	495	4
5	-20.2	-28.6	-24.4	091	3.6	3.7	086	7.0	E	55	-30.9	0.0	495	5
6	-20.6	-26.1	-23.4	051	6.0	6.2	040	11.4	NE	54	-28.6	0.0	435	6
7	-22.1	-27.2	-24.7	052	5.9	6.0	062	12.1	NE	56	-30.3	0.0	468	7
8	-21.8	-28.6	-25.2	076	5.0	5.3	060	10.2	ENE	54	-32.8	0.0	515	8
9	-27.0	-34.4	-30.7	088	2.9	3.1	078	8.9	ESE	51	-37.5	0.0	510	9
10	-27.5M	-27.5M	-27.5M	093M	4.5M	4.5M	093M	7.0M	E(M)	55M	-33.8M	****	240M	10
11	-17.9M	-20.8M	-19.4M	051M	4.0M	4.9M	010M	8.9M	E(M)	28M	-34.4M	0.0M	240M	11
12	-20.5	-25.0	-22.8	062	5.8	5.9	052	10.8	ENE	40	-32.7	0.0	598	12
13	-21.1	-25.2	-23.2	065	7.2	7.3	059	13.3	ENE	40	-32.5	0.0	573	13
14	-14.1	-24.6	-19.4	068	5.0	5.2	069	11.4	ENE	49	-27.0	0.0	505	14
15	-4.9	-20.9	-12.9	069	3.9	4.1	062	9.5	ENE	60	-19.3	0.0	450	15
16	-6.1	-10.2	-8.2	066	4.8	4.8	066	10.2	ENE	65M	-13.7M	0.0	485	16
17	-5.8	-12.6	-9.2	044	2.0	2.3	067	8.3	N	70M	-13.3M	0.0	475	17
18	-4.2	-6.9	-5.6	057	5.9	6.2	075	12.1	ENE	68M	-10.4M	0.0	560	18
19	-6.0	-10.9	-8.5	066	.5	2.8	072	9.5	ENE	68M	-12.9M	1.2	453	19
20	-8.0	-10.5	-9.3	047	5.5	5.5	061	8.9	NE	67	-14.2	0.0	565	20
21	-7.4	-15.2	-11.3	047	5.1	5.2	056	8.3	NE	46	-19.4	0.0	720	21
22	-3.8	-17.2	-10.5	076	3.6	3.7	083	9.5	ENE	39	-22.7	0.0	760	22
23	-6.0	-16.4	-11.2	075	3.6	3.7	070	8.3	E	31	-26.7	0.0	790	23
24	-8.4	-13.7	-11.1	062	6.0	6.2	063	12.1	ENE	33	-24.9	0.0	815	24
25	-8.7	-14.6	-11.7	065	7.4	7.5	065	13.3	ENE	39	-23.8	0.0	750	25
26	-6.7	-11.3	-9.0	069	7.4	7.6	065	14.6	ENE	52	-16.9	0.0	648	26
27	-6.6	-13.8	-10.2	072	3.1	3.3	075	9.5	ENE	64M	-15.0M	0.0	598	27
28	-4.7	-10.7	-7.7	076	1.4	1.6	095	3.8	E	**	*****	0.0	693	28
29	-8.1	-15.8	-12.0	073	2.2	2.4	097	5.7	E	75M	-14.8M	0.0	888	29
30	-6.1	-14.2	-10.2	058	6.4	6.4	057	10.2	ENE	77M	-12.6M	0.0	853	30
31	-2.2	-6.9	-4.6	063	5.2	5.4	075	10.8	ENE	66	-9.8	0.0	920	31
MONTH	-2.2M	-34.4M	-14.2M	064M	4.5M	4.8M	065M	14.6M	ENE(M)	53M	-22.6M	2.8M	17675M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 11.4
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.

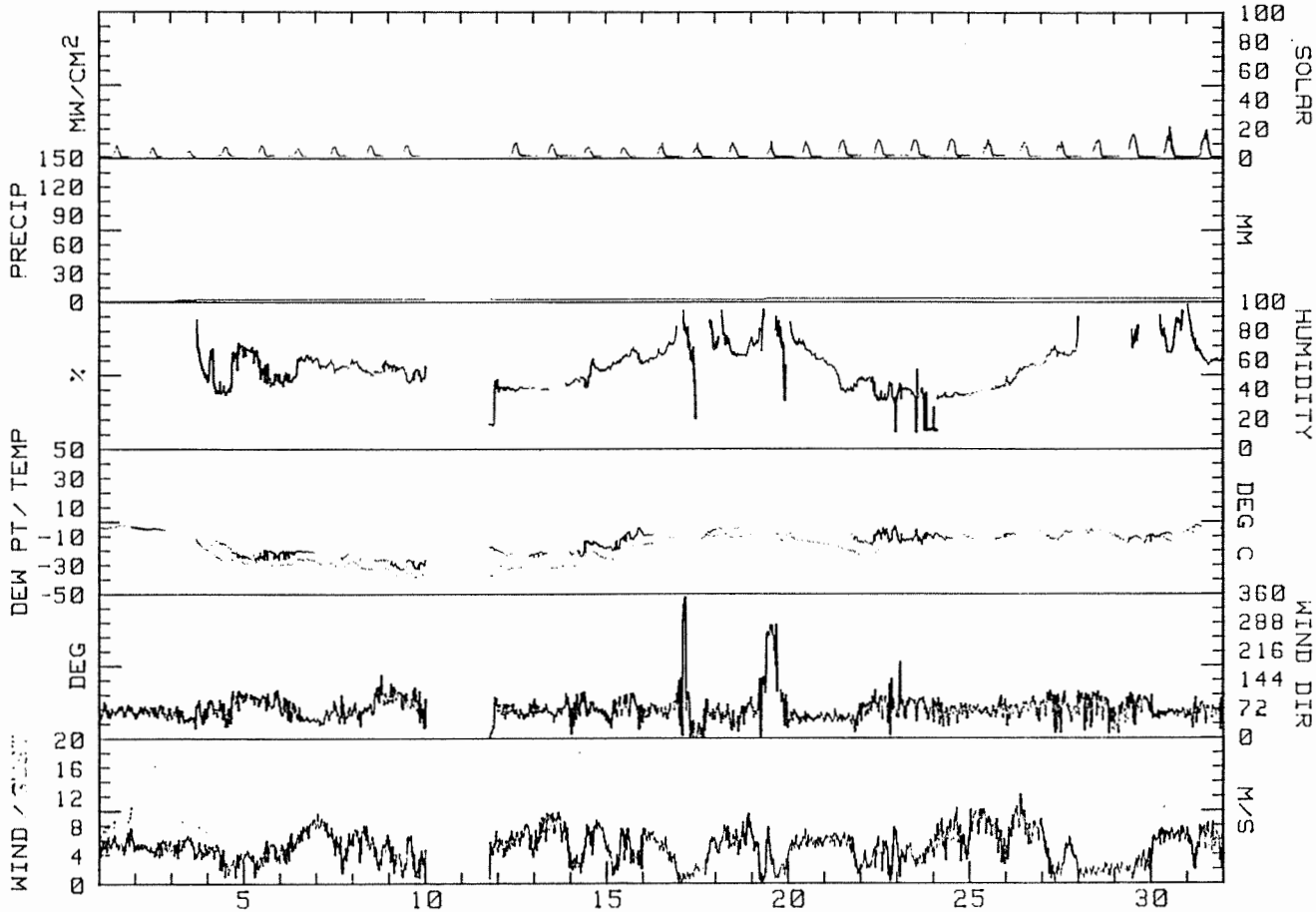
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

January, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING January, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.18	1.00	.18	0.00	0.00	0.00	0.00	1.36
NNE	.29	1.71	1.61	.39	0.00	0.00	0.00	4.00
NE	.21	2.61	13.68	9.96	0.00	0.00	0.00	26.46
ENE	.36	4.71	19.21	17.36	.43	0.00	0.00	42.07
E	.36	6.57	9.57	2.54	0.00	0.00	0.00	19.04
ESE	.25	2.50	2.14	.04	0.00	0.00	0.00	4.93
SE	.21	.21	.04	0.00	0.00	0.00	0.00	.46
SSE	.14	.04	0.00	0.00	0.00	0.00	0.00	.18
S	.11	0.00	0.00	0.00	0.00	0.00	0.00	.11
SSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	.04	.04	.04	0.00	0.00	0.00	0.00	.11
WSW	.04	.18	.25	.04	0.00	0.00	0.00	.50
W	.04	.07	.18	.07	0.00	0.00	0.00	.36
WNW	0.00	.07	0.00	0.00	0.00	0.00	0.00	.07
NW	.07	.07	0.00	0.00	0.00	0.00	0.00	.14
NNW	.11	0.00	0.00	0.00	0.00	0.00	0.00	.11
CALM								.11
TOTAL	2.39	19.79	46.89	30.39	.43	0.00	0.00	100.00

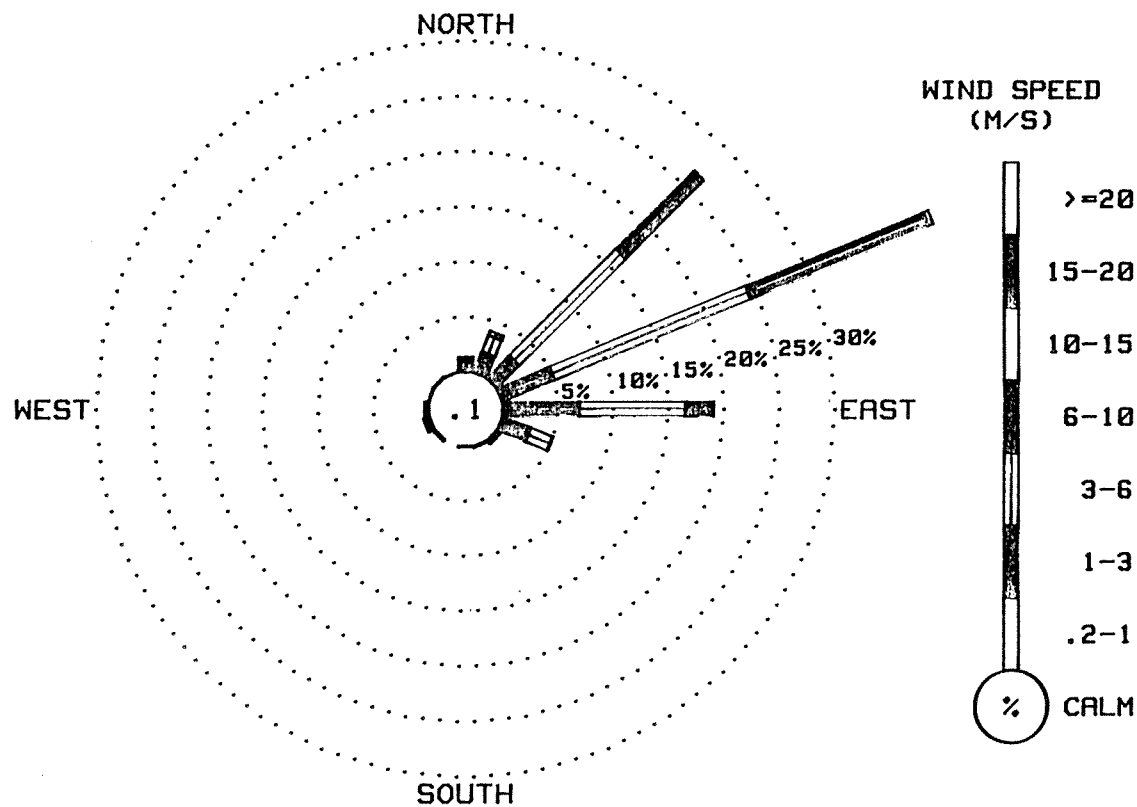
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2800 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

January, 1983



WIND ROSE PLOT

No precipitation data for February

(See INTERPRETATION OF DATA).

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.1	-12.1	73	096	3.4	099	5.7	1
0600	-.2	-9.4	50	080	3.1	076	11.4	1
0900	-1.9	-11.3	49	078	8.0	069	13.3	5
1200	-3.8	-11.8	54	084	6.5	080	10.8	15
1500	-2.5	-9.2	60	055	5.0	049	7.6	3
1800	-2.2	-8.7	61	043	4.8	053	7.0	1
2100	-1.9	*****	**	061	5.1	070	7.6	1
2400	-1.6	-4.9	78	051	3.7	044	5.7	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.6	-9.3	60	042	2.5	035	7.6	1
0600	-3.9	-9.9	63	060	4.7	070	10.8	1
0900	-4.5	*****	**	061	5.8	078	10.2	4
1200	-3.5	*****	**	069	6.1	083	9.5	17
1500	-4.2	*****	**	066	6.3	084	10.8	3
1800	-4.4	-5.7	91	069	5.8	084	9.5	1
2100	-4.3	-6.9	82	073	6.6	081	10.8	1
2400	-4.9	-6.5	89	049	4.9	064	8.3	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-4.2	-7.5	78	059	5.0	067	7.6	1
0600	-4.4	-8.8	71	068	5.8	074	10.8	1
0900	-5.4	-9.8	71	061	5.0	078	9.5	6
1200	-4.7	-10.4	64	049	4.6	045	6.3	15
1500	-5.0	-10.5	65	057	4.7	057	6.3	4
1800	-4.3	-8.9	70	057	4.7	037	7.0	1
2100	-4.2	-10.2	63	056	4.4	056	7.0	1
2400	-2.8	-9.7	59	062	5.9	072	9.5	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.9	-10.5	60	084	3.7	065	8.9	1
0600	-4.7	-11.7	58	071	6.9	074	11.4	1
0900	-5.9	-12.2	61	069	7.7	077	12.1	3
1200	-5.3	-11.2	63	080	6.9	081	9.5	13
1500	-5.0	-10.3	66	069	6.0	073	8.9	4
1800	-4.2	-10.0	64	062	5.0	062	7.0	1
2100	-3.5	-9.7	62	065	4.4	071	8.3	1
2400	-6.3	-11.6	66	070	3.5	061	5.7	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.2	-11.3	85	087	2.8	085	3.8	1
0600	-4.6	-11.8	57	060	5.8	066	10.8	1
0900	-4.9	-12.1	57	051	4.1	044	7.0	7
1200	-3.6	-12.6	50	035	3.1	036	5.7	15
1500	-4.1	-11.8	55	065	7.3	071	14.0	5
1800	-5.2	-11.3	62	072	7.2	076	10.8	1
2100	-8.1	-10.9	80	062	5.0	078	10.2	1
2400	-8.9	*****	**	025	3.3	034	5.1	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.4	*****	**	012	2.5	009	3.8	1
0600	-8.1	*****	**	075	2.3	070	5.1	1
0900	-6.0	*****	**	060	3.6	049	5.7	6
1200	-1.9	-8.0	63	074	4.5	085	7.6	20
1500	-4.0	-10.2	62	059	5.3	089	9.5	6
1800	-3.9	-10.3	61	056	6.7	061	11.4	1
2100	-2.9	-9.6	60	072	7.2	070	10.2	1
2400	-4.1	-10.5	61	076	6.1	072	10.2	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.5	-9.7	72	237	.5	099	5.7	1
0600	-5.4	*****	**	285	1.6	282	3.2	1
0900	-5.3	*****	**	285	1.4	280	2.5	4
1200	-5.2	-9.4	72	293	2.3	289	5.1	14
1500	-5.4	*****	**	022	1.6	051	5.1	5
1800	-6.2	*****	**	051	2.8	086	5.7	1
2100	*****	*****	**	069M	4.3M	089M	6.3M	***
2400	*****	*****	**	***	****	077M	8.3M	***

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	097M	1.8M	097M	1.9M	***
0600	*****	*****	**	***	****	***	****	***
0900	-7.9	*****	**	295M	1.0M	296M	1.9M	3
1200	-6.0	*****	**	286M	1.7M	290M	3.2M	12
1500	-6.7	*****	**	289M	1.1M	278M	2.5M	4
1800	-10.9	*****	**	359M	1.6M	359M	2.5M	1
2100	-10.6	*****	**	351M	1.4M	358M	3.2M	1
2400	-13.5	*****	**	352M	1.5M	350M	2.5M	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.8	*****	**	359M	1.0M	350M	2.5M	1
0600	-12.0	*****	**	360	1.3	008	2.5	1
0900	-13.7	-21.7	51	037	.7	079	3.2	4
1200	-9.5	-15.6	61	092	3.0	086	8.0	3
1500	-8.9	-16.8	53	084M	2.7M	082M	5.2M	6
1800	-11.1	-17.3	60	059	1.5	055	3.2	1
2100	-13.4	-18.9	63	078M	1.5M	082M	3.8M	1
2400	*****	*****	**	***	****	079M	2.5M	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.4	*****	60	067	.9	062	2.9	1
0600	-11.9	-17.5	63	079M	1.1M	079M	3.8M	1
0900	-13.5	-18.1	68	056	.8	091	3.2	6
1200	-13.2	-18.0	67	069	1.8	085	3.8	11
1500	-11.9	-16.1	71	088	2.6	092	5.1	5
1800	-13.0	-17.5	69	078	3.0	079	5.7	1
2100	-16.8	*****	**	069M	1.6M	070M	4.4M	1
2400	-16.0	*****	71	057	1.5	085	3.8	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.6	-20.9	69	075	1.8	106	3.8	1
0600	-19.9	-22.7	78	061	1.9	077	3.8	1
0900	-19.6	-23.8	69	041	1.7	037	3.2	8
1200	*****	*****	**	050M	1.1M	087M	3.8M	***
1500	-14.1	*****	**	086M	2.5M	086M	3.4M	7
1800	-16.0	-21.8	61	083M	2.8M	073M	5.1M	1
2100	-19.4	-23.8	68	095M	3.3M	093M	4.4M	1
2400	-20.2	-24.5	68	090M	3.5M	097M	5.1M	2

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-22.7	*****	71	090M	2.4M	096M	5.1M	1
0600	-21.1	-25.4	68	080M	2.9M	092M	5.1M	1
0900	-19.9	-25.7	60	074M	2.3M	067M	3.8M	13
1200	*****	*****	**	***	****	063M	3.2M	***
1500	-12.7	*****	49	079M	1.2M	082M	2.5M	8
1800	-17.1	-22.4	63	032M	.8M	071M	3.2M	1
2100	-19.9	-24.6	66	054M	1.5M	022M	2.5M	1
2400	*****	*****	**	***	****	062M	3.4M	***

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-23.2	-27.4	68	065M	2.3M	066M	3.8M	1
0600	-25.0	-29.2	68	063	1.8	064	3.8	1
0900	-25.4	-30.5	62	054	2.1	061	3.8	15
1200	-20.3	-27.6	52	075	1.8	084	3.2	34
1500	-14.8	*****	43	075	1.3	064	3.2	10
1800	-20.1	-25.3	63	040	1.6	030	2.5	1
2100	-22.7	-27.1	67	047	1.8	050	2.5	1
2400	-23.7	-28.1	67	085	1.8	071	3.2	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-21.9	-26.3	67	093	1.7	107	3.2	1
0600	-23.6	-28.1	66	092	1.7	081	3.2	1
0900	-22.1	-28.1	58	068	1.8	067	3.2	17
1200	-17.8	-25.7	50	068	2.2	055	3.8	35
1500	-13.2	-22.2	47	074	2.1	086	4.4	11
1800	-18.5	-23.8	63	055	1.9	047	4.4	1
2100	-14.7	-21.1	58	073	4.9	075	8.3	1
2400	-13.4	-20.7	54	068	6.1	073	8.9	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-13.8	-21.3	53	068	6.8	074	8.9	1
0600	-14.2	-21.3	55	070	6.0	071	8.9	1
0900	-14.1	-22.1	51	074	6.7	072	8.9	10
1200	-12.2	-20.5	50	080	6.7	081	9.5	26
1500	-11.9	-20.5	49	082	7.5	081	10.2	12
1800	-13.0	-20.8	52	079	7.5	080	10.2	1
2100	-13.5	-21.3	52	079	7.5	078	10.2	1
2400	-13.1	-21.4	50	078	8.0	078	11.4	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-13.3	-21.6	50	078	7.8	081	10.8	1
0600	-13.2	-21.9	48	070	8.2	076	11.4	1
0900	-14.4	-23.1	48	075	7.8	069	10.8	11
1200	-12.6	-21.9	46	077	8.3	076	11.4	27
1500	-12.0	-21.9	44	076	7.5	075	10.8	12
1800	-12.6	-22.1	45	073	8.4	065	11.4	2
2100	-13.9	-23.3	45	067	7.5	061	10.2	1
2400	-15.2	-24.5	45	072	8.3	072	11.4	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-15.9	-24.9	46	073	7.2	073	10.2	1
0600	-16.8	-25.5	47	076	7.1	080	10.2	1
0900	-19.2	-28.0	46	089	5.6	073	9.5	11
1200	-15.3	-24.9	44	084	5.4	079	8.9	27
1500	-15.3	-24.6	45	074	5.4	077	7.6	13
1800	-17.4	-26.3	46	072	6.2	077	9.5	2
2100	-16.4	-25.6	45	077	8.1	076	11.4	1
2400	-17.3	-26.5	45	073	8.0	074	11.4	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.7	-26.2	44	063	7.4	062	10.2	2
0600	-17.5	-26.4	46	063	8.0	069	10.8	3
0900	-15.4	-23.3	51	063	7.5	065	11.4	6
1200	-15.2	-19.9	67	062	6.9	070	9.5	15
1500	-14.1	-20.4	59	067	6.5	074	9.5	13
1800	-14.1	-19.6	63	066	6.5	070	8.9	1
2100	-12.2	-17.4	65	064	7.5	058	10.2	1
2400	-11.1	-16.0	67	060	6.9	052	10.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.4	-13.8	76	054	6.3	061	8.9	1
0600	-10.4	-12.6	84	056	6.4	056	8.3	1
0900	-8.8	-13.4	69	061	5.9	052	7.6	12
1200	-6.4	-12.9	60	066	3.6	078	5.7	29
1500	-5.8	-12.7	58	035	3.2	029	5.1	14
1800	-9.7	-14.1	70	027	3.0	046	5.7	1
2100	-12.3	-13.6	90	031	2.2	022	3.8	1
2400	-12.3	-15.2	79	055	2.5	044	6.3	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.0	-13.4	65	074	3.5	068	7.0	1
0600	-8.9	-14.4	64	066	6.6	077	9.5	1
0900	-8.5	-14.7	61	056	6.2	060	8.9	12
1200	-7.4	-14.7	56	065	6.0	061	8.3	25
1500	-6.7	-14.5	54	074	6.1	077	8.9	15
1800	-7.8	-14.8	57	063	5.8	066	8.3	1
2100	-6.6	-14.2	55	059	5.4	050	7.6	1
2400	-6.9	-14.4	55	071	5.3	073	8.3	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.5	-14.3	58	070	5.5	066	8.3	1
0600	-7.2	-13.8	59	077	4.3	048	7.6	1
0900	-10.2	-17.3	56	069	2.2	068	5.7	12
1200	-4.1	-13.3	49	067	3.9	066	7.0	33
1500	-5.2	-13.1	54	063	5.2	058	8.3	12
1800	-6.0	-12.7	59	046	4.4	055	7.0	1
2100	-7.8	-13.6	63	062	4.1	045	6.3	1
2400	-8.7	-12.3	75	090	2.6	073	5.7	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.6	-8.1	89	063	2.7	070	5.7	1
0600	-5.7	*****	**	058	5.2	056	7.0	1
0900	-8.4	-14.6	61	054	3.4	073	6.3	13
1200	-2.5	-10.1	56	087	3.1	074	5.7	31
1500	-2.1	-9.9	55	064	3.9	067	5.7	16
1800	-6.2	-12.3	62	061	2.8	052	5.1	1
2100	-5.2	-11.7	60	068	4.1	063	7.0	1
2400	-6.7	-13.2	60	058	6.1	065	9.5	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.3	-14.5	61	058	6.3	064	9.5	1
0600	-8.5	-14.3	63	081	5.2	063	8.9	1
0900	-7.3	-15.0	54	067	3.7	073	7.0	13
1200	-5.0	-14.1	49	074	4.1	070	8.3	30
1500	-4.3	-13.7	48	077	5.2	071	8.3	14
1800	-5.7	-13.5	54	061	6.8	062	10.8	1
2100	-7.4	-14.2	58	061	7.3	061	11.4	1
2400	-8.2	-14.2	62	055	6.3	052	8.9	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.7	-12.5	63	063	6.9	068	15.2	1
0600	-6.7	*****	**	058	5.8	069	8.3	1
0900	-5.5	*****	**	043	3.7	055	6.3	11
1200	-4.1	*****	85	065	1.9	081	3.8	20
1500	-3.5	*****	**	083	1.4	089	3.2	11
1800	-3.9	*****	**	035	1.3	045	2.5	1
2100	-7.6	*****	**	004	2.1	001	3.2	1
2400	-7.1	*****	**	006	2.0	359	3.8	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.1	*****	**	079	1.8	059	3.2	1
0600	-14.1	*****	**	083	1.6	086	3.2	1
0900	-12.5	*****	**	094	2.3	094	4.4	22
1200	-4.3	-11.1	59	085	4.2	071	7.0	35
1500	-4.6	-11.8	57	062	5.0	073	7.0	17
1800	-7.4	-13.4	62	049	5.0	049	6.3	1
2100	-7.5	-12.9	65	038	5.3	038	7.6	1
2400	-6.5	-11.8	66	053	6.0	062	8.9	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.6	-11.9	66	052	6.3	060	10.8	1
0600	-6.3	-11.8	65	054	6.3	060	9.5	1
0900	-6.3	-12.4	62	053	6.8	060	10.2	16
1200	-5.6	-12.3	59	049	6.4	069	10.2	35
1500	-5.5	-12.5	58	066	7.0	070	10.2	16
1800	-8.1	-14.1	62	055	6.1	051	9.5	1
2100	-8.0	-14.0	62	052	6.2	051	8.3	1
2400	-8.2	-14.2	62	057	6.0	053	8.3	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.5	-16.7	65	053	4.0	058	7.0	1
0600	-12.4	-16.6	71	030	1.9	044	4.4	1
0900	-6.4	-13.1	59	058	3.0	052	7.6	18
1200	-4.4	-12.1	55	059	5.6	064	8.9	24
1500	-4.5	-12.2	55	062	4.8	065	8.9	13
1800	-6.3	-13.2	58	062	1.7	086	3.8	1
2100	-7.6	-13.8	61	056	1.6	075	3.8	1
2400	-8.1	-13.7	64	058	1.2	038	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.4	*****	**	063	1.1	074	2.5	1
0600	-8.2	*****	**	073	1.0	086	1.9	1
0900	-7.1	*****	**	076	1.0	055	2.5	14
1200	-4.7	*****	**	077	1.4	073	3.8	25
1500	-4.5	*****	**	065	1.3	056	3.2	12
1800	-5.6	*****	**	039	1.0	113	2.5	1
2100	-6.9	*****	**	051	.8	011	2.5	1
2400	-7.4	*****	**	004	1.0	358	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	.3	-10.2	-5.0	069	4.8	5.0	069	13.3	NE	59M	-10.5M		913	1
2	-1.7	-5.3	-3.5	063	5.3	5.5	070	10.8	ENE	77M	-7.3M		893	2
3	-2.8	-5.7	-4.3	059	5.0	5.1	074	10.8	NE	69	-9.3		813	3
4	-2.7	-6.3	-4.5	071	5.5	5.6	077	12.1	ENE	62	-10.8		833	4
5	-2.4	-9.4	-5.9	060	4.7	4.9	071	14.0	ENE	61M	-11.7M		1108	5
6	-1.7	-10.7	-6.2	064	4.6	4.9	061	11.4	ENE	64M	-9.3M		1100	6
7	-4.4M	-7.4M	-5.9M	028M	.9M	2.5M	077M	8.3M	WNW(M)	76M	-8.8M		931M	7
8	-5.1M	-13.5M	-9.3M	341M	1.2M	1.4M	290M	3.2M	N(M)	**	*****		687M	8
9	-7.5M	-15.9M	-11.7M	063M	1.2M	1.7M	086M	8.0M	E(M)	60M	-17.5M		783M	9
10	-11.1	-17.4	-14.3	074M	1.7M	1.8M	079M	5.7M	E(M)	68M	-18.0M		751	10
11	-13.6M	-20.8M	-17.2M	075M	2.1M	2.4M	073M	5.1M	E(M)	68M	-22.4M		828M	11
12	-12.7M	-22.9M	-17.8M	074M	1.9M	1.9M	096M	5.1M	E(M)	64M	-24.6M		935M	12
13	-14.8	-25.4	-20.1	063M	1.7M	1.9M	066M	3.8M	ENE(M)	63	-27.3		1912	13
14	-13.2	-25.4	-19.3	072	2.8	2.9	073	8.9	ENE	59	-24.7		1973	14
15	-11.4	-15.1	-13.3	076	7.1	7.1	078	11.4	ENE	52	-21.1		1558	15
16	-12.0	-15.3	-13.7	073	8.0	8.0	076	11.4	ENE	47	-22.4		1630	16
17	-14.0	-19.4	-16.7	077	6.6	6.7	076	11.4	ENE	45	-25.6		1685	17
18	-10.9	-18.0	-14.5	063	7.1	7.2	065	11.4	ENE	56	-21.7		1245	18
19	-5.1	-13.6	-9.4	051	4.0	4.2	061	8.9	ENE	73	-13.6		1690	19
20	-5.0	-12.9	-9.0	066	5.6	5.7	077	9.5	ENE	60	-14.3		1740	20
21	-4.1	-12.3	-8.2	067	4.0	4.1	066	8.3	ENE	58	-14.0		1845	21
22	-1.1	-11.8	-6.5	063	3.8	4.0	065	9.5	ENE	65M	-10.9M		1920	22
23	-3.7	-12.3	-8.0	066	5.6	5.7	061	11.4	ENE	56	-14.3		1908	23
24	-3.4	-8.6	-6.0	050	2.9	3.2	068	15.2	ENE	75M	-9.8M		1253	24
25	-3.6	-14.4	-9.0	061	3.7	3.9	062	8.9	NE	61M	-12.3M		2365	25
26	-4.8	-9.0	-6.9	055	6.4	6.5	060	10.8	NE	62	-12.6		2110	26
27	-3.9	-12.8	-8.4	056	3.0	3.1	064	8.9	ENE	61	-13.7		1928	27
28	-4.2	-9.2	-6.7	059	1.0	1.1	073	3.8	ENE	66M	-13.6M		1650	28
MONTH	.3M	-25.4M	-10.0M	065M	4.1M	4.3M	068M	15.2M	ENE(M)	61M	-15.6M	M	38982M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 8.3
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 8.9
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.6
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 8.3

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

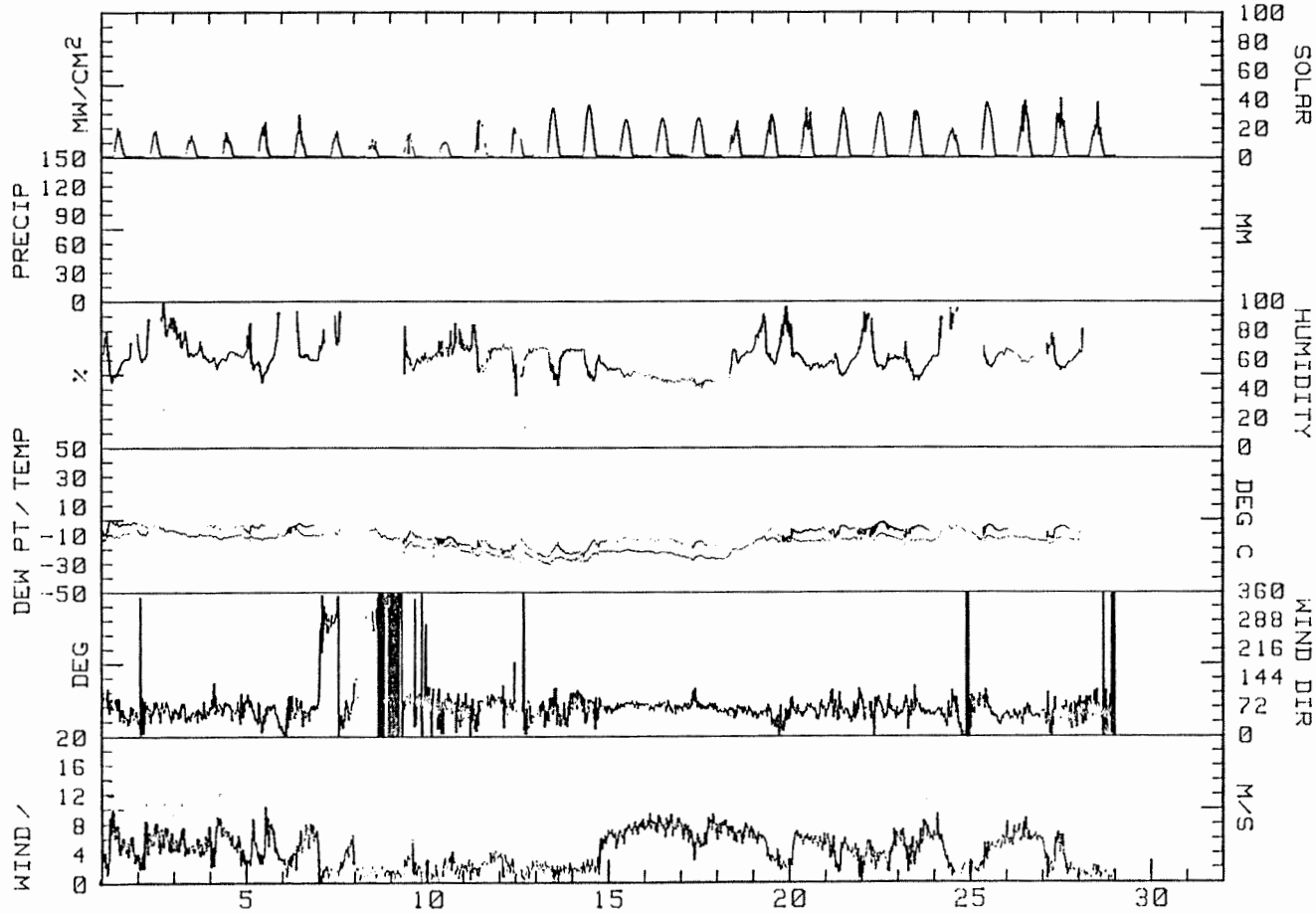
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

February, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING February, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.59	3.12	.39	0.00	0.00	0.00	0.00	4.10
NNE	.28	3.39	1.54	.08	0.00	0.00	0.00	5.29
NE	.51	5.05	11.95	4.26	0.00	0.00	0.00	21.78
ENE	1.03	7.57	13.53	22.25	.04	0.00	0.00	44.42
E	.63	8.52	5.13	4.38	0.00	0.00	0.00	18.66
ESE	.43	1.18	.67	0.00	0.00	0.00	0.00	2.29
SE	0.00	.12	.08	0.00	0.00	0.00	0.00	.20
SSE	0.00	.04	0.00	0.00	0.00	0.00	0.00	.04
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	.04	0.00	0.00	0.00	0.00	0.00	0.00	.04
SW	.08	0.00	0.00	0.00	0.00	0.00	0.00	.08
WSW	.04	0.00	0.00	0.00	0.00	0.00	0.00	.04
W	.08	.59	0.00	0.00	0.00	0.00	0.00	.67
WNW	.16	1.10	0.00	0.00	0.00	0.00	0.00	1.26
NW	.12	.28	0.00	0.00	0.00	0.00	0.00	.39
NNW	.12	.63	0.00	0.00	0.00	0.00	0.00	.75
CALM								0.00
TOTAL	4.10	31.60	33.29	30.97	.04	0.00	0.00	100.00

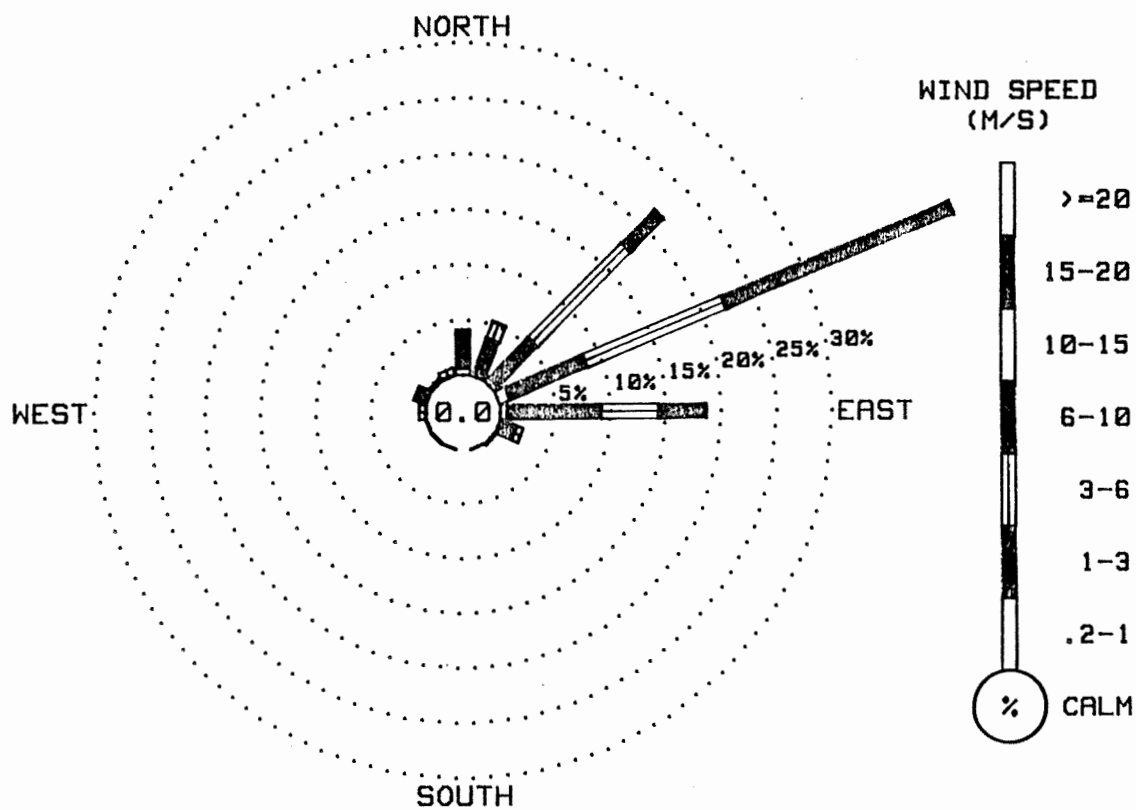
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2535 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

February, 1983



WIND ROSE PLOT

No precipitation data for March

(See INTERPRETATION OF DATA).

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-7.6	*****	**	038	.9	014	2.5	1
0600	-7.7	*****	**	023	.8	015	1.9	1
0900	-6.8	*****	**	063	.7	070	1.9	10
1200	-5.3	*****	**	068	.7	037	1.9	18
1500	-5.0	*****	**	040	.7	016	1.9	11
1800	-7.6	*****	**	033	.8	007	1.9	1
2100	-9.6	*****	**	022	1.2	017	3.2	1
2400	-12.9	*****	**	360	2.6	357	4.4	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.5	*****	**	008	2.6	001	5.7	1
0600	-15.8	*****	**	030	1.7	006	3.8	1
0900	-14.7	-20.2	63	063	1.3	099	3.2	18
1200	-10.1	-17.4	55	050	1.9	036	4.4	38
1500	-8.9	-17.7	49	033	1.7	023	3.2	21
1800	-14.0	-19.3	64	019	2.5	017	3.8	1
2100	-16.2	-19.3	77	035	1.7	019	3.8	1
2400	-17.0	*****	**	056	2.0	052	5.1	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-14.1	*****	**	066	3.8	061	7.6	1
0600	-16.0	*****	**	065	5.9	066	8.9	1
0900	-14.4	-19.5	65	058	5.4	065	7.6	20
1200	-12.2	-17.6	64	062	4.9	073	7.6	42
1500	-12.0	-17.8	62	062	4.6	066	7.0	23
1800	-17.9	-22.2	69	037	3.1	061	5.1	1
2100	-18.9	-22.8	71	015	3.6	015	5.1	1
2400	-19.4	-23.3	71	002	3.5	359	5.1	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-18.7	-22.6	71	003	3.5	003	5.1	1
0600	-17.5	-21.6	70	009	3.7	010	5.7	1
0900	-15.8	-20.2	69	043	3.6	045	6.3	21
1200	-14.1	-19.2	65	061	4.5	064	8.3	21
1500	-12.4	-18.0	63	070	3.5	062	7.0	16
1800	-13.4	-18.0	68	067	3.8	069	6.3	1
2100	-13.1	-17.7	68	074	3.9	069	7.0	1
2400	-13.9	-18.7	67	072	3.3	068	5.7	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-13.1	-18.1	66	066	3.4	068	6.3	1
0600	-12.6	-17.4	67	078	4.2	078	7.6	1
0900	-10.7	-16.2	64	077	3.3	088	5.7	13
1200	-9.3	-15.2	62	064	4.0	064	6.3	19
1500	-8.3	-14.5	61	055	4.1	059	6.3	16
1800	-8.8	-14.9	61	066	5.0	066	7.6	1
2100	-11.7	-17.1	64	071	4.0	074	7.6	1
2400	-14.3	-18.7	69	075	2.1	074	5.1	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-12.0	-17.0	66	074	1.9	071	4.4	1
0600	-10.6	-16.3	63	063	3.2	052	7.0	1
0900	-8.4	-15.6	56	063	5.8	071	8.3	22
1200	-6.8	-14.8	53	070	6.8	072	10.2	39
1500	-6.6	-14.4	54	080	5.9	072	8.3	17
1800	-7.2	-13.8	59	073	6.0	077	8.9	1
2100	-7.3	-13.9	59	072	6.9	072	9.5	1
2400	-8.4	-14.8	60	065	5.8	057	9.5	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.0	-14.7	63	061	4.0	072	6.3	1
0600	-14.3	-18.5	70	045	2.5	059	5.1	1
0900	-12.0	-19.4	54	074	1.6	080	3.2	19
1200	-5.6	-14.2	51	060	3.1	089	5.7	38
1500	-6.0	-14.5	51	058	3.2	056	5.1	18
1800	-11.1	-18.2	56	033	2.8	055	4.4	1
2100	-12.3	-18.9	58	033	2.2	020	3.8	1
2400	-15.2	-20.3	65	065	1.7	076	3.8	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-16.8	-21.0	70	070	1.4	063	3.2	1
0600	-17.5	-21.8	69	070	2.0	048	4.4	1
0900	-11.1	-19.3	51	079	1.8	090	5.7	28
1200	-5.9	-16.3	44	072	5.3	074	7.6	43
1500	-5.8	-16.8	42	078	5.2	070	7.6	26
1800	-9.2	-19.3	44	069	4.0	082	7.0	1
2100	-13.4	-21.7	50	064	2.3	054	4.4	1
2400	-14.8	-23.0	50	082	3.3	087	5.1	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-19.0	-24.8	60	065	2.3	068	4.4	1
0600	-18.9	-25.3	57	045	1.7	025	4.4	1
0900	-14.7	-24.3	44	077	2.0	081	4.4	25
1200	-8.6	-19.0	43	073	5.7	070	12.1	44
1500	-8.5	-19.2	42	079	7.1	075	10.2	26
1800	*****	*****	**	***	****	077M	8.3M	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	043m	3.1m	029m	5.1m	***
1800	*****	*****	**	046m	3.9m	051m	5.7m	***
2100	*****	*****	**	029m	3.8m	042m	4.4m	***
2400	*****	*****	**	***	****	***	****	***

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	048m	3.8m	***
1800	-3.0	*****	**	054m	4.1m	040m	5.7m	***
2100	*****	*****	**	***	****	017m	6.8m	***
2400	*****	*****	**	***	****	***	****	***

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	066m	3.8m	***
1800	*****	*****	**	***	****	056m	3.8m	***
2100	-6.2	-12.3	62	052m	2.5m	023m	3.2m	1
2400	*****	*****	**	***	****	026m	3.2m	***

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	63	049m	3.3m	049m	4.4m	1
0600	*****	*****	**	***	****	036m	6.8m	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	70	035m	2.5m	056m	3.8m	***
2100	*****	*****	**	***	****	038m	4.4m	***
2400	*****	*****	**	***	****	014m	6.2m	***

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	-7.8	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	54	***	****	***	****	***
1500	.1	-8.4	53	054m	2.8m	048m	3.8m	32
1800	-3.4	-9.6	62	057m	2.5m	061m	3.8m	1
2100	-5.8	-11.3	65	036	2.3	055	3.8	1
2400	*****	*****	**	***	****	021m	3.2m	***

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	052	3.2	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	061m	4.4m	***
1800	-5.1	-12.7	55	053m	3.0m	060m	4.4m	1
2100	*****	*****	**	***	****	011m	6.2m	***
2400	*****	*****	**	***	****	***	****	***

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	-1.3	-9.9	52	056m	3.9m	054m	5.7m	33
1800	-5.8	-12.1	61	050m	2.6m	058m	3.8m	2
2100	*****	*****	**	***	****	036m	4.4m	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	-6.5	-13.2	59	054m	4.2m	063m	5.7m	2
2100	*****	*****	**	***	****	080m	4.4m	***
2400	*****	*****	**	***	****	***	****	***

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	077m	4.6m	078m	6.3m	***
1800	*****	*****	**	049m	2.8m	069m	5.1m	2
2100	*****	*****	**	***	****	029m	4.4m	***
2400	*****	*****	**	***	****	***	****	***

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	065m	7.0m	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	062m	6.6m	***
1200	*****	*****	**	***	****	***	****	***
1500	-1.6	-11.0	49	060m	5.2m	075m	7.6m	36
1800	-4.2	-12.6	52	055	4.1	064	5.7	2
2100	-8.8	-16.0	56	050m	4.2m	049m	7.6m	1
2400	*****	*****	**	***	****	016m	3.8m	***

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.4	-16.1	58	049m	3.4m	***	****	1
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	54
1500	-2.1	-11.4	49	059m	4.6m	061m	6.3m	36
1800	*****	*****	**	***	****	060m	6.3m	***
2100	*****	*****	**	***	****	042m	4.4m	***
2400	*****	*****	**	051m	4.0m	041m	4.4m	***

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.3	-15.3	57	074m	2.4m	068m	5.1m	1
0600	-9.9	-16.8	57	040m	3.5m	***	****	***
0900	*****	*****	**	***	****	056m	6.3m	***
1200	-3.4	-14.3	43	046m	3.7m	050m	4.4m	54
1500	-2.5	-14.1	41	043m	2.8m	045m	3.8m	36
1800	-7.8	-15.3	55	023	2.0	041	3.2	3
2100	*****	*****	**	***	****	359m	3.8m	***
2400	*****	*****	**	***	****	***	****	***

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	62	034m	2.0m	036m	3.2m	1
0600	-13.0	-18.4	64	073m	2.4m	076m	3.8m	3
0900	-8.8	*****	**	065m	2.4m	066m	3.2m	***
1200	-3.2	-13.8	44	078m	3.3m	076m	5.7m	61
1500	-2.9	-12.7	47	064	3.1	074	5.1	23
1800	-4.7	-10.6	63	053	2.7	053	4.4	2
2100	-5.1	-11.2	62	053	3.3	049	5.7	1
2400	-5.3	-12.0	59	056	3.5	064	6.3	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.2	-12.9	59	057	4.5	068	6.3	1
0600	-8.7	-15.1	60	061	4.3	059	7.0	4
0900	*****	*****	**	***	****	063m	6.6m	***
1200	-2.7	-11.2	52	057m	4.7m	062m	7.0m	56
1500	-2.5	-11.8	49	069	5.8	069	8.3	41
1800	-5.4	-13.0	55	058m	4.7m	069m	8.3m	3
2100	-6.7	-14.0	56	043m	3.6m	041m	5.7m	1
2400	-6.9	-14.0	57	052	3.0	046	5.1	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.0	-13.1	57	063	3.0	059	5.7	1
0600	-6.5	-13.8	56	047	5.0	045	7.6	4
0900	-3.8	-13.3	48	055m	5.2m	058m	8.3m	39
1200	-2.8	-12.1	49	056m	6.2m	064m	8.9m	58
1500	-3.7	-12.9	49	058	6.2	060	10.8	30
1800	-5.4	-13.5	53	060	6.3	065	10.8	3
2100	-6.4	-14.2	54	046	5.5	045	9.5	1
2400	-8.0	-15.5	55	056	5.8	059	8.9	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.4	-16.1	54	053m	6.7m	055m	10.2m	1
0600	-8.8	-16.9	52	058	6.8	059	10.2	5
0900	-7.1	-16.1	49	056m	7.8m	053m	11.4m	39
1200	-5.1	-15.0	46	069m	7.5m	070m	10.8m	58
1500	-4.3	-13.7	48	077	7.3	082	10.2	40
1800	-4.8	-13.7	50	068	6.7	071	10.8	4
2100	-7.1	-14.6	55	053	5.7	070	10.8	1
2400	-8.4	-15.8	55	054	5.2	064	7.6	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.9	-16.3	55	050	4.9	054	7.0	1
0600	-11.4	-17.8	59	028	2.9	064	7.0	5
0900	-6.1	-15.4	48	044	2.4	065	6.3	36
1200	-3.2	-13.3	46	059	4.2	068	6.3	58
1500	-2.0	-11.9	47	058	4.2	055	6.3	39
1800	-5.0	-12.7	55	046	3.2	052	5.7	4
2100	-8.7	-15.3	59	044	3.1	046	5.1	1
2400	-9.7	-15.6	62	039	1.9	056	4.4	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.6	-14.8	61	051	3.5	046	5.7	1
0600	-8.0	-14.4	60	072	4.6	077	7.0	6
0900	-4.6	-12.5	54	068	4.6	082	7.0	41
1200	-2.0	-10.6	52	066	5.7	070	8.9	59
1500	-1.6	-10.5	51	062	4.8	062	8.3	39
1800	-5.0	-12.2	57	054	3.4	058	7.0	4
2100	-10.1	-15.8	63	024	2.9	039	3.8	1
2400	-10.4	-15.5	66	042	1.7	011	3.8	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-11.9	-15.6	74	078	1.7	081	3.2	1
0600	-11.3	-14.4	78	080	1.5	087	3.2	6
0900	-5.9	-14.2	52	035	1.8	053	4.4	43
1200	-1.5	-10.6	50	068	3.7	074	5.7	61
1500	-.6	-10.0	49	058	4.2	054	5.7	42
1800	-3.7	-11.7	54	057	3.6	064	5.7	4
2100	-7.0	-13.7	59	040	2.9	045	5.7	1
2400	-8.2	-14.6	60	037	3.2	056	5.7	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.3	-13.0	59	034	3.1	051	5.7	1
0600	-6.6	-12.9	61	037	3.0	050	5.7	7
0900	-2.5	-9.2	60	047	3.4	061	6.3	38
1200	-.2	-7.9	56	066	3.9	062	5.7	59
1500	.4	-7.4	56	069	3.2	078	5.1	34
1800	-1.6	-7.7	63	066	2.3	082	4.4	4
2100	-5.8	-9.7	74	036	2.1	066	3.2	1
2400	-8.2	*****	**	045	1.8	038	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	-2.8	-13.6	-8.2	027	1.0	1.2	357	4.4	N	**	*****	****	1330	1
2	-8.1	-17.4	-12.8	034	1.8	2.0	001	5.7	NNE	63M	-18.8M	****	2450	2
3	-11.6	-21.3	-16.5	050	4.0	4.4	066	8.9	ENE	68M	-20.3M	****	2748	3
4	-12.4	-20.2	-16.3	051	3.3	3.8	064	8.3	ENE	68	-19.9	****	2001	4
5	-7.8	-16.4	-12.1	068	3.7	3.8	078	7.6	ENE	64	-16.4	****	1725	5
6	-6.5	-15.4	-11.0	070	5.3	5.3	072	10.2	ENE	60	-15.6	****	2503	6
7	-4.9	-15.2	-10.1	053	2.6	2.7	072	6.3	ENE	58	-16.7	****	2638	7
8	-5.6	-17.5	-11.6	074	3.2	3.2	074	7.6	ENE	53	-19.5	****	3025	8
9	-7.8M	-20.6M	-14.2M	072M	3.8M	3.9M	070M	12.1M	ENE(M)	49M	-22.5M	****	4227M	9
10	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	10
11	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	11
12	1.8M	-1.8M	0.0M	042M	3.6M	3.6M	051M	5.7M	NE (M)	53M	-8.0M	****	3960M	12
13	1.0M	-8.9M	-4.0M	054M	4.1M	4.2M	017M	6.8M	ENE(M)	50M	-10.2M	****	2910M	13
14	-1.3M	-6.3M	-3.8M	052M	2.5M	2.6M	066M	3.8M	NE (M)	58M	-10.6M	****	2655M	14
15	-.7M	-8.4M	-4.6M	043M	2.8M	3.0M	036M	6.8M	NE (M)	66M	-8.6M	****	1287M	15
16	.6M	-9.8M	-4.6M	044M	2.2M	2.3M	048M	3.8M	NE (M)	61M	-10.2M	****	1673M	16
17	-.5M	-9.2M	-4.9M	048M	3.0M	3.2M	011M	6.2M	NE (M)	54M	-12.1M	****	3378M	17
18	-.8M	-7.1M	-4.0M	054M	3.2M	3.3M	054M	5.7M	NE (M)	56M	-10.8M	****	4926M	18
19	-3.0M	-10.1M	-6.6M	060M	4.0M	4.0M	063M	5.7M	NE (M)	58M	-12.8M	****	2400M	19
20	-2.8M	-7.8M	-5.3M	059M	3.3M	3.5M	078M	6.3M	ENE (M)	57M	-11.8M	****	4110M	20
21	-1.6M	-9.1M	-5.4M	054M	4.3M	4.4M	075M	7.6M	ENE(M)	53M	-12.7M	****	3471M	21
22	-1.9M	-9.8M	-5.9M	054M	4.2M	4.3M	061M	6.3M	NE (M)	52M	-12.9M	****	4920M	22
23	-2.5M	-11.7M	-7.1M	032M	2.4M	2.7M	056M	6.3M	NE (M)	50M	-15.4M	****	4152M	23
24	-2.6M	-14.9M	-8.8M	058M	3.0M	3.1M	064M	6.3M	NE (M)	56M	-13.0M	****	3249M	24
25	-2.4M	-8.7M	-5.6M	058M	4.4M	4.4M	069M	8.3M	ENE(M)	55M	-13.1M	****	4112M	25
26	-2.6	-8.9	-5.8	055M	5.4M	5.4M	060M	10.8M	NE (M)	53	-13.5	****	3903	26
27	-4.3	-9.1	-6.7	061M	6.6M	6.7M	053M	11.4M	ENE(M)	51	-15.2	****	4220	27
28	-2.0	-13.4	-7.7	048	3.3	3.4	054	7.0	NE	54	-14.7	****	4320	28
29	-1.4	-10.8	-6.1	059	3.8	4.0	070	8.9	ENE	58	-13.1	****	4523	29
30	-.5	-13.4	-7.0	055	2.7	2.9	074	5.7	ENE	60	-13.0	****	4778	30
31	.9	-10.1	-4.6	051	2.8	2.9	061	6.3	ENE	62M	-10.0M	****	4500	31
MONTH	1.8M	-21.3M	-7.6M	057M	3.5M	3.7M	070M	12.1M	ENE(M)	58M	-14.0M	****	96091M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 8.9
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 10.8
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 8.9
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.

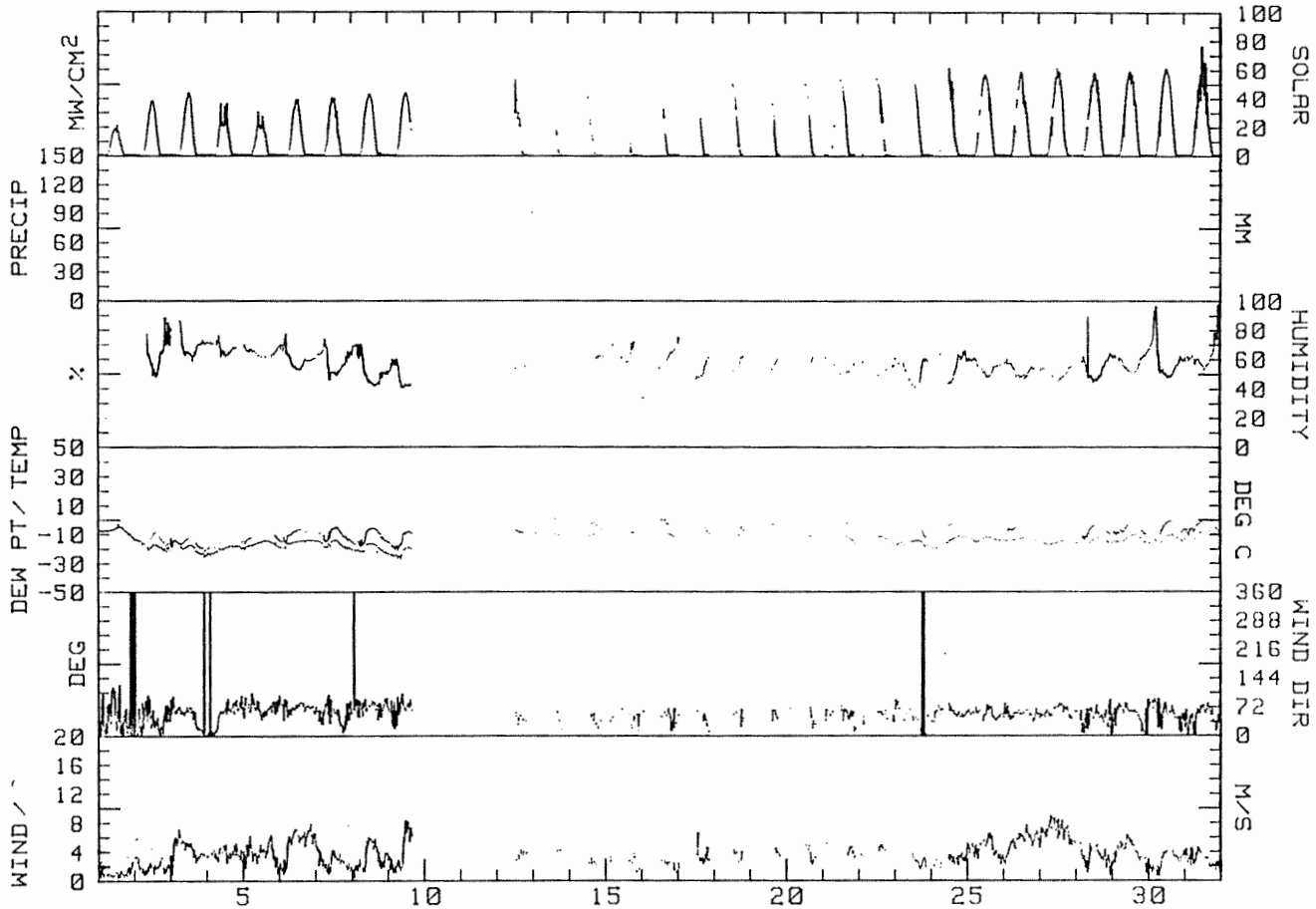
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

March, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING March, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.29	2.66	3.24	0.00	0.00	0.00	0.00	6.18
NNE	.52	7.57	2.72	0.00	0.00	0.00	0.00	10.81
NE	.64	9.19	17.80	2.14	0.00	0.00	0.00	29.77
ENE	.87	9.42	25.20	8.44	0.00	0.00	0.00	43.93
E	.40	4.68	2.60	.81	0.00	0.00	0.00	8.50
ESE	.35	.23	.12	0.00	0.00	0.00	0.00	.69
SE	.06	0.00	0.00	0.00	0.00	0.00	0.00	.06
SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALM								.06
TOTAL	3.12	33.76	51.68	11.39	0.00	0.00	0.00	100.00

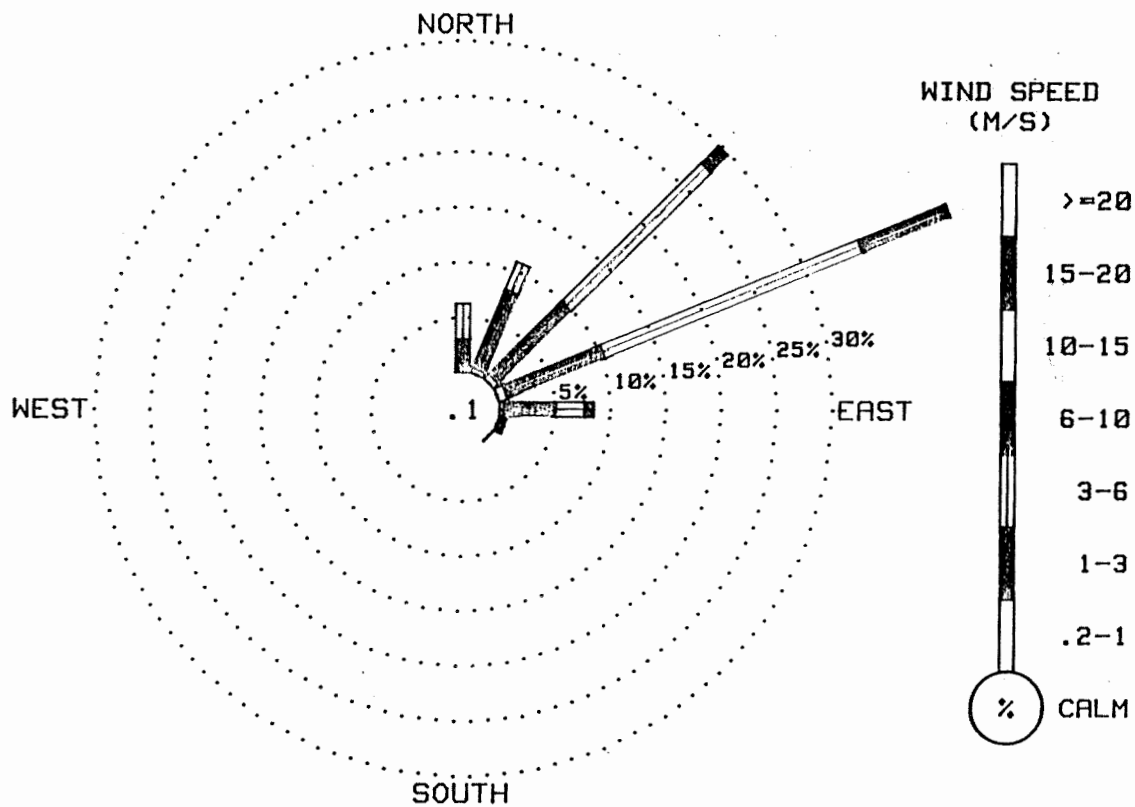
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
1730 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

March, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

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

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.9	*****	**	059	2.1	057	3.2	1
0600	-6.7	*****	**	067	1.9	063	3.8	7
0900	-1.4	-8.8	57	066	2.2	069	6.3	49
1200	1.2	-7.3	53	065	3.9	058	5.7	62
1500	1.7	-7.1	52	071	3.9	084	6.3	43
1800	-1.5	-8.5	59	058	2.6	066	4.4	6
2100	-5.9	-11.4	65	020	2.4	021	5.1	1
2400	-7.6	-12.5	68	042	2.3	027	3.8	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-10.8	*****	**	052	2.2	038	4.4	1
0600	-9.2	-13.5	71	054	2.6	071	5.1	8
0900	-3.5	-13.3	47	071	2.5	068	7.0	45
1200	2.6	-9.4	41	069	2.3	086	4.4	63
1500	3.4	-9.0	40	049	3.0	053	4.4	44
1800	-.9	-10.6	48	038	2.3	043	3.8	6
2100	-5.7	-12.4	59	007	2.5	024	4.4	1
2400	-7.0	-13.0	62	024	1.8	003	3.8	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.6	-15.1	64	057	1.9	059	3.2	1
0600	-10.6	-15.0	70	053	2.2	060	3.8	7
0900	-2.5	-10.8	53	080	2.3	085	5.7	45
1200	.1	-8.9	51	066	5.0	074	7.6	64
1500	.8	-8.2	51	081	6.4	080	10.8	44
1800	-.7	-8.9	54	074	5.6	075	8.9	6
2100	.2	-6.9	59	050	4.0	070	7.6	1
2400	-1.4	-6.7	67	065	4.5	071	13.3	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.3	-7.0	58	061	3.9	087	8.9	1
0600	.9	-6.0	60	086	4.6	091	9.5	4
0900	.5	*****	**	065	4.3	083	8.3	18
1200	1.0	*****	**	062	4.6	060	8.3	26
1500	1.4	*****	**	074	3.5	079	7.6	15
1800	-1.7	*****	**	261	4.9	250	14.0	3
2100	-1.1	*****	**	269	8.6	274	14.6	1
2400	-3.5	*****	**	132	.8	250	6.3	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.1	*****	**	073	3.0	061	7.0	1
0600	-5.9	*****	**	052	3.0	057	5.7	9
0900	-3.2	*****	**	066	4.3	073	8.3	33
1200	-.6	-7.6	59	078	4.3	081	7.0	47
1500	.2	-6.2	62	026	2.2	076	5.1	31
1800	-2.4	*****	**	358	1.2	343	2.5	6
2100	-5.9	*****	**	004	1.7	359	3.2	1
2400	-6.9	*****	**	013	1.5	357	3.2	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-6.7	*****	**	040	1.1	004	2.5	1
0600	-9.4	*****	**	080	1.8	056	3.2	8
0900	-3.3	-14.2	43	080	1.0	087	2.5	53
1200	0.0	-10.6	45	044	2.5	052	4.4	62
1500	-.5	-10.5	47	018	2.9	007	5.1	48
1800	-4.9	-11.0	62	018	2.6	028	4.4	6
2100	-7.9	-9.3	90	359	2.6	002	4.4	1
2400	-7.2	*****	**	028	1.7	027	3.2	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-8.4	*****	**	059	1.5	081	3.2	1
0600	-9.3	*****	**	070	1.7	089	3.2	10
0900	-4.6	-13.7	49	081	1.4	098	3.2	50
1200	-.4	-11.3	44	047	1.8	091	3.2	67
1500	-.4	-10.7	46	011	2.7	009	4.4	48
1800	-4.6	-11.0	61	016	2.9	015	4.4	7
2100	-8.3	-11.3	79	003	2.4	357	3.2	1
2400	-8.7	-12.5	74	031	1.8	021	3.2	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-9.7	-12.4	81	050	1.4	030	3.2	1
0600	-9.4	*****	**	076	1.0	067	2.5	7
0900	-4.9	-12.8	54	105	1.2	098	1.9	39
1200	.2	-12.3	39	051	1.1	046	2.5	66
1500	-.5	-11.6	43	016	1.3	035	3.2	30
1800	-1.9	-8.4	61	357	.9	289	3.2	5
2100	-3.6	*****	**	255	1.6	249	4.4	1
2400	-5.8	*****	**	100	1.0	109	1.9	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-5.4	*****	**	220	1.0	244	4.4	1
0600	-8.0	*****	**	121	.5	250	3.2	5
0900	-2.2	*****	62	106	.8	096	1.3	20
1200	-3.3	*****	62	013	.3	048	1.9	24
1500	-2.9	-10.9	54	287	1.9	278	5.7	39
1800	-5.4	*****	**	243	1.5	297	4.4	7
2100	-10.2	-14.4	71	353	2.0	001	3.8	1
2400	-10.7	-13.3	81	357	2.7	359	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	-11.9	-15.6	74	360	2.7	002	3.8	1
0600	-9.9	*****	**	019	1.4	001	3.2	10
0900	-5.7	*****	43	052	.6	033	1.9	48
1200	-5.1	-18.7	34	055	2.0	076	3.8	70
1500	-5.4	-18.3	36	050	2.7	050	4.4	50
1800	-8.4	-18.6	44	038	2.2	050	3.8	9
2100	-14.5	-20.7	59	011	2.5	022	5.1	1
2400	-15.3	-20.5	64	021	2.1	041	3.8	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	-15.4	-20.1	67	065	1.9	077	3.8	1
0600	-16.3	-21.5	64	066	1.9	084	3.8	11
0900	-10.0	-17.1	56	059	3.6	050	7.0	34
1200	-9.0	-14.2	66	073	6.5	076	9.5	44
1500	*****	*****	**	***	****	078m	10.8m	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	.1	*****	**	056m	4.0m	069m	5.7m	***
1500	*****	*****	**	***	****	070m	4.8m	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	055m	1.6m	055m	1.9m	31
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	1.4	*****	**	149m	.4m	149m	1.3m	57
1200	3.2	-8.3	43	033m	1.4m	035m	3.2m	84
1500	*****	*****	**	***	****	020m	1.9m	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	004m	2.5m	***
2400	*****	*****	**	***	****	***	****	***

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	099m	6.3m	22
1800	-1.4	*****	**	078	3.0	079	5.7	5
2100	-1.7	*****	**	073	2.8	081	5.1	1
2400	-3.1	*****	**	075	2.3	084	4.4	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	-3.2	*****	**	042	1.6	052	2.5	1
0600	-3.1	*****	**	064	1.2	065	2.5	11
0900	-.3	*****	**	043	2.1	060	3.8	49
1200	.9	-5.5	62	058	3.4	060	7.0	61
1500	1.1	-5.6	61	069	4.7	061	9.5	35
1800	.8	-5.6	62	042	3.0	017	5.7	8
2100	.1	-7.2	58	010m	3.1m	007m	5.7m	1
2400	-3.6	*****	61	023m	2.6m	013m	8.9m	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	-3.4	*****	**	083	.8	033	3.8	1
0600	-4.8	-11.4	60	012	1.2	323	2.5	16
0900	-.2	-11.4	43	049	1.6	077	3.2	56
1200	2.8	-12.0	33	351	1.7	026	3.8	64
1500	.9	-8.7	49	274m	2.8m	245m	7.0m	36
1800	-2.1	*****	**	283	2.6	310	4.4	6
2100	-2.9	*****	**	345m	.3m	304m	1.3m	1
2400	-3.1	*****	**	277	1.3	281	3.2	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST MAX. M/S	RAD MW
0300	-3.9	*****	**	261m	1.8m	258m	3.2m	1
0600	-4.0	*****	**	027m	.2m	285m	1.9m	7
0900	-1.7	*****	**	047	1.8	059	4.4	24
1200	.9	-7.1	55	080	3.8	059	6.3	42
1500	1.8	-8.1	48	089	4.7	094	7.6	43
1800	-.6	-6.5	64	057	4.5	065	7.0	8
2100	-.8	-7.6	60	069	5.6	083	10.2	1
2400	-1.4	*****	**	074	6.7	071	9.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	077	7.2	079	11.4	1
0600	-2.2	*****	**	069	5.5	073	8.3	11
0900	-.2	-8.9	52	091	.6	079	7.6	38
1200	2.3	-12.1	34	314	1.9	282	5.1	59
1500	1.7	-10.9	39	006	2.4	023	4.4	44
1800	-.1	-11.0	44	053	3.2	077	6.3	11
2100	-.8	-9.5	52	056	3.3	066	6.3	1
2400	-1.9	-8.4	61	070	5.2	074	8.9	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.7	-8.3	65	066	4.0	068	7.6	1
0600	-2.7	-6.5	75	063	3.0	064	7.0	12
0900	-.6	-7.4	60	050	3.1	069	5.7	39
1200	1.6	-7.2	52	055	4.3	081	8.9	56
1500	2.8	-8.0	45	096	3.7	086	8.3	30
1800	1.1	-4.1	68	069	1.2	128	3.8	6
2100	-.9	*****	**	069	2.5	079	7.0	1
2400	-2.6	*****	**	072	2.1	089	6.3	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-4.2	*****	**	046	.8	356	3.2	1
0600	-3.1	*****	**	004	1.8	000	2.5	14
0900	.2	-3.0	79	033	2.0	040	3.8	50
1200	2.8	-5.8	53	041	3.1	047	5.1	74
1500	3.3	-7.3	46	070	4.3	080	7.0	53
1800	2.6	-6.6	51	056	2.9	055	5.1	16
2100	.2	*****	**	035	2.8	036	4.4	1
2400	-.8	*****	**	039	2.9	050	6.3	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.5	*****	**	058	1.2	053	3.2	1
0600	-2.0	*****	**	080	1.2	083	4.4	13
0900	3.0	-5.7	53	068	2.4	076	5.1	77
1200	5.2	-6.2	44	060	2.7	094	5.7	80
1500	3.5	-3.3	61	327	2.0	299	4.4	44
1800	2.5	*****	**	291	1.9	299	5.1	10
2100	1.7	*****	**	296	.2	284	1.3	1
2400	-.6	*****	**	095	.2	319	1.3	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.5	*****	**	090	1.0	096	1.9	1
0600	-.9	*****	**	086	1.2	090	2.5	15
0900	3.4	*****	58	105	.5	128	2.5	41
1200	4.9	-3.1	56	275	1.3	268	3.8	88
1500	4.2	*****	**	261	2.9	255	5.1	43
1800	2.7	*****	**	283	1.3	272	3.8	11
2100	1.3	*****	**	359	.5	270	1.9	1
2400	1.3	*****	**	017	1.2	000	3.2	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.2	*****	**	007	.5	013	1.9	1
0600	.2	-6.9	59	060	1.1	019	2.5	26
0900	4.4	-5.2	50	046	.8	062	1.9	61
1200	6.9	-4.0	46	012	1.7	047	2.5	78
1500	6.9	-4.9	43	004	2.3	029	3.8	58
1800	6.9	-4.9	43	036	2.6	032	4.4	17
2100	4.3	-3.7	56	052	3.1	054	5.1	1
2400	4.3	-3.2	58	057	4.9	076	6.3	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.1	-2.7	57	069	4.7	060	7.0	1
0600	4.9	-3.9	53	074	3.3	088	6.3	20
0900	8.0	-2.7	47	063	2.9	088	6.3	60
1200	9.5	-3.9	39	058	3.2	067	5.1	78
1500	10.1	-4.8	35	068	3.0	068	4.4	57
1800	7.8	-3.8	44	019	2.0	062	3.8	15
2100	3.7	-2.4	64	001	2.3	002	3.2	1
2400	1.3	*****	**	359	1.9	351	3.2	***

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.4	*****	**	359	2.1	001	4.4	1
0600	1.2	-5.5	61	005	1.6	359	4.4	20
0900	6.1	-4.4	47	358	.9	352	2.5	60
1200	7.5	-4.4	43	006	1.9	008	3.2	78
1500	8.9	-3.4	42	005	2.1	004	3.2	57
1800	6.8	-2.9	50	358	1.8	007	3.2	16
2100	*****	*****	**	***	****	001	2.5	***
2400	*****	*****	**	***	****	***	****	***

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.7	*****	**	001	2.5	354	4.4	1
0600	1.4	*****	60	356	2.0	351	3.2	20
0900	5.7	-4.8	47	284	.5	192	1.9	61
1200	7.7	-4.5	42	347	.8	351	3.2	80
1500	8.3	-4.0	42	329	2.6	335	5.1	58
1800	6.6	-3.4	49	287	2.8	265	6.3	16
2100	2.2	.1	86	335	1.4	299	3.2	1
2400	-.8	*****	**	001	2.3	000	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.1	*****	**	018	1.9	001	4.4	1
0600	-1.1	*****	**	039	1.3	035	3.2	12
0900	5.2	-2.6	57	091	.7	105	2.5	45
1200	7.0	-2.5	51	010	1.2	359	2.5	68
1500	6.8	-1.9	54	329	1.2	250	3.8	43
1800	5.1	2.4	83	287	1.7	269	3.2	6
2100	2.3	*****	**	300	1.3	280	3.2	1
2400	1.3	*****	**	298	1.1	280	2.5	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.8	*****	**	312	.5	299	1.3	1
0600	.9	*****	**	340	.3	347	1.3	12
0900	1.3	*****	**	264	.7	133	1.3	29
1200	4.0	*****	**	257	.9	274	2.5	51
1500	6.4	*****	**	249	.9	248	2.5	61
1800	5.4	*****	**	251	1.4	219	3.2	14
2100	2.7	*****	**	295	1.1	291	2.5	1
2400	1.8	*****	**	310	.8	282	2.5	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.6	*****	**	351	.9	324	2.5	1
0600	4.3	-3.7	56	042	.6	029	1.9	24
0900	5.9	-4.0	49	054	.9	128	3.8	63
1200	6.4	-7.0	38	026	3.0	011	5.1	85
1500	7.0	-10.0	29	029	2.8	029	4.4	61
1800	6.1	-10.7	29	054	2.7	048	5.1	19
2100	.5	-9.3	48	048	1.3	082	2.5	1
2400	-.9	-8.1	58	030	1.7	031	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	1.8	-10.9	-4.6	058	2.6	2.7	069	6.3	ENE	58M	-9.1M	0.0	4918	1
2	3.6	-11.1	-3.8	046	2.3	2.5	068	7.0	NE	54M	-11.6M	0.0	5065	2
3	.8	-11.3	-5.3	068	3.9	4.1	071	13.3	ENE	59	-10.5	0.0	5130	3
4	1.7	-3.9	-1.1	048	1.1	4.9	274	14.6	ENE	60M	-6.3M	2.0	2143	4
5	1.0	-7.0	-3.0	051	2.4	2.8	073	8.3	ENE	63M	-6.5M	0.0	4013	5
6	.3	-10.3	-5.0	031	1.8	2.1	007	5.1	NNE	58M	-10.9M	0.0	5288	6
7	.6	-10.6	-5.0	033	1.8	2.1	009	4.4	NNE	57M	-11.9M	0.0	5383	7
8	2.2	-10.4	-4.1	051	.6	1.3	249	4.4	NE	58M	-11.6M	0.0	4303	8
9	2.6	-10.7	-4.1	322	.6	1.6	278	5.7	N	69M	-12.1M	.2	3473	9
10	-4.6	-15.9	-10.3	028	1.9	2.1	022	5.1	NE	54M	-17.7M	0.0	5653	10
11	-8.2M	-17.0M	-12.6M	069M	4.0M	4.1M	078M	10.8M	ENE(M)	63M	-18.4M	0.0	5615M	11
12	.4M	-1.0M	-.3M	054M	3.6M	3.7M	069M	5.7M	ENE(M)	60M	-6.9M	0.0	10829M	12
13	0.0M	0.0M	0.0M	050M	1.7M	1.7M	055M	1.9M	NE (M)	**	*****	0.0	7440M	13
14	5.1M	0.0M	2.6M	033M	1.2M	1.4M	035M	3.2M	NNE(M)	46M	-7.5M	0.0	13920M	14
15	.1M	-3.2M	-1.6M	076M	2.7M	2.8M	099M	6.3M	ENE(M)	**	*****	0.0	1271M	15
16	1.4	-5.0	-1.8	045M	2.5M	2.8M	061M	9.5M	ENE(M)	62M	-6.0M	0.0	4878	16
17	6.8	-5.8	.5	320M	.9M	1.7M	245M	7.0M	WNW(M)	53M	-9.9M	0.0	5600	17
18	1.8	-4.2	-1.2	071M	3.0M	3.7M	083M	10.2M	ENE(M)	58M	-7.1M	0.0	4050	18
19	3.4M	-3.1M	.2M	057	3.0	3.9	079	11.4	ENE	47M	-10.0M	0.0	5571	19
20	3.4	-4.2	-.4	067	2.9	3.2	081	8.9	ENE.	60M	-7.4M	0.0	4740	20
21	3.7	-4.4	-.4	044	2.4	2.7	080	7.0	NE	53M	-6.3M	0.0	6108	21
22	6.5	-3.0	1.8	036	.9	1.7	094	5.7	ENE	56M	-4.8M	0.0	5863	22
23	4.9	-2.1	1.4	302	.4	1.3	255	5.1	E	63M	-2.7M	0.0	5168	23
24	8.3	-1.2	3.6	040	2.0	2.2	076	6.3	NE	49M	-4.6M	0.0	6968	24
25	10.1	1.3	5.7	052	2.6	3.0	060	7.0	ENE	51M	-3.4M	0.0	7031M	25
26	8.9M	-1.8M	3.6M	002	1.7	1.8	001	4.4	N	50M	-3.9M	0.0	8238M	26
27	8.7	-2.2	3.3	336	1.6	2.0	265	6.3	N	49M	-3.7M	.2	6895	27
28	7.6	-2.8	2.4	344	.9	1.5	001	4.4	N	57M	-1.8M	0.0	4610	28
29	6.4	.3	3.4	275	.7	.9	219	3.2	W	**	*****	0.0	4080	29
30	7.7	-1.1	3.3	035	1.7	1.9	011	5.1	NNE	40M	-8.3M	0.0	7525	30
MONTH	10.1M	-17.0M	-1.1M	045M	1.7M	2.5M	274M	14.6M	ENE(M)	55M	-8.2M	2.4	171764M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 11.4
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 12.7
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 14.6
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 14.0

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

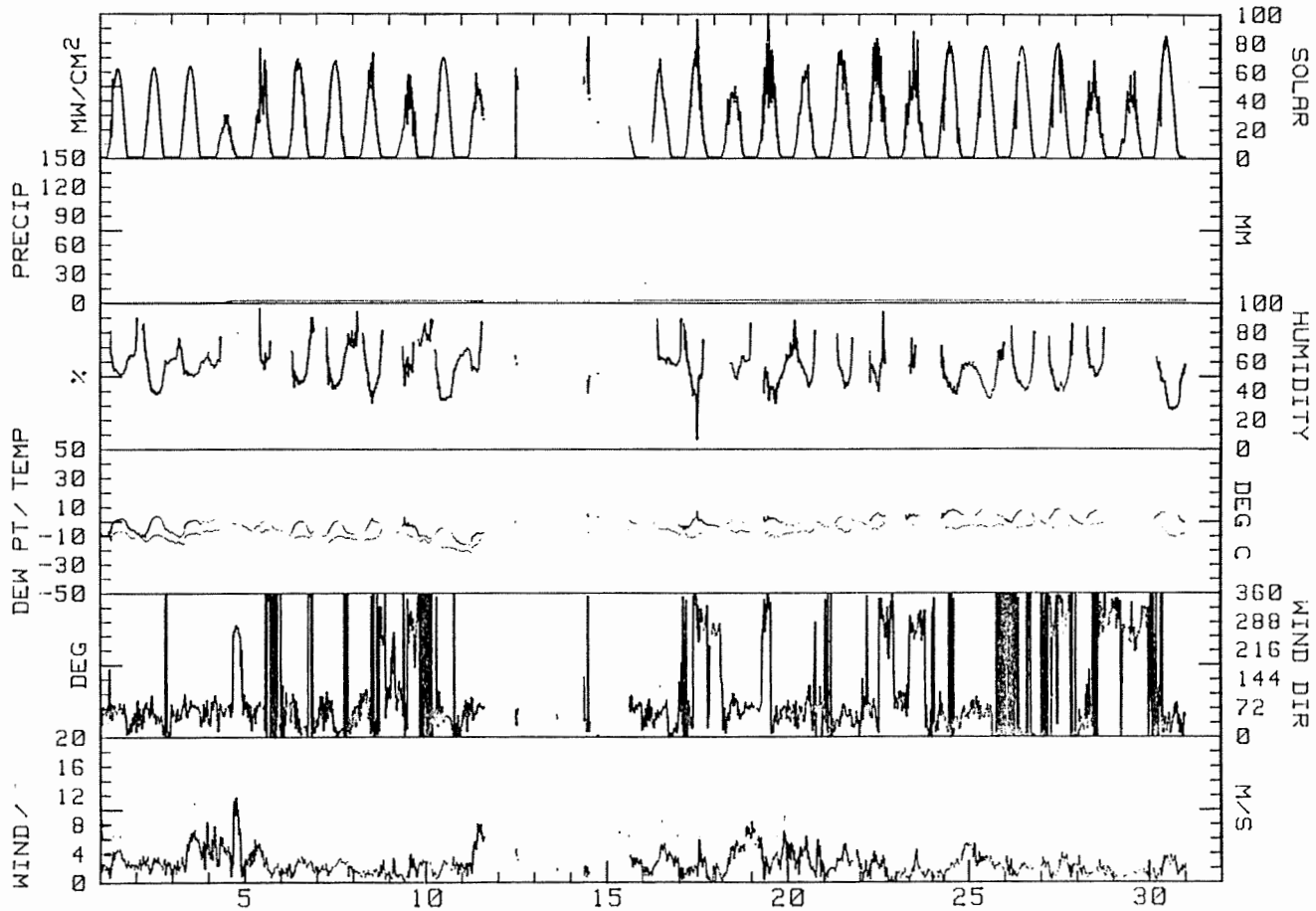
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

April, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING April, 1983

DIRECTION	VELOCITY (M/S) 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	TOTAL
N	.85	13.26	1.25	0.00	0.00	0.00	0.00	15.36
NNE	1.25	9.47	2.02	0.00	0.00	0.00	0.00	12.74
NE	1.41	10.88	5.00	0.00	0.00	0.00	0.00	17.29
ENE	1.33	8.14	10.96	2.06	0.00	0.00	0.00	22.49
E	1.05	5.24	2.62	.89	0.00	0.00	0.00	9.79
ESE	.77	1.33	.16	0.00	0.00	0.00	0.00	2.26
SE	.40	.36	.08	0.00	0.00	0.00	0.00	.85
SSE	.36	.08	0.00	0.00	0.00	0.00	0.00	.44
S	.12	.24	0.00	0.00	0.00	0.00	0.00	.36
SSW	.12	.24	0.00	0.00	0.00	0.00	0.00	.36
SW	.24	.40	0.00	0.00	0.00	0.00	0.00	.64
WSW	.60	1.49	.52	.16	.04	0.00	0.00	2.82
W	.97	2.42	.40	.20	.32	0.00	0.00	4.31
WNW	1.09	2.02	.48	0.00	0.00	0.00	0.00	3.59
NW	1.25	1.37	.24	0.00	0.00	0.00	0.00	2.86
NNW	1.01	1.98	.16	0.00	0.00	0.00	0.00	3.14
CALM								.69
TOTAL	12.82	58.93	23.90	3.31	.36	0.00	0.00	100.00

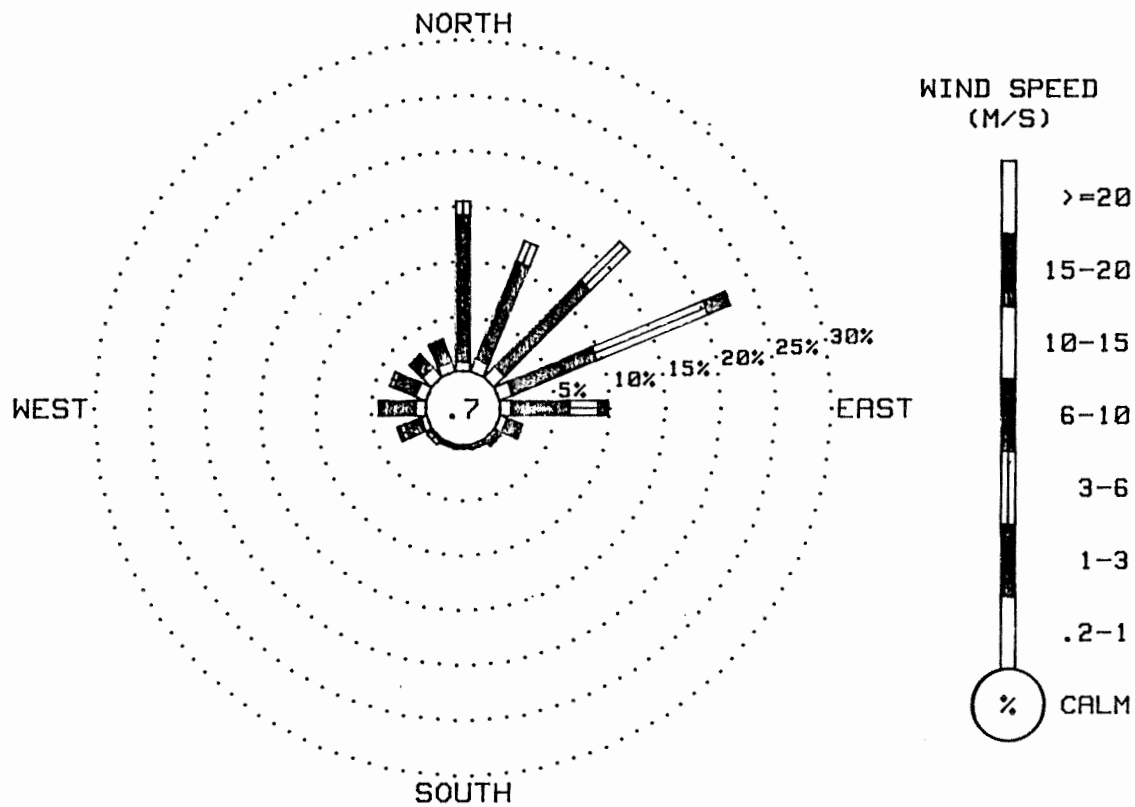
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2481 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

April, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

DATE	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	DATE
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	2.0	2.0	.6	0.0	.6	0.0	0.0	.6	.2	.2	0.0	0.0	2
3	0.0	0.0	.2	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	.2	0.0	0.0	0.0	.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	****	****	****	****	19
20	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	20
21	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	21
22	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	22
23	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	.4	0.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	.2	0.0	.2	.4	.2	.2	.4	.4	0.0	0.0	0.0	0.0	0.0	.2	.6	0.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.4	-8.4	68	048	1.5	018	3.2	1
0600	.6	-6.7	58	068	1.8	076	4.4	25
0900	5.0	-5.4	47	082	3.6	075	7.6	54
1200	6.5	-5.9	41	078	5.8	081	8.9	81
1500	7.7	-6.2	37	079	5.7	079	8.9	53
1800	5.1	-4.5	50	063	3.9	065	7.6	9
2100	3.4	*****	59	020	1.1	029	2.5	1
2400	1.1	*****	**	281	1.7	285	4.4	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.4	*****	**	336	1.0	324	2.5	1
0600	.7	*****	**	055	1.7	048	3.2	11
0900	1.6	*****	**	056	.7	125	1.9	17
1200	.9	*****	**	310	1.1	259	3.2	17
1500	1.2	*****	**	272	2.2	272	5.1	18
1800	.6	*****	**	257	1.7	246	3.8	7
2100	-.4	*****	**	261	2.4	262	5.7	1
2400	-.8	*****	**	255	3.5	259	5.7	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.9	*****	**	252	2.3	253	3.8	1
0600	-.6	*****	**	253	2.1	255	3.8	13
0900	1.0	*****	**	254	2.2	257	3.8	58
1200	.8	*****	**	270	2.1	214	5.1	39
1500	2.2	*****	**	282	1.6	295	4.4	47
1800	3.3	*****	**	290	1.9	265	3.8	20
2100	-.1	*****	**	263	.3	191	2.5	1
2400	-1.5	*****	**	359	1.8	357	3.2	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.8	*****	**	***	****	***	****	1
0600	.2	*****	**	060	2.3	070	4.4	26
0900	2.5	*****	**	071	3.8	080	6.3	46
1200	3.9	*****	**	080	4.5	089	7.0	34
1500	5.1	*****	**	051	4.1	070	7.6	34
1800	1.7	*****	**	067	4.2	088	7.6	18
2100	.1	*****	**	066	3.6	080	6.3	1
2400	-.1	*****	**	040	2.3	056	6.3	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.8	*****	**	027	2.0	040	5.7	1
0600	.6	*****	**	048	2.7	058	4.4	17
0900	2.6	*****	**	049	2.2	060	4.4	52
1200	4.8	-5.6	47	070	2.5	102	5.7	53
1500	5.2	-3.4	54	040	3.0	067	7.0	42
1800	3.9	-3.8	57	039	3.0	041	5.7	16
2100	.2	*****	**	013	2.2	005	4.4	1
2400	-.7	*****	**	002	2.0	003	3.2	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.3	*****	**	021	1.4	056	2.5	1
0600	.1	*****	**	060	1.3	075	3.2	26
0900	4.5	-2.3	61	085	3.0	076	5.7	68
1200	7.1	-6.4	38	100	3.3	116	7.0	68
1500	6.3	-6.1	41	125	4.1	126	7.6	50
1800	4.3	-3.0	59	049	2.7	093	5.7	13
2100	2.0	*****	**	031	2.2	015	3.8	1
2400	-.7	*****	**	011	2.0	000	3.8	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.9	*****	**	029	2.7	022	5.1	1
0600	.4	*****	**	049	2.1	045	4.4	19
0900	7.1	-5.1	42	081	1.4	085	4.4	67
1200	8.9	-5.1	37	017	3.6	022	5.7	75
1500	9.4	-6.2	33	019	4.0	021	6.3	62
1800	7.5	-6.4	37	020	3.7	018	5.7	20
2100	2.3	-4.2	62	006	3.5	000	7.0	1
2400	.9	-5.1	64	012	2.9	004	6.3	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.4	*****	**	029	1.8	014	3.2	2
0600	2.0	-4.7	61	042	1.0	007	1.9	26
0900	8.5	-4.8	39	129	1.0	120	2.5	66
1200	9.7	-6.3	32	352	1.7	003	4.4	26
1500	11.1	-6.4	29	349	2.3	010	4.4	62
1800	9.2	-6.4	33	016	2.4	347	4.4	21
2100	2.6	-4.6	59	004	2.1	008	3.8	1
2400	1.7	-2.2	75	353	2.1	002	4.4	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.8	*****	**	006	2.1	351	3.8	2
0600	1.6	*****	**	020	1.5	007	4.4	14
0900	7.2	-2.3	51	172	.5	246	3.2	67
1200	7.6	-1.1	54	322	2.0	271	4.4	27
1500	9.1	-2.3	45	326	2.4	316	5.1	27
1800	8.3	-2.4	47	319	2.7	310	4.4	18
2100	3.7	-1.0	71	345	1.4	326	2.5	1
2400	2.6	*****	**	283	1.8	310	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.0	*****	**	272	1.6	264	3.8	2
0600	2.6	*****	**	053	.7	349	3.2	28
0900	7.9	-1.6	51	117	1.3	117	2.5	80
1200	9.1	-4.6	38	326	1.5	340	4.4	48
1500	9.2	-9.0	27	309	3.5	324	8.3	65
1800	8.5	-9.1	28	337	4.2	329	7.0	26
2100	1.7	-5.9	57	346	1.8	338	4.4	1
2400	.3	-6.1	62	359	2.4	359	4.4	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.6	*****	**	358	2.6	001	5.1	2
0600	2.3	-5.8	55	023	1.5	357	5.1	29
0900	8.5	*****	36	123	1.1	129	2.5	71
1200	10.6	-8.2	26	086	1.3	159	5.1	81
1500	11.1	-7.8	26	018	1.8	133	6.3	45
1800	9.4	-8.8	27	015	2.9	012	5.1	16
2100	4.1	-4.9	52	358	2.2	352	3.8	1
2400	3.5	-4.2	57	318	1.5	354	3.2	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.8	*****	**	356	2.2	001	5.1	2
0600	2.8	-1.7	72	040	1.4	004	4.4	18
0900	6.8	-2.9	50	099	2.9	097	7.0	44
1200	8.2	-2.8	46	096	4.4	109	8.3	38
1500	8.4	-3.2	44	088	3.8	126	7.0	28
1800	6.8	-.2	61	046	3.3	070	5.7	12
2100	4.6	*****	**	033	2.5	035	5.1	1
2400	3.4	*****	**	021	1.5	025	2.5	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.6	*****	**	009	1.5	006	2.5	2
0600	6.7	*****	**	054	.7	065	3.8	35
0900	10.0	-2.1	43	119	2.0	152	5.1	71
1200	9.8	-1.6	45	058	2.0	078	5.1	22
1500	12.6	-1.5	38	019	3.9	024	6.3	66
1800	9.6	-1.8	45	059	3.7	020	7.0	7
2100	7.1	-1.6	54	090	2.0	067	3.8	1
2400	4.3	*****	**	007	1.8	000	3.2	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.7	*****	**	002	1.5	358	2.5	1
0600	4.8	*****	**	299	.6	327	1.9	14
0900	8.7	.2	55	169	.7	117	2.5	50
1200	10.9	.3	48	280	2.2	300	5.7	62
1500	11.1	-1.4	42	267	2.4	269	5.7	28
1800	9.2	-.2	52	259	3.8	263	6.3	20
2100	4.7	*****	**	257	3.9	240	7.0	1
2400	4.3	*****	**	277	1.2	282	2.5	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.6	*****	**	289	1.6	276	3.2	2
0600	5.3	*****	**	267	2.1	240	4.4	24
0900	7.0	*****	**	253	2.8	260	5.1	42
1200	9.2	-1.3	48	302	1.8	330	5.7	36
1500	9.9	-1.2	46	331	1.7	330	3.8	32
1800	9.6	-1.5	46	311	1.7	276	5.1	15
2100	4.1	.6	78	326	1.3	309	2.5	1
2400	2.4	*****	**	003	1.9	003	3.2	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	1.9	*****	**	039	1.8	064	5.1	2
0600	3.8	1.0	82	066	4.3	068	7.6	20
0900	7.7	-3.0	47	085	5.7	083	8.9	71
1200	8.5	-2.2	47	089	6.4	083	9.5	73
1500	4.7	*****	**	087	5.5	096	9.5	18
1800	3.8	*****	**	085	2.6	076	5.7	7
2100	2.4	*****	**	155	1.0	126	2.5	1
2400	1.5	*****	**	225	1.2	238	3.8	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	1.0	*****	**	280	.7	243	1.9	2
0600	2.4	*****	**	229	.4	258	2.5	14
0900	4.6	*****	**	256	2.9	253	6.3	22
1200	5.5	*****	**	259	4.0	264	7.0	59
1500	6.4	*****	**	270	5.0	254	8.3	27
1800	3.8	*****	**	268	3.5	251	8.3	13
2100	2.5	*****	**	257	1.6	236	3.8	1
2400	2.5	*****	**	258	2.8	252	6.3	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	1.7	*****	**	252	2.4	247	5.1	2
0600	2.9	*****	**	264	1.7	246	4.4	19
0900	5.1	*****	**	277	3.6	276	6.3	49
1200	6.0	-1.6	58	271	3.2	299	7.0	58
1500	5.0	*****	**	290	3.0	330	7.0	17
1800	5.0	*****	**	284	2.3	252	7.6	16
2100	2.8	*****	**	254	1.9	269	4.4	1
2400	.6	*****	**	332	.8	291	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.1	*****	**	037	.8	006	2.5	2
0600	2.2	*****	**	049	1.0	012	2.5	19
0900	6.4	.1	64	161	.8	219	3.8	83
1200	8.3	-4.3	41	248	2.2	223	5.7	39
1500	8.2	-3.7	43	252	3.7	251	8.3	25
1800	8.7	-3.0	44	265	4.6	245	8.9	36
2100	*****	*****	**	***	****	267M	7.0M	***
2400	*****	*****	**	***	****	***	****	***

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	6.4	*****	**	062M	3.6M	080M	7.0M	11
2100	[illegible]	*****	**	26[illegible]	1.6	263	[illegible]	1
2400	1.8	*****	**	39[illegible]	2.0	[illegible]	[illegible]	[illegible]

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.9	*****	**	067	.1	262	2.5	2
0600	2.7	*****	**	045	1.5	062	4.4	14
0900	7.2	-1.0	56	077	3.7	099	7.6	67
1200	8.0	-1.5	51	102	4.3	095	7.6	45
1500	9.4	-3.6	40	070	2.3	089	5.7	33
1800	9.9	-4.2	37	019	2.2	007	5.1	29
2100	4.6	-3.9	54	353	2.1	017	3.8	2
2400	[illegible]	[illegible]	[illegible]	359	2.2	030	3.2	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-.3	*****	**	360	1.9	001	2.5	3
0600	2.7	.9	88	336	1.1	355	2.5	20
0900	8.8	-2.2	46	266	2.3	272	5.1	50
1200	11.2	-4.2	34	263	2.9	295	5.7	75
1500	12.5	-2.3	36	252	4.3	238	8.3	76
1800	8.9	1.8	61	240	2.7	236	8.9	12
2100	6.6	2.0	72	293	1.3	124	7.0	2
2400	4.3	*****	**	278	2.4	276	5.1	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.3	*****	**	272	2.1	269	3.8	2
0600	3.4	*****	**	254	2.1	257	4.4	12
0900	4.6	*****	**	245	2.9	254	4.4	34
1200	5.1	*****	**	247	2.8	242	5.7	25
1500	8.3	*****	**	183	.5	281	3.8	90
1800	5.4	*****	**	288	.4	275	10.2	12
2100	4.1	*****	**	098	.5	337	2.5	2
2400	3.0	*****	**	305	.7	299	1.9	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	1.2	*****	**	349	.5	351	2.5	2
0600	3.9	*****	**	008	1.3	002	2.5	22
0900	6.8	*****	**	115	[illegible]	114	2.5	38
1200	9.4	-.2	51	113	1.7	116	3.8	38
1500	9.6	-2.1	44	062	1.7	063	5.1	38
1800	8.9	-.7	51	093	2.6	084	5.7	16
2100	6.7	.2	63	072	2.6	076	5.1	2
2400	5.1	*****	**	050	2.3	050	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.8	*****	**	056	2.7	049	4.4	3
0600	6.7	*****	**	060	2.7	054	5.1	39
0900	9.5	5.7	77	083	4.7	085	8.3	64
1200	12.9	1.8	47	096	4.4	098	8.3	72
1500	14.7	-.7	35	129	2.2	136	7.0	49
1800	13.9	1.8	44	343	.8	126	7.0	32
2100	8.5	*****	**	054	2.5	074	7.6	2
2400	8.1	*****	**	052	3.6	058	6.3	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.8	*****	**	048	2.7	061	5.1	3
0600	9.4	*****	**	065	2.7	067	7.0	10
0900	12.7	6.1	64	077	5.5	086	9.5	31
1200	15.1	5.0	51	112	4.9	110	8.3	38
1500	16.6	3.6	42	104	5.3	104	8.9	33
1800	16.1	4.1	45	083	4.4	092	7.0	18
2100	13.8	3.0	48	082	3.8	083	7.0	2
2400	10.4	*****	**	048	.9	092	7.0	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.8	*****	**	338	.8	309	2.5	3
0600	11.9	6.0	67	031	1.3	055	4.4	17
0900	16.0	5.9	51	073	4.5	089	8.9	38
1200	15.2	6.0	54	083	5.9	092	10.2	11
1500	18.2	6.4	46	080	3.3	097	7.6	40
1800	19.4	*****	46	058	1.5	049	4.4	10
2100	13.9	7.0	63	296	1.1	261	7.0	2
2400	9.8	*****	**	253	5.1	252	9.5	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.5	*****	**	257	3.7	257	6.3	2
0600	7.3	*****	**	256	3.8	250	6.3	7
0900	6.0	*****	**	246	3.3	245	6.3	5
1200	7.6	*****	**	269	.6	270	3.2	31
1500	10.2	*****	**	259	1.4	261	5.1	35
1800	11.3	*****	**	265	4.4	257	7.6	16
2100	7.6	*****	**	264	3.4	262	5.7	2
2400	6.0	*****	**	284	1.6	279	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	8.0	-3.6	2.2	069	2.7	3.2	081	8.9	ENE	52M	-6.1M	0.0	6705	1
2	2.1	-.8	.7	279	1.1	1.9	262	5.7	WSW	**	*****	6.6	2233	2
3	3.3	-1.6	.9	272	1.5	1.9	214	5.1	WSW	**	*****	.6	5448	3
4	5.1	-2.1	1.5	064	3.6	3.3	070	7.6	ENE	**	*****	.2	6218	4
5	6.0	-1.8	2.1	037	2.3	2.6	067	7.0	NE	58M	-3.5M	0.0	6073	5
6	7.1	-3.3	1.9	072	2.0	2.6	126	7.6	NNE	54M	-3.8M	0.0	7523	6
7	10.0	-2.4	3.8	023	2.8	3.1	000	7.0	NNE	45M	-5.2M	0.0	7580	7
8	11.1	-1.4	4.9	010	1.6	1.9	003	4.4	N	46M	-5.3M	0.0	6753	8
9	9.4	-1.8	3.8	332	1.5	2.0	316	5.1	N	51M	-2.4M	0.0	5120	9
10	10.2	.1	5.2	334	1.6	2.3	324	8.3	NNW	41M	-6.5M	0.0	7320	10
11	11.6	-2.5	4.6	015	1.5	2.1	133	6.3	N	41M	-6.6M	0.0	7833	11
12	9.4	.8	5.1	063	2.3	2.9	109	8.3	NNE	54M	-2.2M	0.0	5755	12
13	12.6	2.6	7.6	049	1.8	2.4	020	7.0	NNE	47M	-1.4M	0.0	5215	13
14	11.1	3.1	7.1	270	1.7	2.2	240	7.0	W	50M	-.3M	0.0	5098	14
15	11.1	2.1	6.6	300	1.5	2.0	330	5.7	WNW	49M	-1.0M	0.0	5500	15
16	9.6	.1	4.9	084	3.1	3.7	083	9.5	ENE	54M	-1.8M	.2	5525	16
17	6.4	1.0	3.7	262	2.6	2.8	254	8.3	W	**	*****	1.2	3960	17
18	6.7	.6	3.7	274	2.2	2.6	252	7.6	WNW	63M	-.5M	0.0	4963	18
19	9.8M	-.6M	4.6M	261M	1.8M	2.6M	245M	8.9M	W(M)	47M	-3.0M	0.0M	8053M	19
20	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	20
21	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	21
22	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	22
23	8.1M	1.8M	5.0M	294M	1.0M	2.3M	080M	7.0M	W(M)	**	*****	.4M	1357M	23
24	10.6	.7	5.7	055	1.8	2.5	099	7.6	N	50M	-2.9M	.6	6990	24
25	12.7	-1.2	5.8	272	1.9	2.9	236	8.9	W	52M	-1.5M	0.0	7223	25
26	8.6	2.1	5.4	254	1.3	2.0	275	10.2	WSW	**	*****	2.8	4030	26
27	10.4	1.2	5.8	072	1.5	1.9	084	5.7	ENE	54M	-.3M	0.0	4700	27
28	15.6	4.6	10.1	073	2.6	3.4	085	8.3	NE	50M	2.2M	0.0	6905	28
29	17.6	6.7	12.2	085	3.5	4.0	086	9.5	E	50M	4.4M	0.0	4425	29
30	20.1	7.6	13.9	065	1.3	3.2	092	10.2	E	54M	6.5M	0.0	4690	30
31	12.1	5.8	9.0	260	2.7	3.0	257	7.6	W	**	*****	2.6	4113	31
MONTH	20.1M	-3.6M	5.3M	021M	.7M	2.6M	275M	10.2M	N(M)	50M	-2.0M	15.2M	157304M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 2.5
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 9.5
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 5.7
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 3.8

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.

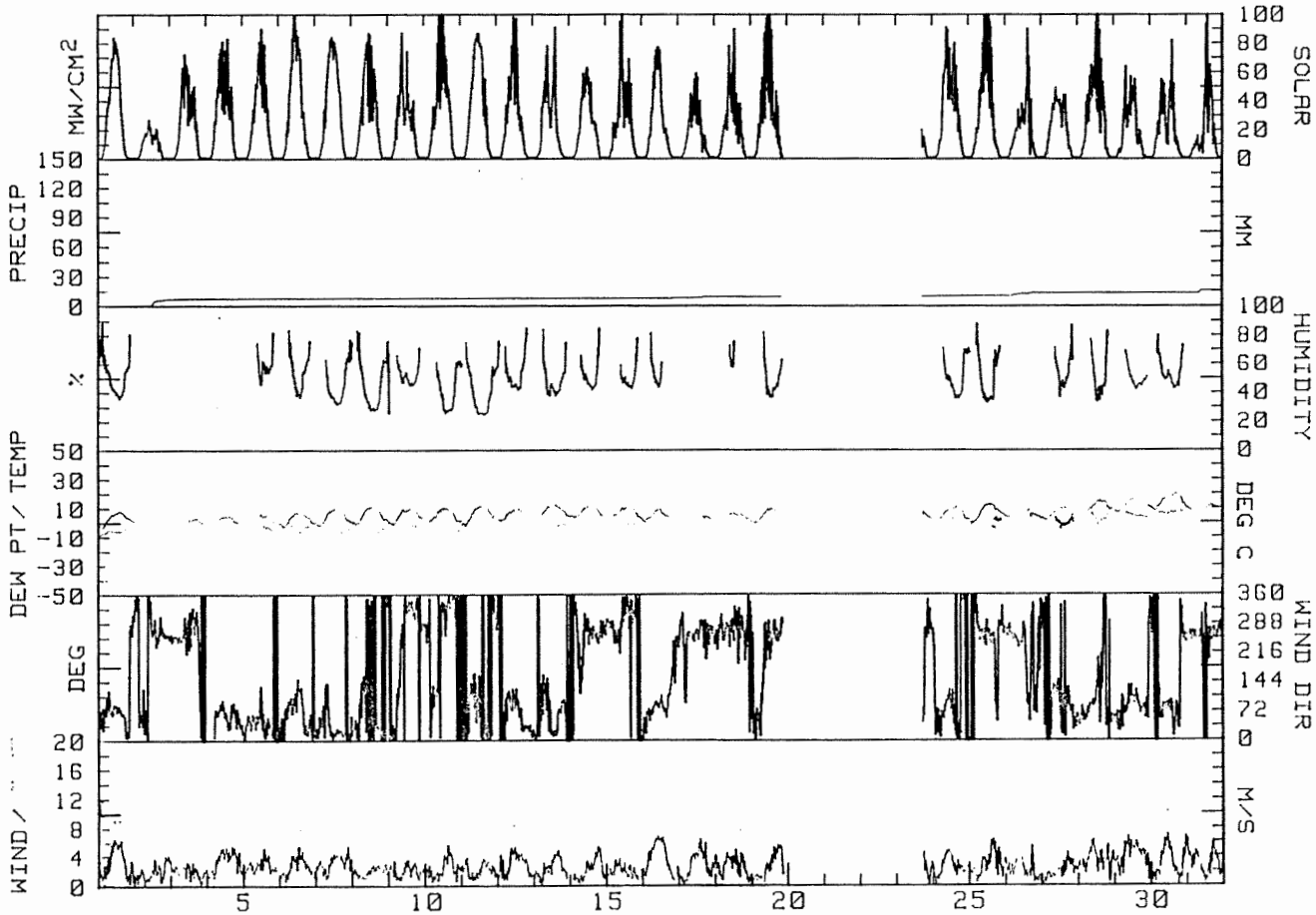
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

May, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING May, 1983

DIRECTION	VELOCITY (M/S) 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	TOTAL
N	.50	9.86	1.74	0.00	0.00	0.00	0.00	12.11
NNE	.15	6.62	3.02	0.00	0.00	0.00	0.00	9.79
NE	.54	5.65	2.17	0.00	0.00	0.00	0.00	8.36
ENE	.81	4.06	6.23	.27	0.00	0.00	0.00	11.37
E	.27	2.75	5.34	1.24	0.00	0.00	0.00	9.59
ESE	.54	2.63	1.62	.15	0.00	0.00	0.00	4.95
SE	.23	2.05	.58	0.00	0.00	0.00	0.00	2.86
SSE	.31	.46	.12	0.00	0.00	0.00	0.00	.89
S	.46	.46	.08	0.00	0.00	0.00	0.00	1.01
SSW	.04	.39	.15	0.00	0.00	0.00	0.00	.58
SW	.19	1.08	.43	0.00	0.00	0.00	0.00	1.70
WSW	.27	4.64	5.30	.23	0.00	0.00	0.00	10.44
W	.46	6.11	4.18	.04	0.00	0.00	0.00	10.79
WNW	.70	4.53	1.59	0.00	0.00	0.00	0.00	6.81
NW	.58	2.63	.43	0.00	0.00	0.00	0.00	3.64
NNW	.43	3.71	.85	0.00	0.00	0.00	0.00	4.99
CALM								.12
TOTAL	6.50	57.64	33.81	1.93	0.00	0.00	0.00	100.00

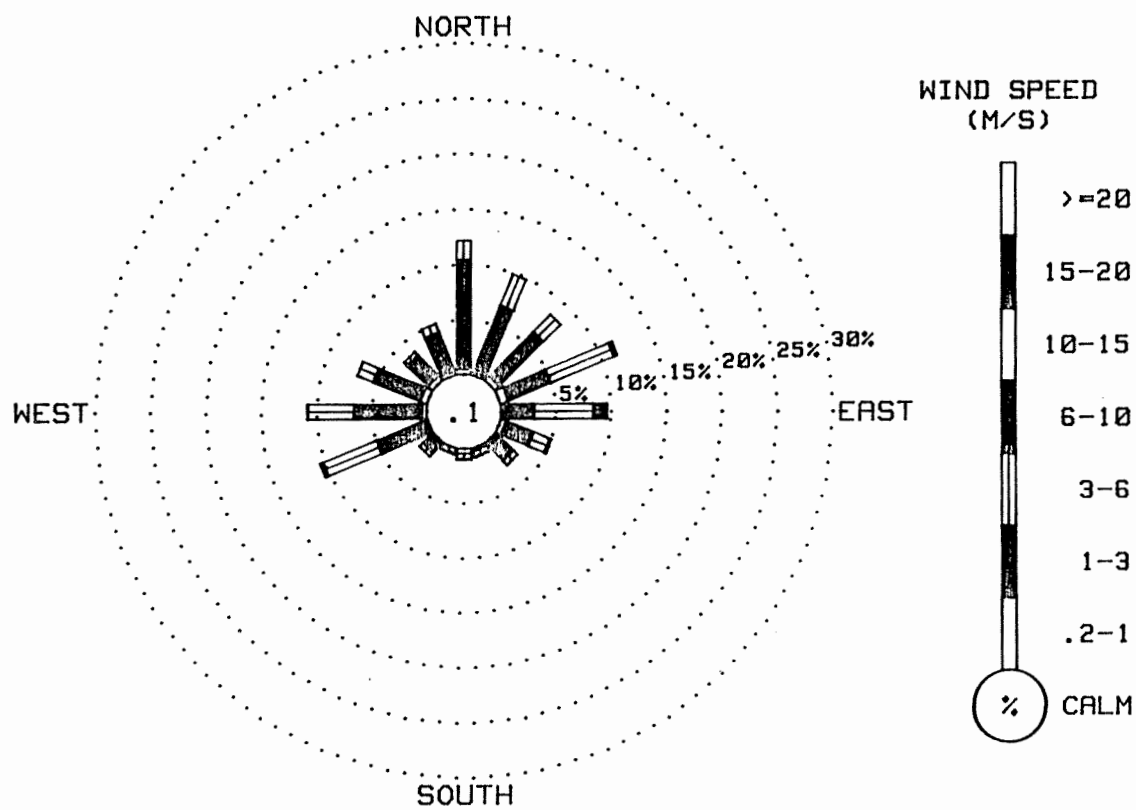
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2585 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

May, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

DATE	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	DATE
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	1.2	.2	0.0	0.0	.2	.8	1.2	1.0	2
3	.6	1.4	.8	1.2	1.2	1.2	1.6	1.2	.8	.6	.6	.4	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	3
4	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	.4	5
6	.2	0.0	0.0	.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	8
9	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	.4	.6	0.0	0.0	0.0	0.0	.2	1.8	0.0	0.0	11
12	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	.8	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	.2	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	.2	0.0	.2	0.0	.2	****	****	****	15
16	****	0.0	****	****	****	.8	****	****	****	****	****	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	****	0.0	****	16
17	****	****	****	****	****	****	****	****	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	****	17
18	****	****	****	****	****	****	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	****	0.0	0.0	****	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	1.6	1.2	2.4	2.8	1.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	.2	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	29
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.6	*****	**	018	1.1	351	1.9	3
0600	7.7	2.6	70	074	1.8	072	4.4	23
0900	11.9	1.8	50	098	3.4	104	7.0	73
1200	12.7	-2.9	34	122	3.1	140	7.6	31
1500	15.7	-2.0	30	240	2.0	224	6.3	74
1800	15.8	-3.3	27	306	1.7	270	9.5	34
2100	11.1	-2.8	38	354	2.2	338	4.4	3
2400	7.8	.6	60	348	1.7	001	3.2	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.4	*****	**	284	1.9	284	3.2	2
0600	6.1	*****	**	278	2.0	272	3.8	17
0900	10.6	*****	**	266	3.2	271	5.1	40
1200	12.6	7.7	72	262	4.2	249	6.3	48
1500	9.9	*****	**	258	4.8	267	7.6	10
1800	6.8	*****	**	267	3.6	266	5.7	10
2100	6.1	*****	**	263	4.3	263	6.3	1
2400	5.0	*****	**	258	4.4	260	7.0	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.5	*****	**	269	3.0	255	5.1	2
0600	4.3	*****	**	275	3.0	281	5.7	11
0900	4.1	*****	**	260	4.5	261	7.6	24
1200	5.3	*****	**	269	3.9	261	6.3	29
1500	6.0	*****	**	274	5.4	275	9.5	33
1800	4.7	*****	**	279	4.6	281	7.0	7
2100	3.6	*****	**	263	2.8	260	5.7	1
2400	3.1	*****	**	255	2.8	248	5.1	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.3	*****	**	253	3.2	247	5.7	2
0600	2.7	*****	**	258	2.7	241	5.7	11
0900	4.3	*****	**	263	3.4	258	5.7	22
1200	5.6	*****	**	259	3.4	254	5.1	15
1500	6.6	*****	**	261	3.7	246	6.3	20
1800	6.1	*****	**	285	3.3	293	5.7	8
2100	5.0	*****	**	286	2.3	287	3.8	2
2400	3.9	*****	**	284	1.7	281	3.2	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.0	*****	**	290	1.2	292	2.5	3
0600	4.9	*****	**	276	.9	286	1.9	14
0900	9.3	2.4	62	273	1.9	283	4.4	93
1200	10.9	2.0	54	289	2.2	269	5.7	68
1500	11.0	1.8	53	275	4.1	268	8.3	32
1800	10.4	1.8	55	282	4.2	294	7.6	20
2100	8.3	3.2	70	281	3.1	289	7.0	2
2400	6.0	*****	**	325	1.4	297	2.5	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.9	*****	**	001	1.8	346	5.1	1
0600	4.2	*****	**	106	1.8	091	5.1	10
0900	9.8	2.7	61	082	.6	120	3.8	88
1200	12.2	-5.0	30	096	1.1	112	4.4	108
1500	13.6	-5.7	26	357	2.4	332	6.3	78
1800	11.6	-6.9	27	353	4.3	355	7.6	34
2100	6.7	-3.9	47	005	3.1	354	5.7	2
2400	3.8	-1.7	67	075	3.2	073	5.1	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.1	-1.1	64	071	3.2	063	5.7	4
0600	7.2	-2.3	51	063	3.8	061	6.3	35
0900	10.7	-3.9	36	069	3.6	053	6.3	74
1200	13.6	-5.7	26	068	1.8	075	7.6	105
1500	14.3	-5.1	26	264	1.4	181	5.1	44
1800	13.6	-5.2	27	284	2.7	275	5.7	18
2100	9.1	-4.2	39	055	2.2	036	6.3	3
2400	5.0	-2.1	60	083	2.2	081	4.4	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.6	-2.1	66	065	2.1	077	4.4	3
0600	5.1	-.9	65	087	2.0	106	3.8	22
0900	11.1	-4.7	33	085	2.8	065	5.7	55
1200	12.6	-5.6	28	138	1.2	084	5.1	16
1500	11.1	-4.3	34	336	1.0	038	5.7	12
1800	10.1	-1.7	44	031	3.3	025	6.3	15
2100	6.2	*****	**	030	4.0	031	6.3	2
2400	4.4	*****	**	049	1.8	036	3.8	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.6	*****	**	057	.7	049	2.5	2
0600	4.5	*****	**	081	.5	106	1.9	13
0900	6.4	*****	**	124	1.5	115	5.1	27
1200	9.9	-2.2	43	150	1.1	355	7.0	43
1500	9.8	-4.0	38	008	4.4	018	7.6	21
1800	8.5	-4.8	39	356	5.3	356	9.5	10
2100	7.5	-4.7	42	357	4.6	354	8.3	2
2400	5.6	-2.7	55	012	3.3	359	7.6	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.4	-2.9	55	046	2.5	052	5.7	4
0600	7.6	-2.2	50	072	1.6	104	4.4	16
0900	10.7	-3.5	37	030	3.6	033	7.0	51
1200	12.9	-3.5	32	138	2.6	104	6.3	82
1500	13.6	-4.7	28	029	2.9	030	6.3	31
1800	9.4	3.0	64	085	3.4	094	7.6	16
2100	5.7	*****	**	078	4.2	084	7.6	2
2400	4.9	*****	**	041	1.3	046	2.5	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.2	*****	**	032	1.2	003	2.5	3
0600	6.5	*****	**	057	.9	050	3.8	23
0900	9.6	*****	**	180	1.4	224	5.7	90
1200	9.4	*****	**	266	3.9	238	7.6	105
1500	8.2	*****	**	262	2.9	236	7.6	11
1800	10.1	3.9	65	262	3.6	250	6.3	12
2100	6.8	*****	**	264	3.0	231	7.0	2
2400	5.8	*****	**	273	.3	217	5.7	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.3	*****	**	257	.8	257	2.5	3
0600	6.1	*****	**	258	1.5	245	3.2	13
0900	10.1	2.2	58	226	1.8	220	4.4	88
1200	12.2	-.1	43	231	1.2	191	5.1	36
1500	13.3	-.5	39	110	2.4	133	6.3	43
1800	10.6	1.1	52	258	2.1	247	8.9	30
2100	8.3	2.8	68	265	2.4	244	6.3	3
2400	6.3	*****	**	276	1.6	275	2.5	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.2	*****	**	283	2.0	264	3.2	5
0600	8.9	*****	63	300	1.1	303	2.5	34
0900	12.3	1.0	46	219	.7	134	3.8	75
1200	13.9	-2.7	32	176	1.7	222	5.1	33
1500	14.3	-4.1	28	109	1.8	099	4.4	31
1800	14.9	-3.6	28	224	1.3	239	5.7	21
2100	9.4	6.1	80	246	5.0	246	7.6	3
2400	6.2	*****	**	260	2.8	251	7.0	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.2	*****	**	284	1.9	279	3.2	3
0600	5.9	*****	**	284	.9	287	2.5	9
0900	9.2	*****	**	068	1.2	062	5.1	45
1200	13.1	1.7	46	089	2.2	130	5.7	33
1500	12.7	3.7	54	200	.8	251	8.3	44
1800	10.3	4.3	66	259	5.3	244	8.9	13
2100	7.4	*****	**	237	1.7	242	5.7	3
2400	6.0	*****	**	353	.8	077	1.9	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.6	*****	**	286	1.2	294	2.5	4
0600	6.0	*****	**	321	.2	298	1.3	11
0900	9.8	*****	**	124	.8	120	1.9	71
1200	11.1	*****	**	102	1.5	130	3.8	63
1500	13.8	*****	**	232	1.4	242	5.1	86
1800	9.3	*****	**	265	3.4	246	7.6	13
2100	7.8	*****	**	245M	.9M	263M	5.1M	2
2400	*****	*****	**	***	****	***	****	***

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	240M	1.5M	***
0600	*****	*****	**	214M	1.3M	147M	4.4M	95
0900	*****	*****	**	***	****	***	****	***
1200	11.7	3.0	55	243M	2.5M	153M	6.3M	54
1500	13.1	.4	42	269M	3.7M	272M	7.6M	28
1800	11.8	3.3	56	151M	2.9M	142M	7.6M	14
2100	8.5	3.5	66	183M	1.3M	150M	5.1M	1
2400	*****	*****	**	***	****	206M	2.5M	***

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	14.8	-.3	36	171M	1.1M	213M	3.8M	99
1200	15.2	-.3	35	310M	1.5M	255M	5.7M	104
1500	17.5	-1.3	28	301	2.1	273	5.7	86
1800	17.5	-2.3	26	269	2.4	278	7.0	26
2100	13.0	-1.1	38	322	1.1	283	3.8	3
2400	*****	*****	**	***	****	031M	3.8M	***

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	16.7	1.4	36	094M	3.2M	090M	5.7M	76
1200	18.6	-1.4	26	093	2.8	125	6.3	29
1500	20.0	*****	22	103	1.5	107	6.3	21
1800	20.2	-2.3	22	279	2.7	299	6.3	36
2100	14.1	2.0	44	267	3.4	264	7.6	3
2400	12.3	*****	60	344	1.0	304	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.6	*****	**	021	1.1	356	3.2	6
0600	11.2	*****	**	208m	.1m	159m	7.6m	31
0900	14.0	6.4	60	231m	3.2m	177m	8.3m	26
1200	15.6	6.4	54	253	4.9	263	8.3	63
1500	12.9	5.9	62	236	5.0	249	8.9	7
1800	12.7	*****	**	201	.9	193	6.3	34
2100	9.2	*****	**	263	4.0	264	7.6	4
2400	6.5	*****	**	278	2.0	276	3.2	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	286m	3.2m	***
0600	*****	*****	**	***	****	356m	2.5m	***
0900	13.4	6.8	64	294m	1.2m	268m	4.4m	38
1200	17.1	5.7	47	242	2.1	234	5.1	95
1500	18.3	-1.1	27	284	2.0	258	7.0	79
1800	18.2	1.5	33	231	4.5	219	7.6	39
2100	13.7	5.6	58	235	3.2	246	7.0	3
2400	10.1	*****	**	297	1.9	001	4.4	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.5	*****	**	273	2.3	259	4.4	5
0600	10.1	*****	**	279m	1.6m	160m	4.4m	15
0900	15.0	6.1	55	216m	1.9m	163m	4.4m	76
1200	20.3	3.8	34	243	2.3	240	5.1	81
1500	21.1	2.3	29	311	2.1	331	6.3	75
1800	17.1	4.7	44	308	2.4	355	8.3	9
2100	14.1	9.2	72	273	2.2	252	7.6	3
2400	10.1	*****	**	274	2.4	252	5.1	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.7	*****	**	288	2.4	288	3.8	7
0600	11.7	*****	**	264	2.8	261	5.1	32
0900	14.7	7.6	62	249	4.7	253	8.3	73
1200	18.7	7.8	49	254	4.6	250	7.0	85
1500	18.1	6.3	46	251	4.1	244	7.6	25
1800	17.5	7.9	53	248	3.9	241	7.0	20
2100	14.8	7.9	63	261	3.0	243	5.7	3
2400	11.4	*****	**	284	1.6	296	2.5	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	10.0	*****	**	281	2.0	281	5.1	6
0600	11.1	*****	**	256	3.2	241	5.7	21
0900	12.7	*****	**	248	4.5	235	7.0	34
1200	16.7	7.9	56	251	4.8	247	7.6	64
1500	16.4	6.3	51	245	4.3	238	7.6	44
1800	17.2	3.4	40	270	3.3	242	5.7	36
2100	12.9	2.1	48	282	2.8	289	6.3	4
2400	11.1	5.9	70	296	1.6	286	3.8	1

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.1	*****	**	315	1.2	358	2.5	4
0600	11.2	6.8	74	054	.6	355	2.5	37
0900	16.9	3.5	41	106	1.1	109	4.4	78
1200	20.9	-29.8	1	116	2.2	106	6.3	92
1500	22.6	-28.7	1	104	3.0	113	7.6	36
1800	23.2	-28.3	1	101	2.6	150	6.3	36
2100	16.8	6.0	49	063	1.4	081	3.8	4
2400	10.6	*****	**	310	1.4	278	4.4	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.4	*****	**	357	2.3	355	3.2	5
0600	12.3	6.2	66	056	.7	005	3.2	36
0900	19.4	4.2	37	296	1.0	262	3.2	76
1200	23.9	*****	**	119	1.4	129	5.1	91
1500	25.9	*****	**	107	2.7	099	7.0	76
1800	22.0	-1.4	21	241	3.7	219	8.9	17
2100	16.8	3.7	42	251	5.1	249	8.3	3
2400	11.4	10.3	93	253	5.2	246	8.9	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	9.5	*****	**	255	3.7	256	5.7	1
0600	9.5	*****	**	256	3.2	254	5.7	23
0900	10.9	*****	**	248	3.2	257	6.3	18
1200	15.2	8.3	63	259	2.5	248	5.7	106
1500	18.4	9.3	55	252	3.3	261	6.3	85
1800	15.6	8.4	62	247	5.3	242	8.9	36
2100	10.4	*****	**	248	5.4	248	9.5	4
2400	7.9	*****	**	275	2.0	270	4.4	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.1	*****	**	353	1.2	296	2.5	5
0600	9.3	*****	**	066	.8	123	2.5	22
0900	8.7	*****	**	113	.9	118	2.5	15
1200	10.3	*****	**	120	.6	137	2.5	24
1500	12.1	*****	**	255	2.5	270	4.4	29
1800	10.9	*****	**	241	3.8	236	5.7	7
2100	9.5	*****	**	263	2.2	245	4.4	2
2400	8.7	*****	**	273	1.4	273	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.4	*****	**	276	1.6	286	2.5	4
0600	10.1	*****	**	229	.6	233	2.5	28
0900	13.9	*****	**	096	1.8	087	4.4	64
1200	16.5	6.6	52	092	3.1	085	5.7	72
1500	13.4	*****	**	165	2.1	240	8.3	27
1800	11.3	*****	**	248	4.0	235	7.0	15
2100	9.7	*****	**	259	2.9	246	5.7	3
2400	6.6	*****	**	335	1.0	290	2.5	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.1	*****	**	003	2.0	001	3.2	6
0600	8.5	*****	**	052	.8	011	2.5	36
0900	15.6	7.7	59	119	1.9	109	4.4	73
1200	16.9	3.8	42	115	2.9	103	5.7	49
1500	11.8	*****	**	186	1.4	251	7.0	22
1800	11.9	*****	**	257	3.5	262	6.3	24
2100	9.9	*****	**	244	3.2	251	5.1	2
2400	8.5	*****	**	251	1.9	245	5.7	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.5	*****	**	250	.6	269	2.5	3
0600	9.7	*****	**	323	.5	001	1.9	24
0900	14.3	6.5	59	251	.7	239	3.2	91
1200	17.8	1.6	34	167	1.3	090	5.7	105
1500	19.5	-1.1	25	291	.5	177	5.1	71
1800	18.7	.7	30	268	1.0	302	5.1	30
2100	14.3	6.5	59	249	2.0	245	5.1	3
2400	12.4	2.5	51	292	1.4	268	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	16.9	2.7	9.8	054	.7	2.3	270	9.5	ESE	41M	-1.4M	0.0	7630	1
2	14.4	4.3	9.4	264	3.5	3.6	267	7.6	W	69M	6.5M	5.0	3285	2
3	6.3	3.1	4.7	269	3.7	3.8	275	9.5	W	**	*****	12.0	2968	3
4	7.2	2.1	4.7	267	2.9	3.0	246	6.3	W	**	*****	.2	2643	4
5	12.2	2.9	7.6	283	2.3	2.5	268	8.3	WNW	57M	2.0M	.6	6083	5
6	13.6	3.7	8.7	027	1.7	2.7	355	7.6	N	39M	-4.3M	2.0	7730	6
7	14.8	3.4	9.1	059	1.7	2.9	075	7.6	ENE	42	-3.6	0.0	8190	7
8	13.6	2.6	8.1	054	1.9	2.6	025	6.3	NE	47M	-2.7M	.4	4700	8
9	10.8	3.6	7.2	012	2.1	2.9	356	9.5	N	44M	-3.4M	.2	3723	9
10	13.7	4.6	9.2	064	2.3	3.0	094	7.6	NNE	46M	-2.1M	0.0	5598	10
11	10.9	2.6	6.8	264	1.5	2.5	238	7.6	WSW	66M	4.2M	3.2	5840	11
12	14.4	5.1	9.8	246	1.1	2.0	247	8.9	W	50M	1.1M	.2	7103	12
13	15.8	4.2	10.0	241	1.4	2.3	246	7.6	WSW	41M	-.8M	0.0	7218	13
14	14.7	4.2	9.5	264	.8	2.3	244	8.9	W	50M	2.1M	1.4	6538	14
15	13.8M	4.6M	9.2M	245M	.7M	1.6M	246M	7.6M	NW(M)	**	*****	1.2M	6801M	15
16	14.3M	4.6M	9.5M	190M	1.6M	3.1M	103M	6.7M	SSE(M)	51M	2.2M	.8M	8563M	16
17	17.8M	10.3M	14.1M	303M	1.1M	2.0M	278M	7.0M	W (M)	34M	-1.5M	0.0M	10051M	17
18	21.2M	12.3M	16.8M	006M	.1M	2.7M	264M	7.6M	WNW(M)	32M	.0M	0.0M	9992M	18
19	16.5	4.6	10.6	251M	2.5M	3.4M	249M	8.9M	W (M)	58M	6.4M	1.2	7124	19
20	19.2M	3.5M	11.4M	256M	2.0M	2.5M	219M	7.6M	WSW(M)	49M	4.3M	0.0M	9070M	20
21	21.3	4.0	12.7	274M	1.9M	2.6M	355M	8.3M	W (M)	44M	4.5M	0.0	9035	21
22	19.5	8.5	14.0	258	3.3	3.4	253	8.3	WSW	55M	7.5M	0.0	8013	22
23	17.3	9.8	13.6	260	3.2	3.4	247	7.6	WSW	52M	4.8M	0.0	6720	23
24	23.8	6.1	15.0	088	1.0	2.0	113	7.6	E			0.0	9518	24
25	26.1	6.4	16.3	250	1.3	3.1	219	8.9	WSW	49M	4.7M	0.0	9368	25
26	18.7	7.3	13.0	253	3.5	3.6	248	9.5	WSW	59M	8.2M	.4	7388	26
27	12.7	4.9	8.8	257	1.0	1.8	236	5.7	WSW	**	*****	9.8	3043	27
28	16.5	6.2	11.4	224	.7	2.5	240	8.3	W	60M	7.4M	.4	6225	28
29	17.3	4.5	10.9	220	.6	2.6	251	7.0	WSW	51M	5.5M	.4	5633	29
30	20.1	7.5	13.8	257	.8	1.5	090	5.7	WSW	46M	3.5M	0.0	8293	30
MONTH	26.1M	2.1M	10.5M	270M	1.0M	2.7M	270M	9.5M	W(M)	46M	1.6M	39.4M	204082M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 5.1
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 2.5
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 3.8
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 3.8

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.

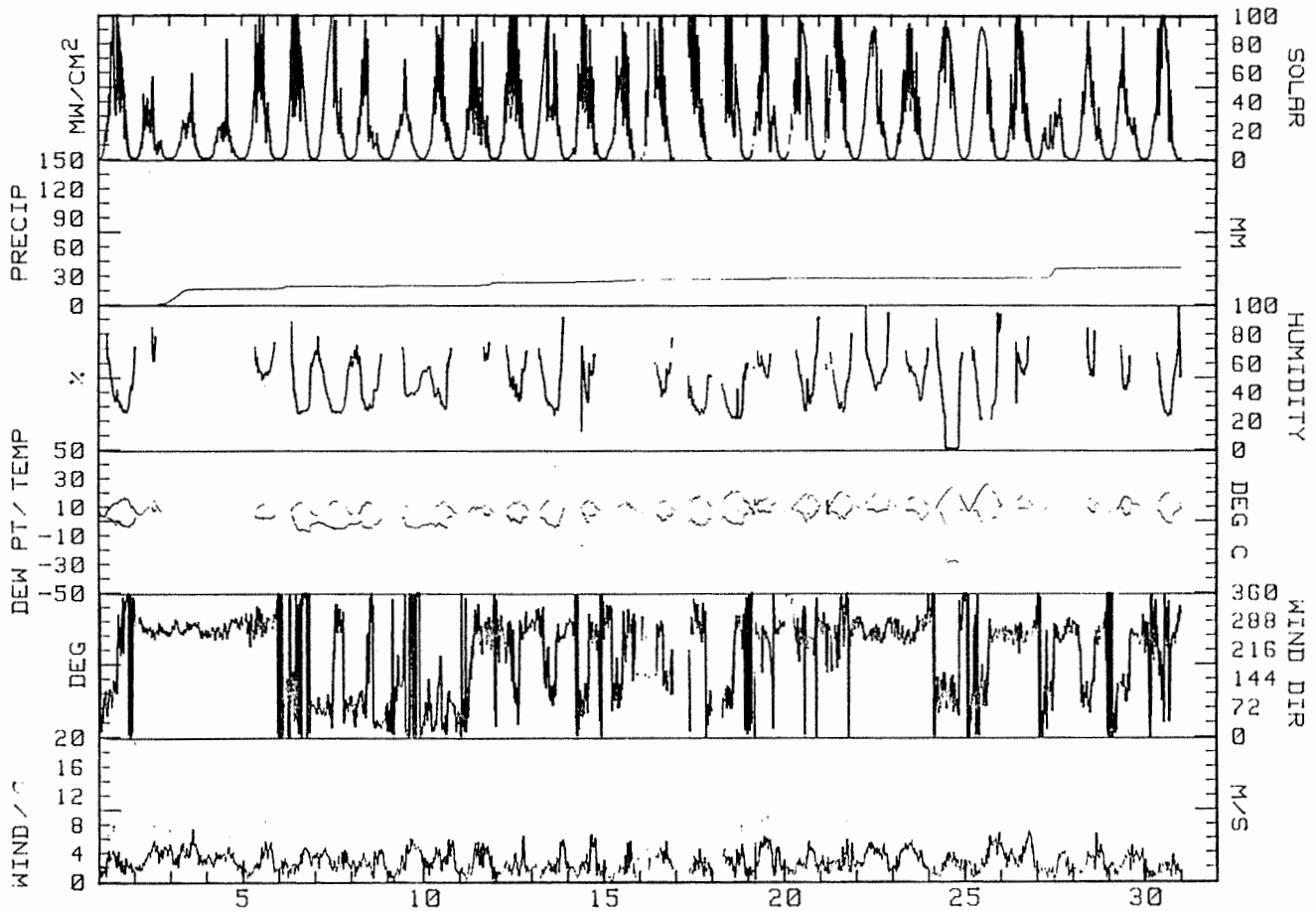
**** SEE NOTES AT THE BACK OF THIS REPORT ****

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

June, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING June, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.48	3.87	2.21	0.00	0.00	0.00	0.00	6.56
NNE	.55	2.06	1.25	0.00	0.00	0.00	0.00	3.87
NE	.48	2.47	.92	0.00	0.00	0.00	0.00	3.87
ENE	.74	2.91	2.03	0.00	0.00	0.00	0.00	5.68
E	.52	3.39	1.73	0.00	0.00	0.00	0.00	5.64
ESE	.44	4.17	1.44	0.00	0.00	0.00	0.00	6.05
SE	.26	2.14	1.11	0.00	0.00	0.00	0.00	3.50
SSE	.15	1.40	.70	0.00	0.00	0.00	0.00	2.25
S	.04	1.22	.11	0.00	0.00	0.00	0.00	1.36
SSW	.29	1.22	.11	0.00	0.00	0.00	0.00	1.62
SW	.11	1.81	2.03	.04	0.00	0.00	0.00	3.98
WSW	.55	4.57	12.50	.77	0.00	0.00	0.00	18.40
W	.77	9.96	8.63	.18	0.00	0.00	0.00	19.54
WNW	.59	8.67	1.95	0.00	0.00	0.00	0.00	11.21
NW	.55	2.47	.26	0.00	0.00	0.00	0.00	3.28
NNW	.52	2.14	.41	0.00	0.00	0.00	0.00	3.06
CALM								.11
TOTAL	7.04	54.46	37.39	1.00	0.00	0.00	0.00	100.00

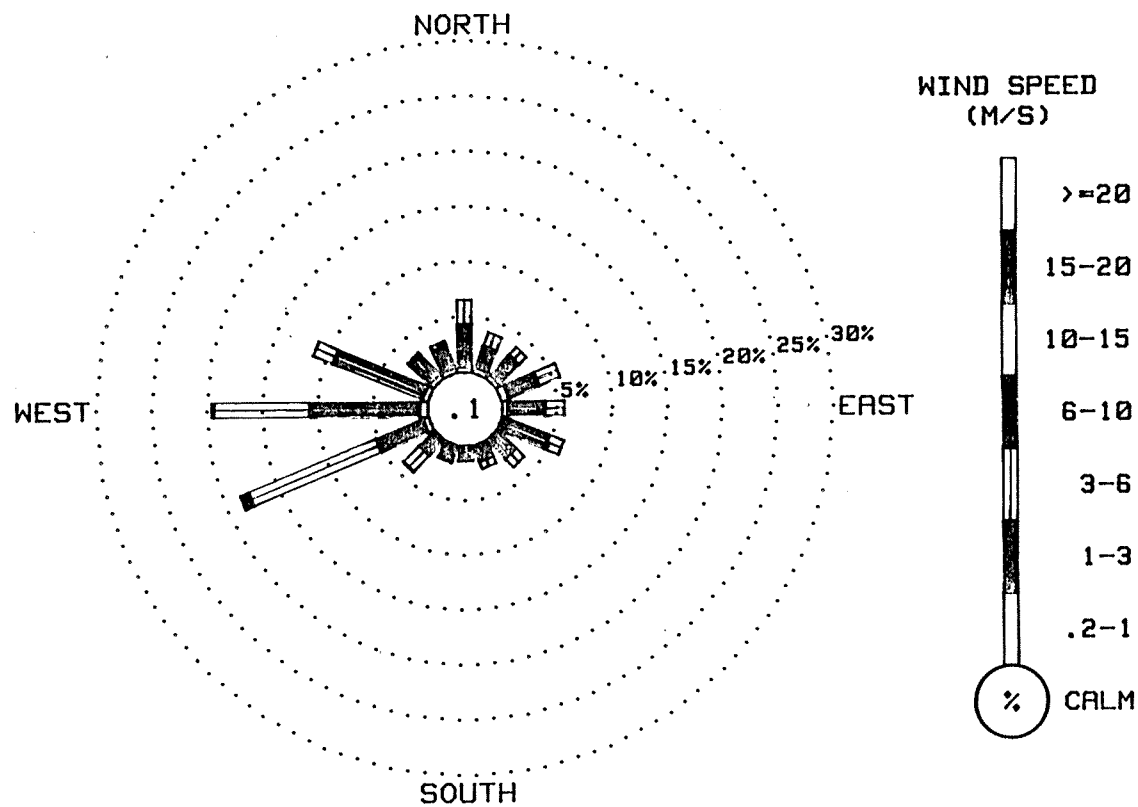
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2712 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

June, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

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	DAT
1	0.0	0.0	0.0	.4	.2	1.0	.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.6	
2	3.4	.2	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	.4	.2	.2	0.0	0.0	0.0	0.0	0.0	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	6.8	0.0	3.2	.2	0.0	.6	1
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	1
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
13	0.0	0.0	0.0	0.0	0.0	.4	.8	0.0	.6	0.0	.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	1
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	.2	0.0	.6	0.0	0.0	0.0	0.0	0.0	1
15	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	3.6	7.2	5.6	3.6	1.2	0.0	0.0	.2	.2	.4	.6	.6	.4	1
18	.2	.2	.8	.6	.4	.6	.6	.6	.8	.8	.6	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	.6	0.0	0.0	2
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	.6	1.8	2
23	2.8	2.2	3.4	1.4	1.4	.6	.2	0.0	0.0	0.0	0.0	0.0	.2	.2	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.8	2.6	2.0	2.2	.8	.2	0.0	2
30	.2	0.0	.2	0.0	0.0	.2	.2	.2	.2	.2	.2	.6	.8	.4	.2	.8	0.0	.4	.4	1.2	.2	.4	.4	.6	3
31	.6	1.0	.8	1.2	2.0	.6	.6	.4	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	.4	0.0	0.0	0.0	0.0	0.0	3

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	11.4	*****	**	325	.6	347	1.9	2
0600	10.1	*****	**	332	.7	070	2.5	6
0900	11.7	*****	**	266	2.5	252	5.1	29
1200	11.5	*****	**	244	5.3	240	7.6	33
1500	11.2	*****	**	248	5.4	247	7.6	17
1800	10.7	*****	**	242	5.3	243	7.6	6
2100	10.0	*****	**	249	4.5	247	7.0	1
2400	9.1	*****	**	252	3.6	252	6.3	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.7	*****	**	259	5.0	270	8.9	2
0600	8.0	*****	**	270	2.4	257	4.4	10
0900	9.8	*****	**	269	2.6	283	5.1	32
1200	12.7	7.4	70	258	3.4	278	6.3	54
1500	14.3	6.7	60	263	3.1	261	5.7	24
1800	13.6	7.4	66	244	3.9	240	7.0	15
2100	11.3	*****	**	251	3.1	243	5.7	2
2400	9.5	*****	**	267	2.2	264	3.8	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	9.1	*****	**	280	1.9	279	3.2	3
0600	10.1	*****	**	281	1.9	283	3.2	16
0900	12.6	*****	**	265	2.5	258	5.1	30
1200	17.0	6.2	49	272	1.9	243	4.4	64
1500	19.8	3.4	34	258	1.2	201	3.8	41
1800	15.3	*****	**	268	3.0	265	7.0	16
2100	14.6	*****	**	277	1.6	277	5.1	3
2400	13.1	*****	**	043	.7	004	2.5	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	11.2	*****	**	022	.9	008	2.5	3
0600	13.3	*****	**	304	1.0	295	2.5	18
0900	16.3	10.5	68	274	1.5	285	3.2	25
1200	20.1	8.8	48	003	1.8	035	5.7	24
1500	15.3	*****	**	033	.2	105	7.0	7
1800	14.2	*****	**	259	2.2	266	5.7	10
2100	11.9	*****	**	246	4.6	239	7.0	3
2400	10.3	*****	**	253	3.9	245	6.3	1

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	10.2	*****	**	256	2.8	258	5.1	2
0600	11.2	*****	**	257	3.3	253	5.1	17
0900	14.0	*****	**	250	3.2	242	5.1	38
1200	17.9	11.5	66	261	3.0	263	5.1	85
1500	21.2	12.4	57	257	2.7	246	5.7	77
1800	19.8	*****	**	257	3.7	251	5.7	26
2100	15.3	*****	**	250	4.5	260	7.6	3
2400	12.9	*****	**	245	4.3	246	7.0	1

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	11.1	*****	**	250	3.4	229	5.7	3
0600	11.0	*****	**	254	3.8	263	6.3	8
0900	13.2	*****	**	248	4.0	250	6.3	41
1200	15.6	*****	**	248	4.7	261	7.0	76
1500	11.8	*****	**	237	6.8	235	9.5	38
1800	10.2	*****	**	251	5.4	244	9.5	9
2100	9.2	*****	**	254	3.7	262	5.7	1
2400	8.4	*****	**	273	1.8	250	4.4	1

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.1	*****	**	279	1.5	285	2.5	2
0600	9.2	*****	**	266	1.1	282	2.5	13
0900	12.3	*****	**	189	.8	213	2.5	36
1200	14.6	7.7	63	234	.8	256	3.2	43
1500	15.3	7.6	60	202	.6	300	3.2	42
1800	15.7	8.0	60	078	1.1	129	2.5	18
2100	12.4	*****	**	328	.9	304	5.1	2
2400	8.9	*****	**	275	2.1	280	4.4	1

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.1	*****	**	349	1.2	353	2.5	3
0600	8.8	*****	**	099	.7	137	2.5	14
0900	13.6	4.5	54	121	1.1	102	5.1	42
1200	16.0	2.7	41	104	4.0	108	7.6	48
1500	15.1	4.8	50	257	3.9	262	6.3	40
1800	12.4	5.6	63	244	5.3	244	7.6	29
2100	8.8	*****	**	247	3.5	249	7.0	3
2400	7.3	*****	**	004	1.5	359	3.2	1

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.1	*****	**	062	2.8	076	8.3	2
0600	8.7	*****	**	070	4.0	078	7.6	13
0900	10.7	*****	**	071	3.9	076	7.0	30
1200	12.7	5.4	61	066	3.8	077	6.3	73
1500	15.4	3.1	44	046	2.5	059	7.0	46
1800	11.3	*****	**	012	.6	009	5.1	14
2100	9.1	*****	**	264	4.2	261	7.0	2
2400	7.7	*****	**	265	2.2	261	5.1	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.0	*****	**	282	1.8	288	3.8	2
0600	8.7	*****	**	258	1.8	257	4.4	21
0900	11.9	9.5	05	239	3.8	243	7.0	87
1200	14.2	3.3	48	257	4.4	246	7.6	31
1500	16.4	1.2	36	257	4.5	246	8.9	72
1800	10.8	6.8	76	262	4.4	259	8.3	3
2100	9.7	*****	**	288	2.1	019	6.3	2
2400	8.9	*****	**	275	2.8	281	5.1	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.1	*****	**	263	3.7	260	6.3	3
0600	9.0	*****	**	259	4.3	274	6.3	18
0900	10.7	*****	**	253	5.1	261	8.3	27
1200	12.7	*****	**	247	6.2	249	8.9	42
1500	13.8	8.3	69	248	5.4	246	8.3	76
1800	13.9	13.3	96	246	4.9	242	7.0	12
2100	11.1	*****	**	255	4.2	252	7.6	1
2400	9.4	*****	**	264	3.6	268	5.7	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.2	*****	**	245	4.4	236	7.0	3
0600	9.4	*****	**	244	4.0	251	7.0	24
0900	12.0	*****	**	241	4.6	241	7.6	76
1200	15.0	7.9	49	247	4.5	253	8.9	90
1500	17.1	6.1	39	248	5.9	241	8.9	86
1800	15.9	6.1	53	249	6.1	235	8.9	38
2100	10.2	*****	**	250	5.7	252	8.9	3
2400	8.6	*****	**	246	3.8	254	7.0	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.8	*****	**	265	2.1	252	4.4	2
0600	8.6	*****	**	260	1.6	251	5.1	6
0900	9.6	*****	**	265	2.4	264	4.4	22
1200	10.5	*****	**	264	1.8	279	4.4	25
1500	11.8	*****	**	257	1.2	265	5.1	15
1800	9.6	*****	**	251	2.4	238	7.0	15
2100	8.5	*****	**	101	.5	146	3.2	2
2400	8.3	*****	**	317	1.2	302	2.5	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.3	*****	**	019	.5	100	2.5	3
0600	9.1	*****	**	329	.3	004	1.9	31
0900	11.9	6.7	70	254	1.7	246	4.4	39
1200	12.7	4.9	59	267	4.6	257	9.5	50
1500	15.1	5.6	53	263	3.4	293	7.0	71
1800	12.5	*****	**	277	2.7	267	8.9	7
2100	10.6	*****	**	286	1.4	272	4.4	2
2400	10.2	*****	**	067	.7	124	2.5	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.8	*****	**	097	.6	072	1.9	2
0600	9.7	*****	**	092	1.0	100	1.9	13
0900	13.7	*****	**	275	1.7	286	5.1	77
1200	15.6	7.4	58	257	4.2	253	7.0	101
1500	16.9	7.0	52	274	3.1	251	7.0	27
1800	17.8	4.3	41	284	4.0	298	6.3	30
2100	13.0	10.2	83	297	2.6	285	5.1	3
2400	10.9	*****	**	289	1.2	288	2.5	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.9	*****	**	308	1.0	270	3.8	3
0600	10.6	*****	**	083	.8	092	1.9	33
0900	14.5	6.9	60	256	1.1	268	3.8	32
1200	16.4	7.7	56	268	3.4	262	7.0	44
1500	16.7	6.8	52	266	4.1	261	7.0	23
1800	14.4	8.0	65	291	3.7	285	7.0	7
2100	12.8	*****	**	287	2.6	298	5.7	2
2400	10.9	*****	**	266	1.7	261	3.8	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	9.9	*****	**	272	1.5	280	5.1	2
0600	10.3	*****	**	267	1.6	258	3.2	14
0900	13.1	7.2	67	259	2.2	239	3.8	91
1200	8.8	*****	**	249	3.3	235	9.5	4
1500	8.7	*****	**	239	4.8	240	8.3	10
1800	9.7	*****	**	243	3.5	245	6.3	9
2100	9.0	*****	**	289	1.4	259	3.8	1
2400	6.6	*****	**	068	1.5	006	3.2	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	5.9	*****	**	050	1.6	050	3.8	2
0600	5.7	*****	**	076	.7	049	3.2	9
0900	6.2	*****	**	139	1.1	125	3.8	18
1200	8.1	*****	**	125	2.0	122	4.4	34
1500	12.2	5.0	61	255	1.6	239	3.8	53
1800	11.9	1.8	50	324	2.2	338	4.4	11
2100	8.5	*****	71	357	1.7	354	3.8	2
2400	6.2	*****	**	024	1.0	032	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.0	*****	**	354	.8	054	1.9	3
0600	8.5	*****	**	322	.7	353	2.5	28
0900	*****	*****	**	254M	.9M	248M	3.2M	***
1200	15.4	.3	36	021M	1.4M	358M	3.8M	33
1500	16.8	-.1	32	316	1.5	290	4.4	32
1800	14.7	6.3	57	065	.5	231	8.9	26
2100	11.7	5.4	65	324	1.0	284	3.8	2
2400	*****	*****	**	229M	1.4M	247M	4.4M	***

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	272M	1.9M	290M	3.2M	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	271M	4.4M	269M	6.3M	***
1200	15.2	*****	**	263M	5.2M	252M	8.3M	86
1500	13.4	7.0	65	244	4.5	235	7.6	25
1800	13.1	*****	**	250	4.1	241	8.3	16
2100	10.4	*****	**	282	2.7	288	5.7	2
2400	*****	*****	**	274M	2.3M	259M	3.8M	***

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	178M	1.4M	186M	2.5M	***
0600	*****	*****	**	285M	.5M	315M	1.5M	***
0900	*****	*****	**	***	****	***	****	***
1200	16.5	-.8	31	208M	1.6M	265M	4.4M	90
1500	17.1	.1	32	068	1.6	118	5.7	26
1800	14.4	3.5	48	259	3.5	264	9.5	31
2100	10.8	*****	**	272	2.4	260	7.0	2
2400	*****	*****	**	355M	1.7M	350M	2.5M	***

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	171M	2.9M	170M	5.1M	***
0900	*****	*****	**	***	****	***	****	***
1200	18.3	2.0	34	238M	3.0M	236M	5.7M	76
1500	19.6	-1.6	24	239	4.2	240	7.6	71
1800	16.4	7.9	57	294	2.8	332	6.3	35
2100	12.7	*****	**	273	2.6	260	6.3	1
2400	10.8	*****	**	267	3.5	265	7.0	1

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.1	*****	**	268	3.6	265	7.0	1
0600	7.5	*****	**	240M	1.3M	268M	5.1M	8
0900	*****	*****	**	110M	.9M	110M	1.3M	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	10.2	*****	**	228M	3.0M	255M	5.7M	24
2100	*****	*****	**	238M	4.2M	235M	5.7M	***
2400	*****	*****	**	288M	1.0M	294M	1.9M	***

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	11.5	8.9	84	240M	1.8M	275M	3.2M	32
1200	13.9	1.5	43	225M	1.8M	253M	5.1M	62
1500	14.7	2.5	44	260	2.4	246	5.7	39
1800	13.1	5.1	58	265	3.8	276	7.6	11
2100	10.8	*****	**	253	2.1	251	4.4	2
2400	8.5	*****	**	283	1.2	295	2.5	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	230M	.9M	277M	1.5M	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	17.0	-1.3	29	263M	2.1M	277M	5.1M	79
1500	16.9	-.5	31	268	3.3	264	7.0	72
1800	14.7	1.8	42	277	4.6	278	8.3	23
2100	10.2	*****	**	288	3.1	292	6.3	2
2400	8.5	*****	**	286	1.7	280	2.5	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	295M	1.6M	295M	1.9M	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	15.9	4.3	46	272	4.1	259	7.6	94
1500	15.9	3.9	45	272	4.7	266	7.6	67
1800	13.6	4.8	55	272	4.8	258	8.3	23
2100	11.3	*****	**	278	2.3	287	6.3	1
2400	9.9	*****	**	255	1.0	281	2.5	1

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.5	*****	**	287	.9	301	1.9	2
0600	9.7	*****	**	083	.8	084	1.9	18
0900	*****	*****	50	165M	.1M	301M	3.2M	55
1200	18.5	-1.5	26	355	.4	125	6.3	87
1500	19.4	-1.2	25	265	2.3	283	8.3	77
1800	18.7	.2	29	271	2.5	279	5.1	18
2100	13.7	5.4	57	273	2.4	250	3.8	2
2400	11.6	*****	**	295	1.3	276	2.5	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.1	*****	**	013	1.5	358	3.2	2
0600	*****	*****	**	067M	1.0M	019M	1.9M	***
0900	16.6	6.4	51	162M	.9M	115M	2.5M	56
1200	20.8	2.0	29	246	1.7	269	5.7	83
1500	21.4	-1.2	22	272	4.9	279	9.5	67
1800	19.5	-1.1	25	270	5.3	272	8.3	27
2100	12.9	5.6	61	262	3.4	260	7.6	2
2400	12.7	*****	**	268	2.3	239	5.1	1

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	10.6	*****	**	263	2.7	255	6.3	1
0600	12.2	*****	**	273	2.0	259	3.2	30
0900	15.9	8.7	62	241	3.6	236	6.3	68
1200	18.7	4.4	39	243	4.1	242	7.0	90
1500	17.8	6.9	49	241	4.2	231	7.6	28
1800	11.9	*****	**	238	5.6	238	10.2	6
2100	9.7	*****	**	253	2.9	241	5.7	1
2400	9.4	*****	**	274	2.0	270	3.8	1

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	9.3	*****	**	269	2.8	258	4.4	1
0600	9.2	*****	**	264	3.4	258	5.1	4
0900	10.2	*****	**	259	3.1	258	5.1	15
1200	11.0	*****	**	244	3.6	246	5.7	22
1500	11.7	*****	**	252	3.7	247	5.7	22
1800	11.0	*****	**	254	3.6	253	6.3	8
2100	9.7	*****	**	253	2.3	254	3.8	1
2400	9.1	*****	**	274	1.6	270	3.2	1

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.5	*****	**	256	1.8	253	3.8	1
0600	8.9	*****	**	244	1.5	253	3.2	11
0900	11.0	*****	**	268	2.0	274	3.8	46
1200	14.0	*****	**	279	1.5	279	3.8	39
1500	16.1	*****	**	360	1.6	007	3.8	71
1800	12.7	*****	**	272	1.2	322	5.1	30
2100	11.5	*****	**	258	.4	260	2.5	1
2400	10.5	*****	**	276	1.3	256	3.2	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

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 SPD. M/S	P'VAL. DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	12.7	9.0	10.9	251	3.3	3.6	240	7.6	WSW			7.4	3450	1
2	15.1	7.7	11.4	259	3.2	3.3	270	8.9	W			4.2	5138	2
3	19.8	8.8	14.3	274	1.7	2.0	265	7.0	W			.4	6178	3
4	21.0	10.3	15.7	269	1.5	2.4	105	7.0	WSW			1.4	3293	4
5	22.2	10.2	16.2	253	3.4	3.5	260	7.6	WSW			0.0	6813	5
6	15.6	8.4	12.0	249	4.2	4.2	235	9.5	WSW			.4	5000	6
7	15.9	8.0	12.0	264	.6	1.4	304	5.1	W			.2	4618	7
8	16.2	6.5	11.4	241	.9	2.9	108	7.6	WSW			0.0	5910	8
9	16.2	6.8	11.5	051	1.4	3.3	076	8.3	ENE			.4	5015	9
10	17.3	6.7	12.0	262	3.1	3.4	246	8.9	WSW			11.2	7363	10
11	15.0	7.8	11.4	253	4.7	4.7	249	8.9	WSW			.2	4450	11
12	17.8	8.1	13.0	247	5.1	5.2	253	8.9	WSW			0.0	8908	12
13	13.6	7.8	10.7	264	1.5	2.1	238	7.0	W			4.0	3530	13
14	15.1	6.8	11.0	273	1.6	2.2	257	9.5	W			1.2	5925	14
15	18.2	7.2	12.7	277	1.8	2.4	253	7.0	WNW			.2	6533	15
16	18.3	7.9	13.1	277	2.0	2.4	262	7.0	W			0.0	5493	16
17	14.9	6.6	10.8	253	2.0	2.6	235	9.5	WSW			24.2	3225	17
18	13.7	5.4	9.6	031	.5	1.7	122	4.4	N			6.6	4233	18
19	17.8M	4.2M	11.0M	323M	.6M	1.5M	231M	8.9M	N (M)			4.8	6251M	19
20	15.9M	4.7M	10.3M	260M	3.4M	3.6M	252M	8.3M	W (M)			.8	6550M	20
21	17.8M	4.2M	11.0M	267M	1.0M	2.4M	264M	9.5M	W (M)			0.0	7707M	21
22	20.6M	10.8M	15.7M	258M	2.9M	3.4M	240M	7.6M	W (M)			2.8	9032M	22
23	11.1M	7.4M	9.3M	251M	2.4M	3.1M	265M	7.0M	WSW (M)			13.0	2172M	23
24	15.9M	8.5M	12.2M	256M	2.2M	2.3M	276M	7.6M	W (M)			0.0	7241M	24
25	17.4M	4.2M	10.8M	276M	2.8M	2.9M	278M	8.3M	WNW (M)			0.0	8526M	25
26	16.8M	8.5M	12.7M	272M	3.3M	3.4M	258M	8.3M	W (M)			0.0	8424M	26
27	20.2M	7.9M	14.1M	278M	1.1M	1.7M	283M	8.3M	W (M)			0.0	7487M	27
28	22.1M	5.0M	13.6M	271M	2.3M	3.0M	279M	9.5M	W (M)			0.0	7733M	28
29	19.3	9.4	14.4	249	3.3	3.4	238	10.2	WSW			8.6	6293	29
30	11.9	9.0	10.5	257	3.0	3.0	253	6.3	WSW			8.0	2485	30
31	16.1	8.5	12.3	275	1.2	1.6	322	5.1	W			13.4	4985	31
MONTH	22.2M	4.2M	12.2M	261M	2.1M	2.9M	238M	10.2M	WSW (M)	M	M	113.4	179956M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 8.9
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 8.3
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 9.5
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 8.9

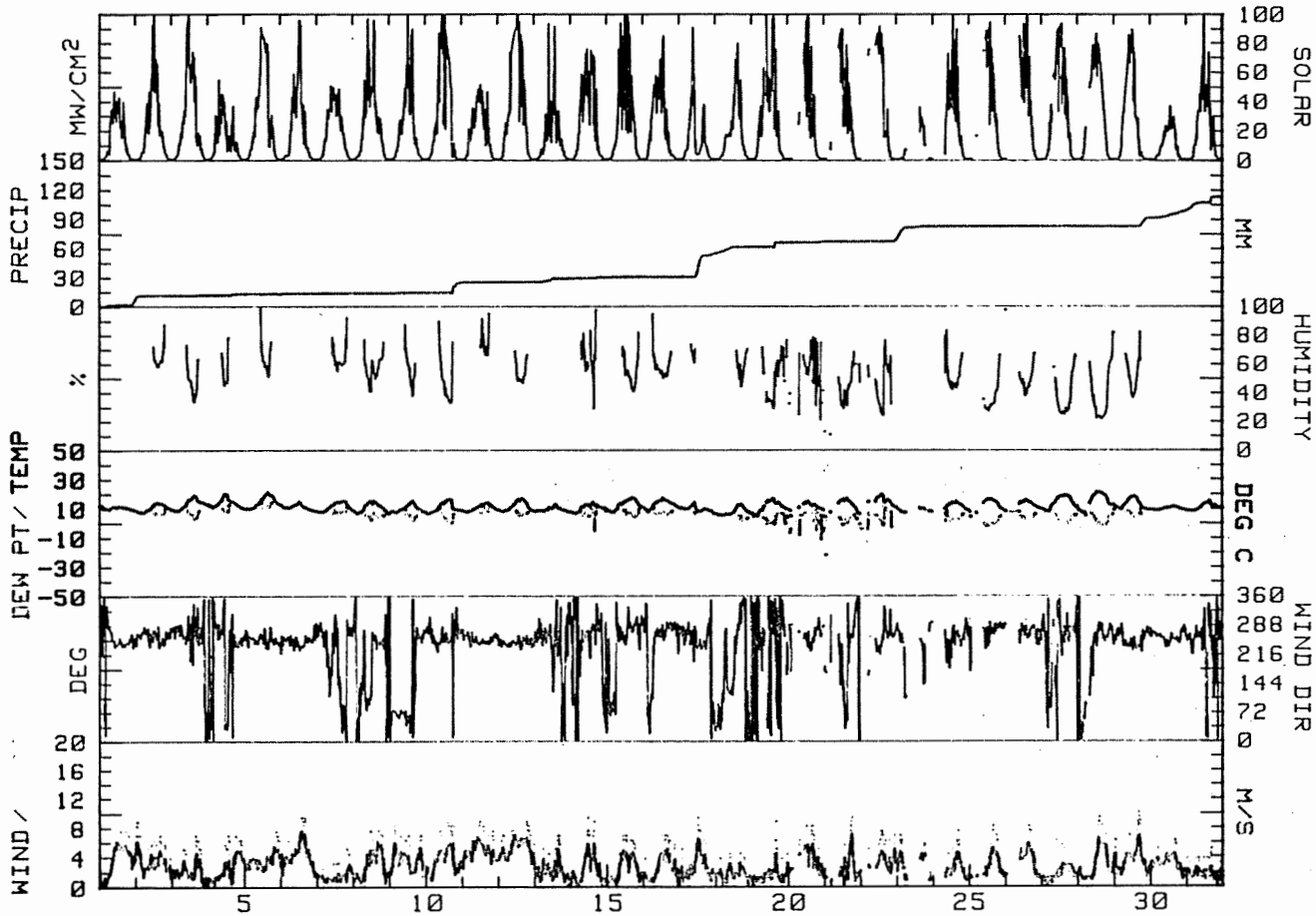
NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

July, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING July, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.86	3.05	0.00	.04	0.00	0.00	0.00	3.95
NNE	.41	1.38	.15	0.00	0.00	0.00	0.00	1.94
NE	.22	1.71	.34	0.00	0.00	0.00	0.00	2.27
ENE	.45	1.19	1.30	.07	0.00	0.00	0.00	3.02
E	.52	1.38	.26	0.00	0.00	0.00	0.00	2.16
ESE	.41	1.34	.30	0.00	0.00	0.00	0.00	2.05
SE	.15	1.04	.07	0.00	0.00	0.00	0.00	1.27
SSE	.15	.82	.04	0.00	0.00	0.00	0.00	1.01
S	.30	.93	.07	0.00	0.00	0.00	0.00	1.30
SSW	.30	.63	.11	0.00	0.00	0.00	0.00	1.04
SW	.41	1.41	3.20	.48	0.00	0.00	0.00	5.51
WSW	.56	7.00	20.36	2.35	0.00	0.00	0.00	30.27
W	.89	14.59	10.87	.34	0.00	0.00	0.00	26.69
WNW	.71	8.75	2.79	0.00	0.00	0.00	0.00	12.25
NW	.63	1.79	.15	0.00	0.00	0.00	0.00	2.57
NNW	.45	1.97	.19	0.00	0.00	0.00	0.00	2.61
CALM								.11
TOTAL	7.41	48.99	40.21	3.28	0.00	0.00	0.00	100.00

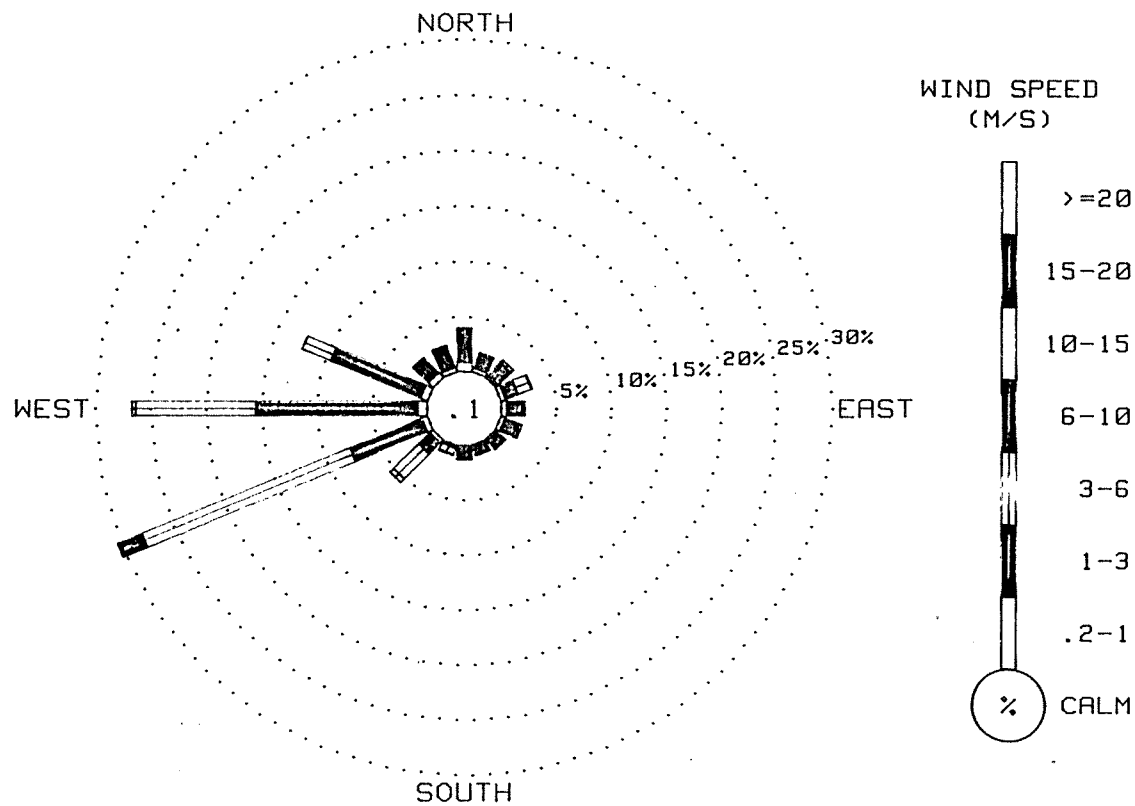
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
2686 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY
2976 WIND OBSERVATIONS WOULD HAVE BEEN CORRECT FOR 15 MINUTE DATA.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

July, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

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	DAT
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.6	.4	0.0	0.0	
6	—	—	—	—	—	1.0	—	—	—	—	—	.2	—	—	—	—	—	—	—	.4	0.0	0.0	0.0	0.0	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	1.8	—	2.8	
8	—	1.6	0.0	—	—	4.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.6	0.0	.2	
9	—	—	—	—	—	4.0	.2	0.0	.2	0.0	.2	.2	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	.2	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	—	—	—	—	—	—	1
12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
13	—	—	—	—	—	—	—	—	—	—	—	—	—	25.8	—	—	—	—	—	—	—	—	—	.4	1
14	.6	—	—	1.0	—	—	.4	—	—	—	—	—	—	—	—	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	—	—	—	—	—	—	2.6	—	.4	1
16	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.6	—	—	—	—	2
21	—	.2	—	—	—	—	—	1.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.2	2
22	—	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	—	—	—	—	2.0	0.0	2.2	—	—	1.2	—	2
23	4.0	1.4	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	—	—	—	—	—	—	3.4	0.0	—	.2	—	1.0	—	2
24	—	—	4.6	.8	.6	0.0	0.0	—	1.2	0.0	.2	.2	0.0	—	—	—	—	—	1.0	—	—	—	—	1.8	2
25	0.0	0.0	0.0	0.0	.4	0.0	.4	.2	—	—	—	—	—	—	—	—	—	—	—	1.2	0.0	0.0	0.0	0.0	2
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
27	0.0	0.0	0.0	0.0	0.0	0.0	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	2
28	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	2
29	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	2
30	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	3
31	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	3

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	10.0	*****	**	312	1.0	297	1.9	1
0600	10.3	*****	**	262	2.7	258	5.1	11
0900	12.6	*****	**	260	3.2	261	5.1	34
1200	16.9	7.8	55	242	3.0	248	5.1	129
1500	17.3	4.2	42	255	2.5	282	4.4	33
1800	13.6	*****	**	238	1.8	198	5.1	6
2100	11.9	*****	**	280	2.3	304	5.1	1
2400	8.7	*****	**	308	1.3	303	2.5	1

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.4	*****	**	329	1.2	324	1.9	1
0600	10.6	*****	**	013	.7	020	2.5	25
0900	15.1	3.5	46	271	1.3	278	3.8	79
1200	18.3	1.2	32	351	1.1	040	5.1	46
1500	18.6	-1.4	26	355	2.2	005	5.1	77
1800	15.9	.3	35	001	3.7	358	7.0	16
2100	12.5	2.6	51	008	3.0	010	5.1	2
2400	10.9	3.0	58	057	1.7	012	3.2	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	7.8	*****	**	027	1.2	042	3.2	1
0600	11.3	*****	64	059	1.0	004	2.5	25
0900	16.1	5.1	48	108	2.0	121	4.4	65
1200	19.4	-.2	27	133	2.0	122	5.1	83
1500	21.3	*****	**	230	1.8	238	7.0	66
1800	17.6	*****	**	273M	3.9M	265M	7.0M	10
2100	*****	*****	**	281M	3.5M	281M	5.4M	***
2400	*****	*****	**	***	****	***	****	***

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	305M	.5M	305M	1.3M	***

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	8.5	*****	**	091M	1.4M	091M	1.9M	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	097M	.6M	097M	1.3M	***
1500	*****	*****	**	181M	1.5M	267M	7.0M	***
1800	*****	*****	**	264M	3.9M	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	9.6	*****	**	005M	.4M	002M	1.3M	17
0900	*****	*****	**	099M	.7M	127M	1.3M	***
1200	*****	*****	**	145M	.9M	145M	2.5M	***
1500	*****	*****	**	262M	2.9M	262M	4.4M	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	014M	.7M	025M	1.3M	***

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	004M	1.0M	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	228M	.8M	***	****	***

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	8.5	*****	**	***	****	***	****	***
0600	*****	*****	**	280M	2.5M	280M	3.8M	***
0900	9.6	*****	**	251M	2.0M	260M	3.8M	19
1200	10.7	*****	**	233M	1.8M	245M	4.4M	30
1500	12.1	6.0	66	252M	1.9M	266M	3.8M	21
1800	12.3	1.6	48	271	2.5	283	6.3	10
2100	*****	*****	**	277M	1.5M	283M	4.4M	***
2400	8.5	*****	6	278M	.6M	268M	2.5M	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.9	*****	**	281M	.7M	291M	2.5M	1
0600	*****	*****	**	285M	1.3M	281M	2.5M	***
0900	*****	*****	**	***	****	***	****	***
1200	13.5	1.1	43	264M	2.4M	248M	5.7M	84
1500	14.7	.0	37	266M	3.4M	280M	6.3M	64
1800	*****	*****	**	273M	3.5M	266M	6.3M	***
2100	*****	*****	**	***	****	***	****	***
2400	10.2	*****	**	285M	2.3M	285M	3.2M	2

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	15.6	-.7	33	228M	2.1M	206M	5.1M	80
1500	*****	*****	**	284M	3.5M	283M	7.6M	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	134M	1.3M	125M	3.2M	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	290M	2.1M	***	****	***
0600	*****	*****	**	245M	3.1M	***	****	***
0900	*****	*****	**	279M	1.9M	270M	3.8M	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	062M	1.0M	116M	3.2M	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	302M	1.5M	309M	2.5M	***

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	314M	1.1M	322M	1.9M	***
0600	*****	*****	**	311M	.9M	325M	1.3M	***
0900	6.0	*****	**	269M	2.1M	262M	3.8M	31
1200	*****	*****	**	264M	2.5M	257M	4.4M	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	350M	1.0M	***	****	***
2400	4.3	*****	**	304M	.8M	***	****	***

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	258M	2.4M	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	9.4	4.8	73	259M	4.0M	252M	6.3M	59
1200	13.4	1.3	44	236	3.8	241	7.0	94
1500	*****	*****	**	252M	3.6M	239M	7.0M	***
1800	*****	*****	**	247M	2.2M	***	****	***
2100	6.8	*****	**	338M	.7M	295M	2.5M	1
2400	4.1	*****	**	005M	1.9M	004M	3.2M	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	012M	1.6M	006M	3.2M	***
0600	3.7	*****	**	076M	1.0M	080M	1.9M	14
0900	*****	*****	**	115M	1.2M	135M	2.5M	***
1200	*****	*****	**	222M	1.1M	226M	1.9M	***
1500	*****	*****	**	283M	2.5M	283M	3.2M	***
1800	*****	*****	**	256M	2.6M	252M	3.8M	***
2100	6.5	*****	**	358M	1.4M	359M	2.5M	1
2400	5.6	*****	**	015M	.9M	358M	5.5M	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	046M	1.4M	046M	3.2M	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	226M	.9M	215M	3.2M	***
1500	16.4	12.4	77	354M	1.7M	324M	6.3M	63
1800	*****	*****	**	049M	3.2M	051M	6.3M	***
2100	7.6	-12.8	22	080M	2.0M	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	14.9	*****	**	127M	1.7M	109M	4.4M	74
1500	16.5	*****	**	256	1.7	226	6.3	54
1800	*****	*****	**	248M	3.4M	232M	5.7M	***
2100	*****	*****	**	***	****	***	****	***
2400	8.5	*****	**	285M	1.4M	285M	1.9M	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	095M	.8M	101M	1.3M	***
0600	*****	*****	**	049M	2.6M	***	****	***
0900	*****	*****	**	069M	2.5M	069M	3.8M	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	6.6	*****	7	348M	.6M	003M	.6M	1

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	358M	1.3M	357M	1.9M	***
0600	*****	*****	**	026M	.7M	357M	1.3M	***
0900	8.3	*****	**	264M	.7M	264M	2.5M	21
1200	*****	*****	**	266M	1.0M	264M	1.9M	***
1500	*****	*****	**	***	****	***	****	***
1800	8.9	*****	**	121M	1.1M	110M	1.3M	6
2100	*****	*****	**	056M	.1M	102M	1.9M	***
2400	*****	*****	**	012M	1.1M	356M	3.2M	***

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	072M	1.3M	067M	4.9M	1
0600	*****	*****	**	063M	.8M	034M	1.9M	6
0900	6.8	*****	**	068M	1.0M	033M	2.5M	28
1200	*****	*****	**	124M	2.0M	127M	3.2M	***
1500	*****	*****	**	***	****	***	****	***
1800	6.1	*****	**	178M	1.2M	127M	3.2M	7
2100	5.1	*****	**	107M	.3M	166M	1.3M	***
2400	*****	*****	**	157M	.4M	152M	1.9M	***

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.2	*****	**	267M	2.4M	258M	3.8M	1
0600	2.0	*****	**	262M	1.8M	250M	3.8M	3
0900	3.4	*****	**	244M	1.3M	243M	4.4M	24
1200	8.1	*****	**	287M	.3M	111M	3.8M	64
1500	*****	*****	**	064M	.6M	037M	3.2M	***
1800	*****	*****	**	***	****	***	****	***
2100	3.2	*****	**	032M	1.2M	002M	3.2M	***
2400	2.2	*****	**	092M	1.6M	088M	4.9M	1

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	099M	2.7M	102M	3.8M	1
0600	*****	*****	**	095M	2.9M	095M	4.4M	***
0900	*****	*****	**	092M	3.3M	084M	5.1M	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	7.0	*****	**	071M	2.5M	074M	5.7M	***
2400	6.0	*****	**	067M	1.7M	073M	3.2M	1

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	6.5	*****	**	081M	1.9M	089M	4.4M	1
0600	7.9	*****	**	063M	2.2M	068M	4.4M	8
0900	*****	*****	**	072M	2.6M	106M	5.1M	***
1200	*****	*****	**	128M	3.4M	128M	4.4M	***
1500	13.2	3.6	52	105M	2.4M	120M	5.7M	56
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	328M	.9M	333M	2.5M	1
2400	*****	*****	**	308M	1.3M	289M	3.2M	***

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	328M	1.2M	327M	3.2M	***
0600	*****	*****	**	342M	1.3M	329M	2.5M	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 31

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	17.8	8.7	13.3	263	2.1	2.3	258	5.1	W	52	6.0	0.0	4858	1
2	20.1	6.1	13.1	359	1.6	2.1	358	7.0	N	40	1.4	0.0	6433	2
3	21.4M	5.4M	13.4M	141M	.3M	2.1M	238M	7.0M	ESE(M)	41M	1.8M	0.0	10037M	3
4	*****	*****	*****	***	****	****	***	****	***	**	*****	—	******	4
5	8.2M	8.2M	8.2M	305M	.5M	.5M	305M	1.3M	NW (M)	**	*****	21.0	240M	5
6	14.1M	7.5M	10.8M	192M	1.0M	2.2M	267M	7.0M	SSE(M)	60M	4.4M	1.6	11387M	6
7	15.0M	7.5M	11.3M	279M	.3M	1.3M	262M	4.4M	NNE(M)	47M	4.9M	4.6	6744M	7
8	9.0M	7.9M	8.5M	311M	.3M	.9M	***	****	N (M)	6M	-27.6M	14.2	240M	8
9	13.4M	8.2M	10.8M	259M	1.7M	1.9M	283M	6.3M	W (M)	60M	4.1M	5.6	4622M	9
10	15.0M	6.6M	10.8M	270M	2.1M	2.2M	280M	6.3M	W (M)	44M	1.3M	0.0	9458M	10
11	16.3M	13.1M	14.7M	262M	2.5M	2.8M	283M	7.6M	SW (M)	37M	.5M	0.0	16244M	11
12	*****	*****	*****	***	****	****	***	****	***	**	*****	0.0	******	12
13	10.3M	8.5M	9.4M	134M	1.3M	1.4M	125M	3.2M	E (M)	63M	2.9M	26.2	18240M	13
14	9.5M	2.4M	6.0M	285M	1.2M	1.9M	270M	3.8M	W (M)	**	*****	3.4	5215M	14
15	7.7M	1.0M	4.4M	275M	1.7M	1.9M	257M	4.4M	W (M)	**	*****	3.0	4360M	15
16	14.4M	2.3M	8.4M	255M	2.5M	3.1M	241M	7.0M	WSW (M)	49M	1.2M	.2	11362M	16
17	12.3M	2.3M	7.3M	006M	.6M	1.5M	358M	5.5M	N (M)	52M	2.3M	.2	3678M	17
18	16.4M	3.7M	10.1M	027M	1.2M	2.3M	324M	6.3M	NE (M)	38M	-2.4M	0.0	13898M	18
19	17.0M	8.5M	12.8M	213M	.9M	2.3M	226M	6.3M	ESE(M)	32M	-3.3M	0.0	15725M	19
20	*****	*****	*****	***	****	****	***	****	***	**	*****	—	******	20
21	6.8M	5.3M	6.1M	062M	1.4M	1.7M	069M	3.8M	ENE(M)	**	*****	9.4	1920M	21
22	9.0M	6.0M	7.5M	307M	.4M	1.0M	356M	3.2M	N (M)	**	*****	—	2016M	22
23	7.9M	4.3M	6.1M	102M	.9M	1.3M	067M	4.9M	ESE(M)	**	*****	—	2936M	23
24	8.5M	1.8M	5.2M	280M	.3M	1.8M	088M	4.9M	W (M)	**	*****	26.2	5175M	24
25	7.3M	1.0M	4.2M	088M	2.6M	2.7M	074M	5.7M	E (M)	**	*****	2.2	993M	25
26	13.8M	5.1M	9.5M	071M	1.4M	2.2M	120M	5.7M	NE (M)	57M	3.4M	0.0	4520M	26
27	6.0M	1.6M	3.8M	332M	1.1M	1.2M	327M	3.2M	N (M)	**	*****	0.0M	240M	27
28	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	28
29	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	29
30	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	30
31	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	31
MONTH	21.4M	1.0M	9.0M	283M	.6M	2.0M	283M	7.6M	W (M)	46M	.1M	117.8M	160540M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 5.7
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 6.3
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 6.3
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 2.5

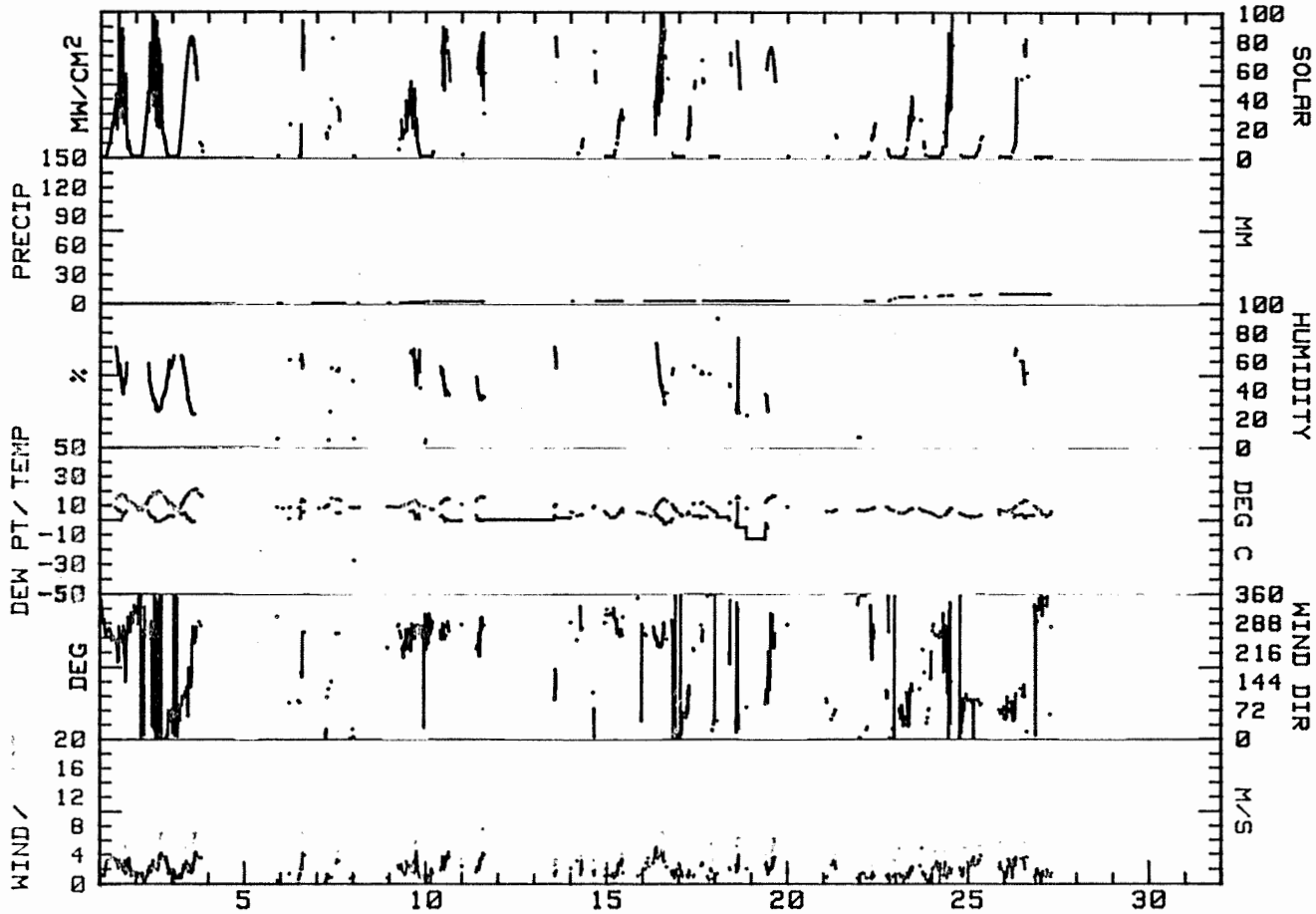
NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

August, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING August, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	2.14	6.43	2.28	0.00	0.00	0.00	0.00	10.86
NNE	1.21	2.95	.27	0.00	0.00	0.00	0.00	4.42
NE	1.74	3.08	.67	0.00	0.00	0.00	0.00	5.50
ENE	1.34	4.69	.40	0.00	0.00	0.00	0.00	6.43
E	.80	4.02	1.07	0.00	0.00	0.00	0.00	5.90
ESE	.40	4.83	.67	0.00	0.00	0.00	0.00	5.90
SE	.27	1.74	.27	0.00	0.00	0.00	0.00	2.28
SSE	0.00	2.28	0.00	0.00	0.00	0.00	0.00	2.28
S	0.00	.80	0.00	0.00	0.00	0.00	0.00	.80
SSW	.13	1.47	.13	0.00	0.00	0.00	0.00	1.74
SW	.67	3.89	1.74	0.00	0.00	0.00	0.00	6.30
WSW	1.07	5.50	5.63	0.00	0.00	0.00	0.00	12.20
W	1.07	11.66	5.50	0.00	0.00	0.00	0.00	18.23
WNW	.54	6.70	1.47	0.00	0.00	0.00	0.00	8.71
NW	.40	4.29	0.00	0.00	0.00	0.00	0.00	4.69
NNW	1.07	2.55	0.00	0.00	0.00	0.00	0.00	3.62
CALM								.13
TOTAL	12.87	66.89	20.11	0.00	0.00	0.00	0.00	100.00

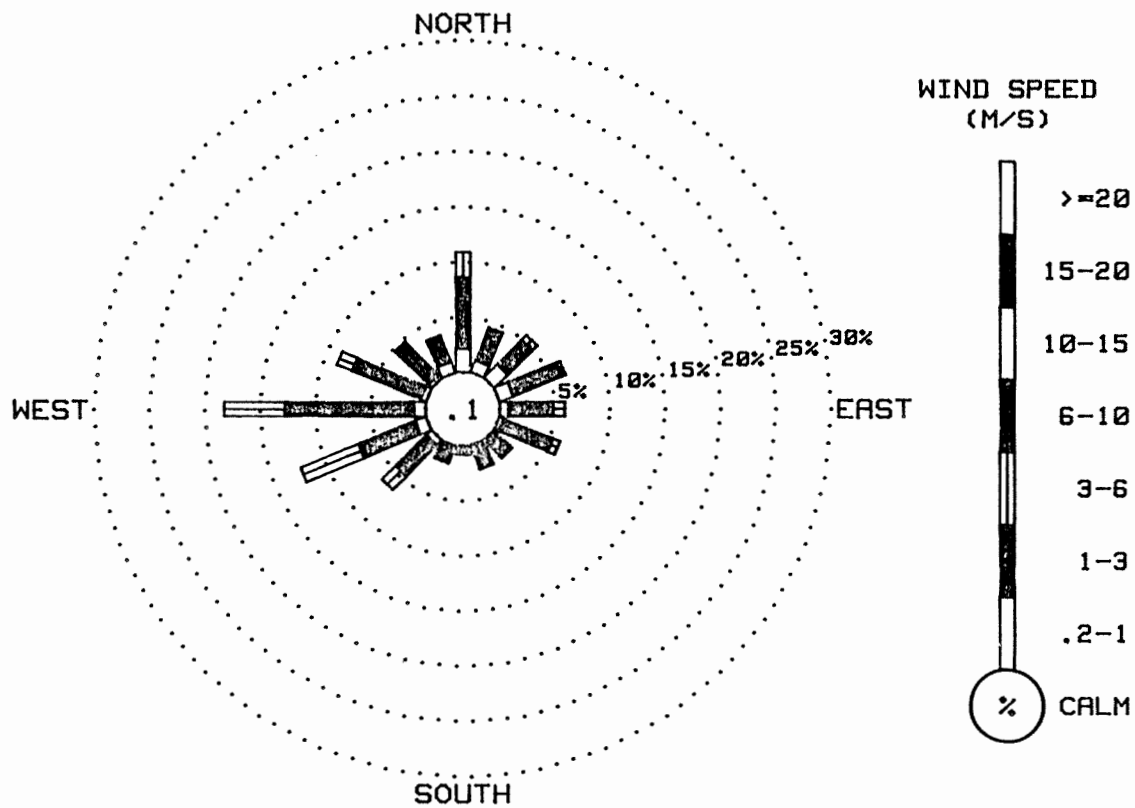
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
746 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY
2976 WIND OBSERVATIONS WOULD HAVE BEEN CORRECT FOR 15 MINUTE DATA.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

August, 1983



WIND ROSE PLOT

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

HOURLY PRECIPITATION SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

PRECIPITATION VALUES ARE IN MILLIMETERS

HOUR ENDING

DATE	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	DATE
1	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	1
2	****	****	****	****	****	****	****	****	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	1.4	.2	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	.6	.2	19
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	.4	.2	.2	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	****	****	****	****	****	****	21
22	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	22
23	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	23
24	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	24
25	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	25
26	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	26
27	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	27
28	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	28
29	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	29
30	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	30

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

DAY 01

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 02

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	54
1200	*****	*****	**	***	****	***	****	67
1500	*****	*****	**	***	****	***	****	44
1800	*****	*****	**	***	****	***	****	8
2100	*****	*****	**	***	****	***	****	1
2400	*****	*****	**	***	****	***	****	1

DAY 03

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	1
0600	*****	*****	**	***	****	***	****	9
0900	*****	*****	**	***	****	***	****	0
1200	*****	*****	**	***	****	***	****	38
1500	*****	*****	**	***	****	***	****	27
1800	*****	*****	**	***	****	***	****	5
2100	3.2	-5.2	54	065m	1.7m	048m	5.1m	1
2400	1.4	-6.2	57	084	2.0	086	3.2	1

DAY 04

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	.1	*****	61	***	****	059	2.5	1
0600	.8	*****	64	***	****	092	2.5	6
0900	5.7	*****	50	***	****	119	3.8	28
1200	7.1	-4.7	43	020m	2.7m	358m	5.7m	43
1500	9.7	3.7	66	027m	3.0m	025m	5.1m	***
1800	*****	*****	**	***	****	095m	6.1m	***
2100	*****	*****	**	***	****	126m	3.8m	***
2400	*****	*****	**	***	****	***	****	***

DAY 05

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 06

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 07

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	5.0	2.8	86	113m	1.6m	266m	8.3m	3
2100	*****	*****	**	***	****	025m	3.2m	***
2400	*****	*****	**	***	****	***	****	***

DAY 08

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	024m	1.9m	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 09

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	GUST M/S	MAX. RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	138m	1.6m	***
0900	*****	*****	**	***	****	***	****	***
1200	8.2	*****	**	161m	.7m	***	****	***
1500	8.8	3.3	68	272m	2.5m	280m	6.3m	17
1800	7.1	2.6	73	296	.9	319	3.2	3
2100	3.8	1.7	86	310	.9	357	2.5	1
2400	3.1	1.3	88	341m	1.0m	355m	1.9m	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

DAY 10

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	050M	2.9M	***
0600	*****	*****	**	***	****	***	****	***
0900	6.0	*****	**	152M	.9M	182M	2.8M	***
1200	*****	*****	76	***	****	***	****	***
1500	10.4	2.0	56	264M	2.8M	252M	5.1M	53
1800	8.9	1.8	61	258	2.8	257	5.1	3
2100	5.9	1.7	74	353	1.2	000	3.8	1
2400	4.5	1.9	83	018	1.6	006	3.2	1

DAY 11

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.7	1.4	91	065	1.1	098	2.5	1
0600	1.6	.4	92	103M	1.4M	097M	3.2M	4
0900	4.8	*****	**	091M	2.1M	093M	4.4M	16
1200	9.5	.9	55	131M	1.4M	096M	3.8M	26
1500	10.5	.8	51	104	2.4	088	4.4	12
1800	8.7	*****	55	094	1.5	105	3.2	2
2100	6.2	.4	66	019	.7	031	2.5	1
2400	4.5	.3	74	018	1.3	003	2.5	1

DAY 12

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	012	2.5	***
0600	2.8	.4	84	029	1.4	005	2.5	4
0900	*****	*****	**	100M	1.0M	119M	4.5M	***
1200	11.0	.1	47	196M	1.4M	135M	4.1M	62
1500	9.8	.4	52	259	1.8	258	4.4	16
1800	7.5	*****	63	284	2.0	293	5.7	3
2100	5.1	1.8	79	275	1.4	254	3.2	1
2400	3.4	*****	94	246	.6	192	2.5	1

DAY 13

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	1.3	-37.9	3	072	.7	068	2.5	1
0600	2.7	.7	87	062	2.0	072	5.7	3
0900	4.0	.7	79	079	5.1	087	8.3	15
1200	6.2	1.6	72	089	5.4	089	9.5	19
1500	7.8	1.5	64	091	4.8	088	8.3	18
1800	7.2	1.1	65	090	4.8	095	7.6	3
2100	3.7	-.5	74	077	4.4	084	7.0	1
2400	2.4	-1.2	77	056	3.4	057	5.1	1

DAY 14

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	2.2	-.9	80	070	3.2	080	5.1	1
0600	3.2	.1	80	058	3.1	057	5.1	4
0900	3.8	1.3	84	081	2.9	091	5.7	9
1200	5.1	3.7	91	090	2.9	087	5.7	29
1500	4.4	3.9	97	263	3.1	228	5.7	27
1800	3.1	2.7	97	279	3.0	285	5.7	2
2100	.9	-31.2	7	267	1.6	294	3.8	1
2400	.7	*****	6	304	.9	311	1.9	1

DAY 15

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	.7	*****	5	300	.6	252	2.5	1
0600	.3	-33.1	6	278	1.4	257	4.4	3
0900	*****	*****	**	***	****	353M	1.9M	***
1200	5.4	.2	69	303M	.8M	307M	3.2M	31
1500	6.8	-.2	61	111	1.4	320	4.4	38
1800	5.0	-2.1	60	055	2.2	069	4.4	3
2100	1.9	*****	72	015	1.7	014	4.4	1
2400	1.3	-3.0	73	002	.9	000	1.9	1

DAY 16

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-1.3	*****	86	015	1.2	005	2.5	1
0600	*****	*****	93	021M	.7M	004M	2.8M	3
0900	*****	*****	**	***	****	088M	1.6M	***
1200	8.9	-1.0	50	137M	1.1M	124M	3.8M	57
1500	10.2	-2.2	42	102	2.3	126	6.3	38
1800	6.2	-3.2	51	091	2.5	087	5.1	3
2100	1.8	-3.4	68	044	1.8	029	3.2	1
2400	.1	-3.4	77	013	1.8	013	3.2	1

DAY 17

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-2.4	-4.1	88	028	1.5	049	2.6	1
0600	-3.2	-3.9	95	056	1.1	011	2.6	8
0900	*****	*****	**	***	****	125M	4.5M	***
1200	8.3	-1.0	52	166M	1.0M	246M	5.1M	56
1500	9.4	-2.3	44	257	4.0	243	6.3	36
1800	5.5	-3.9	51	286	3.2	282	6.3	2
2100	2.5	-3.4	65	347	.8	322	2.5	1
2400	-1.6	-4.4	81	012	1.9	001	3.2	1

DAY 18

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	-3.2	-5.2	86	039	1.8	025	3.2	1
0600	-3.6	-5.3	88	054M	2.6M	042M	4.4M	6
0900	*****	*****	**	***	****	081M	1.9M	***
1200	7.9	-1.9	50	098M	2.2M	094M	5.7M	35
1500	7.8	-3.8	44	098	4.1	108	7.0	19
1800	5.1	-3.4	54	079	3.8	092	6.3	2
2100	3.5	-4.0	58	046	2.4	045	3.8	1
2400	2.8	-3.9	61	042	2.3	051	3.8	1

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

DAY 19

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.5	-2.6	64	068	3.0	084	6.3	1
0600	2.7	-2.8	67	074	4.1	080	7.6	4
0900	4.1	-1.6	66	081	5.6	085	8.9	11
1200	5.5	-.7	64	091	6.5	093	9.5	21
1500	7.1	.6	63	088	6.2	093	10.2	22
1800	6.1	.3	66	080	4.9	094	8.9	1
2100	3.3	-38.7	2	078	4.7	081	8.3	1
2400	2.2	-27.6	9	074	3.9	075	7.0	1

DAY 20

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	3.3	-30.9	6	068	3.5	070	7.0	1
0600	4.3	-35.8	3	067	3.7	074	6.3	2
0900	5.9	4.8	93	072	4.0	083	7.6	34
1200	7.5	5.5	87	089	4.7	095	8.3	22
1500	8.2	6.8	91	069	3.4	073	7.0	10
1800	6.3	-23.3	10	357	1.0	051	3.2	1
2100	6.0	-18.0	16	293	1.4	297	2.5	1
2400	5.5	*****	19	279	1.4	271	2.5	1

DAY 21

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	4.8	-19.7	15	326	.3	303	1.9	1
0600	4.8	*****	16	069	.9	102	1.9	2
0900	5.3	-20.1	14	050	.9	051	2.5	8
1200	6.9	-41.7	0	133	1.0	134	2.5	21
1500	7.9	-41.1	0	107	1.8	090	5.1	12
1800	6.0	-28.9	6	099	2.3	083	5.7	1
2100	*****	*****	**	***	****	089M	5.7M	***
2400	*****	*****	**	***	****	***	****	***

DAY 22

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 23

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 24

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 25

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 26

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 27

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

THREE HOUR SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

DAY 28

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 29

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

DAY 30

HOUR NDNG	TEMP. DEG C	DEW POINT DEG C	RH %	WIND DIR. DEG.	WIND SPD. M/S	GUST DIR. DEG.	MAX. GUST M/S	RAD MW
0300	*****	*****	**	***	****	***	****	***
0600	*****	*****	**	***	****	***	****	***
0900	*****	*****	**	***	****	***	****	***
1200	*****	*****	**	***	****	***	****	***
1500	*****	*****	**	***	****	***	****	***
1800	*****	*****	**	***	****	***	****	***
2100	*****	*****	**	***	****	***	****	***
2400	*****	*****	**	***	****	***	****	***

R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

MONTHLY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

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 SPD. M/S	P'VAL DIR.	MEAN RH %	MEAN DP DEG C	PRECIP MM	DAY'S SOLAR ENERGY WH/SQM	DAY
1	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	1
2	*****	*****	*****	***	****	****	***	****	***	**	*****	0.0M	7451	2
3	6.1M	1.4M	3.8M	078M	1.8M	2.0M	048M	5.1M	E (M)	55M	-5.1M	0.0	2755M	3
4	10.0M	-.5M	6.8M	046M	2.1M	2.8M	095M	6.1M	NNE (M)	49M	-3.3M	0.0	7416M	4
5	*****	*****	*****	***	****	****	***	****	***	**	*****	0.0	******	5
6	*****	*****	*****	***	****	****	***	****	***	**	*****	0.0	******	6
7	8.3M	2.3M	5.3M	086M	1.3M	1.7M	266M	8.3M	E (M)	82M	2.7M	1.8	884M	7
8	3.4M	3.2M	3.3M	019M	1.2M	1.2M	024M	1.9M	NNE (M)	99M	3.1M	0.0	240M	8
9	8.8M	3.1M	6.0M	288M	1.2M	1.5M	280M	6.3M	W (M)	75M	2.6M	0.0	2374M	9
10	11.0M	2.2M	7.3M	294M	1.2M	2.1M	252M	5.1M	N (M)	70M	1.9M	0.0	4003M	10
11	11.1M	1.6M	6.4M	083M	1.2M	1.6M	093M	4.4M	E (M)	71M	.9M	0.0	1778M	11
12	11.2M	2.6M	6.9M	283M	.5M	1.5M	293M	5.7M	NNE (M)	67M	.9M	0.0	3257M	12
13	8.3	1.2	4.8	080	3.8	3.9	089	9.5	E			0.0	1945	13
14	5.2	.1	2.7	036	.6	2.7	091	5.7	ENE			.2	1920	14
15	7.6M	.1M	3.9M	014M	.6M	1.5M	257M	4.4M	N (M)			0.0	2613M	15
16	10.7M	-3.2M	3.8M	066M	1.3M	1.8M	126M	6.3M	NNE (M)	63M	-2.4M	0.0	4027M	16
17	10.0M	-3.8M	2.7M	307M	.9M	2.1M	243M	6.3M	NNE (M)	68M	-3.2M	0.0	4323M	17
18	8.6M	-4.3M	1.0M	070M	2.5M	2.9M	108M	7.0M	E (M)	64M	-4.1M	0.0	2350M	18
19	7.2	1.6	4.4	081	4.8	4.9	093	10.2	E	58	-6.0	1.8	1850	19
20	8.5	2.7	5.6	066	2.1	3.0	095	8.3	ENE			1.2	1975	20
21	8.3M	4.5M	6.4M	094M	1.1M	1.4M	083M	5.7M	ESE (M)			0.0M	1943M	21
22	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	22
23	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	23
24	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	24
25	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	25
26	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	26
27	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	27
28	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	28
29	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	29
30	*****	*****	*****	***	****	****	***	****	***	**	*****	****	******	30
MONTH	11.2M	-4.3M	4.7M	068M	1.3M	2.5M	093M	10.2M	E(M)	M	M	5.0M	53103M	

GUST VEL. AT MAX. GUST MINUS 2 INTERVALS 8.9
GUST VEL. AT MAX. GUST MINUS 1 INTERVAL 9.5
GUST VEL. AT MAX. GUST PLUS 1 INTERVAL 8.9
GUST VEL. AT MAX. GUST PLUS 2 INTERVALS 7.6

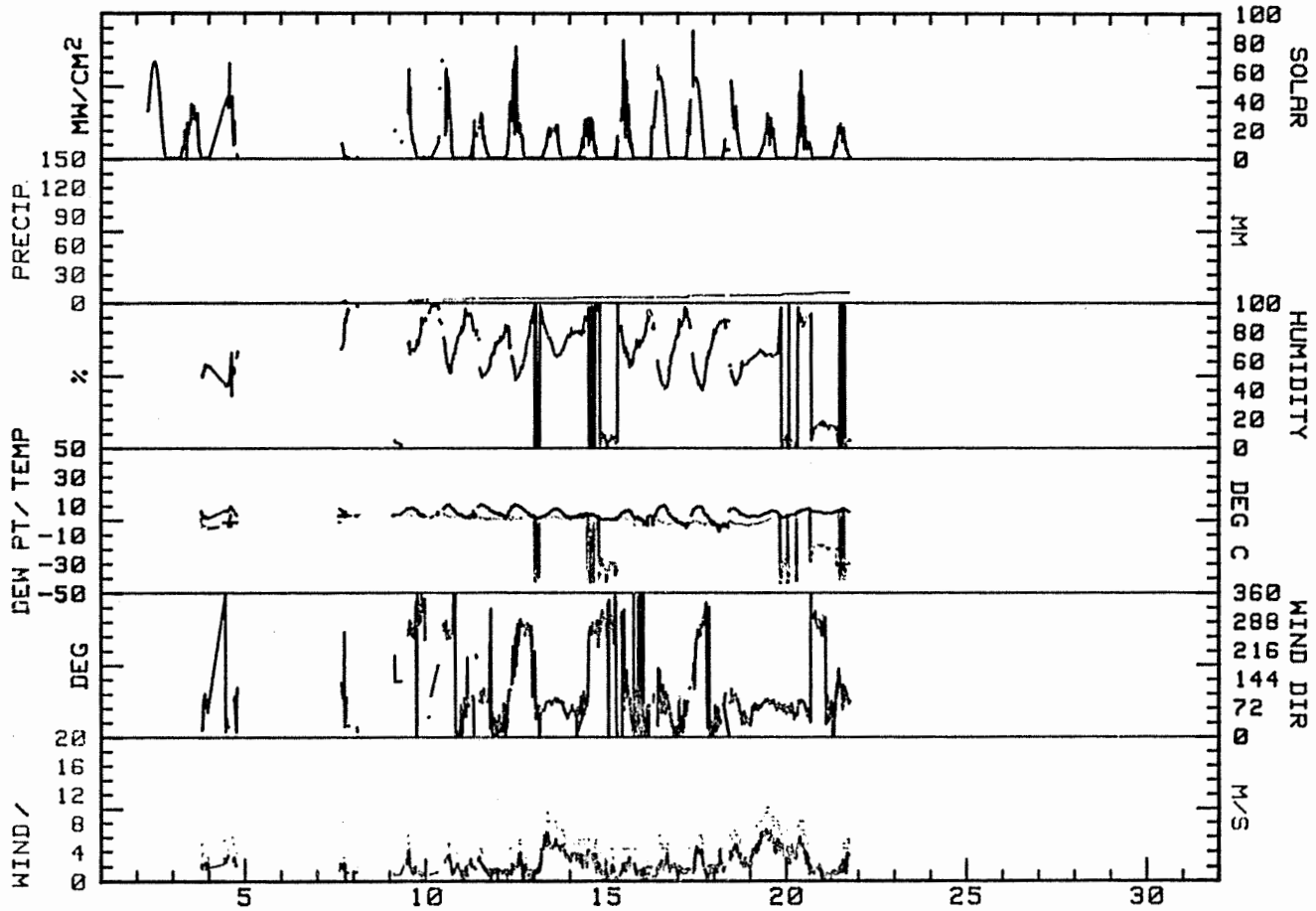
NOTE: RELATIVE HUMIDITY READINGS ARE UNRELIABLE WHEN WIND SPEEDS ARE LESS THAN ONE METER PER SECOND. SUCH READINGS HAVE NOT BEEN INCLUDED IN THE DAILY OR MONTHLY MEAN FOR RELATIVE HUMIDITY AND DEW POINT.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

September, 1983



R & M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WIND FREQUENCY SUMMARY FOR WATANA WEATHER STATION
DATA TAKEN DURING September, 1983

	VELOCITY (M/S)							
DIRECTION	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	TOTAL
N	.92	5.79	.18	0.00	0.00	0.00	0.00	6.89
NNE	.83	7.81	.46	0.00	0.00	0.00	0.00	9.10
NE	.74	5.97	1.47	0.00	0.00	0.00	0.00	8.18
ENE	.74	5.79	10.48	0.00	0.00	0.00	0.00	17.00
E	1.56	7.26	11.12	3.03	0.00	0.00	0.00	22.98
ESE	.55	5.51	.46	0.00	0.00	0.00	0.00	6.53
SE	.46	1.75	0.00	0.00	0.00	0.00	0.00	2.21
SSE	.18	.83	0.00	0.00	0.00	0.00	0.00	1.01
S	.09	.64	0.00	0.00	0.00	0.00	0.00	.74
SSW	.09	.55	0.00	0.00	0.00	0.00	0.00	.64
SW	.55	.83	.09	0.00	0.00	0.00	0.00	1.47
WSW	1.10	2.11	1.65	0.00	0.00	0.00	0.00	4.87
W	.37	4.78	2.02	0.00	0.00	0.00	0.00	7.17
WNW	1.84	3.86	1.29	0.00	0.00	0.00	0.00	6.99
NW	1.10	1.93	0.00	0.00	0.00	0.00	0.00	3.03
NNW	.28	.83	0.00	0.00	0.00	0.00	0.00	1.10
CALM								.09
TOTAL	11.40	56.25	29.23	3.03	0.00	0.00	0.00	100.00

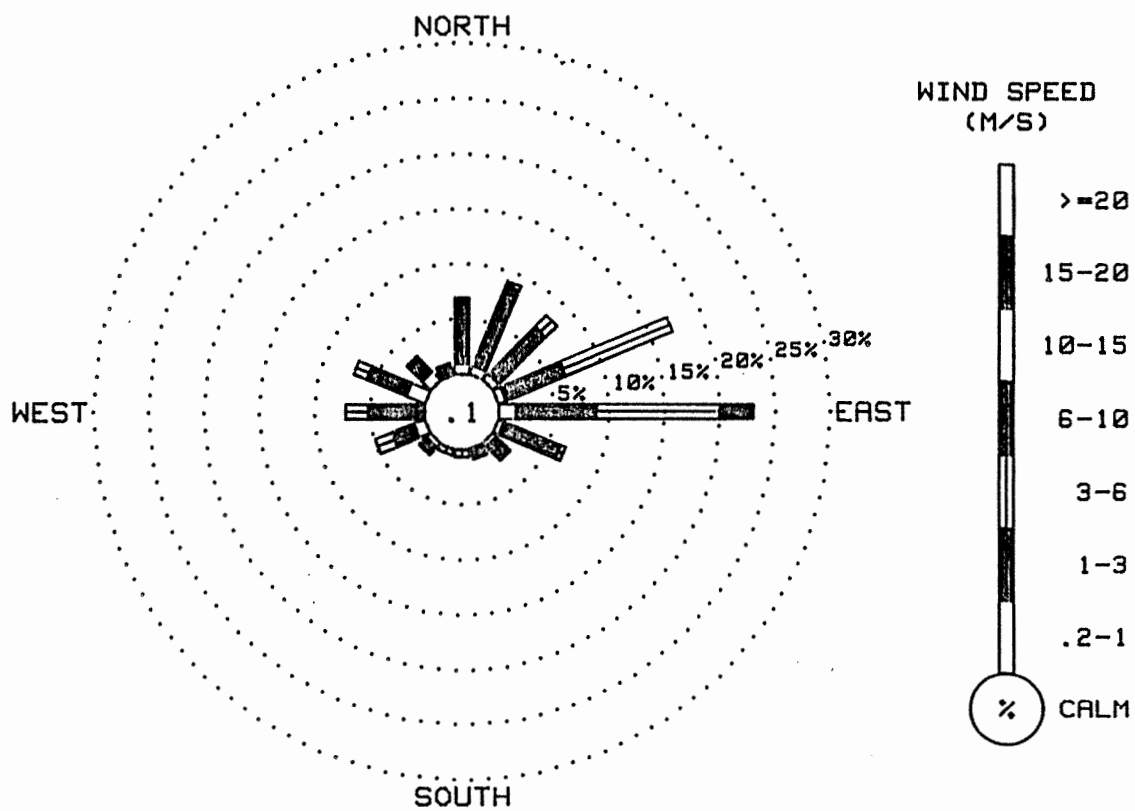
NOTE: ALL FREQUENCIES ARE EXPRESSED IN PERCENT
1088 VALID WIND OBSERVATIONS USED TO DEVELOP FREQUENCY SUMMARY
2880 WIND OBSERVATIONS WOULD HAVE BEEN CORRECT FOR 15 MINUTE DATA.

R&M CONSULTANTS, INC.

SUSITNA HYDROELECTRIC PROJECT

WATANA WEATHER STATION

September, 1983



WIND ROSE PLOT

s12/w23

VI. LONGWAVE RADIATION DATA SUMMARIES

WATANA STATION, WATER YEAR 1983

s12/s5

LONGWAVE RADIATION DATA SUMMARY
WATANA CLIMATE STATION

DAY	OCTOBER 1982 Daily Avg LW Rad (mw/cm2)	OCTOBER 1982 Daily Total LW Rad (kJ/m2-day)	NOVEMBER 1982 Daily Avg LW Rad (mw/cm2)	NOVEMBER 1982 Daily Total LW Rad (kJ/m2-day)	DECEMBER 1982 Daily Avg LW Rad (mw/cm2)	DECEMBER 1982 Daily Total LW Rad (kJ/m2-day)	JANUARY 1983 Daily Avg LW Rad (mw/cm2)	JANUARY 1983 Daily Total LW Rad (kJ/m2-day)
1	M	M	M	M	21	18,100	26	22,500
2	M	M	M	M	17	14,700	26	22,500
3	M	M	M	M	16	13,800	25	21,600
4	M	M	M	M	18	15,600	16	13,800
5	M	M	M	M	24	20,700	15	13,000
6	M	M	M	M	22	19,000	20	17,300
7	M	M	M	M	27	23,300	18	15,600
8	M	M	M	M	28	24,200	15	13,000
9	M	M	M	M	23	19,900	14	12,100
10	M	M	26M	22,500M	21	18,100	M	M
11	M	M	26	22,500	23	19,900	19M	16,400M
12	M	M	27	23,300	24	20,700	16	13,800
13	M	M	26	22,500	23	19,900	16	13,800
14	M	M	24	20,700	23	19,900	20	17,300
15	M	M	25	21,600	23	19,900	21	18,100
16	M	M	22	19,000	22	19,000	25	21,600
17	M	M	20	17,300	23	19,900	26	22,500
18	M	M	18	15,600	21	18,100	24	20,700
19	M	M	16	13,800	20	17,300	26	22,500
20	M	M	17	14,700	20	17,300	20	17,300
21	M	M	25	21,600	19	16,400	18	15,600
22	M	M	25	21,600	18	15,600	18	15,600
23	M	M	26	22,500	20	17,300	17	14,700
24	M	M	28	24,200	23	19,900	20	17,300
25	M	M	26	22,500	21	18,100	20	17,300
26	M	M	21	18,100	25	21,600	22	19,000
27	M	M	22	19,000	27	23,300	23	19,900
28	M	M	22	19,000	30	25,900	27	23,300
29	M	M	22	19,000	28	24,200	25	21,600
30	M	M	27	23,300	28	24,200	23	19,900
31	M	M	-	-	26	22,500	23	19,900
Monthly Avg/Total	M	M	23.4M	606,500	23.5	608,300	20.8M	557,100M

Notes:
(1) Daily average is determined from 8 values taken at 3-hour intervals.
(2) "M" after value means less than 8 valid readings for the day. "M" in place of value means no data for the day. Where part of the month is missing, the monthly total value is extrapolated from the monthly average value.

LONGWAVE RADIATION DATA SUMMARY (cont')
WATANA CLIMATE STATION

DAY	FEBRUARY 1983 Daily Avg LW Rad (mw/cm2)	FEBRUARY 1983 Daily Total LW Rad (kJ/m2-day)	MARCH 1983 Daily Avg LW Rad (mw/cm2)	MARCH 1983 Daily Total LW Rad (kJ/m2-day)	APRIL 1983 Daily Avg LW Rad (mw/cm2)	APRIL 1983 Daily Total LW Rad (kJ/m2-day)	MAY 1983 Daily Avg LW Rad (mw/cm2)	MAY 1983 Daily Total LW Rad (kJ/m2-day)
1	25	21,600	27	23,300	21	18,100	26	22,500
2	23	19,900	23	19,900	21	18,100	30	25,900
3	24	20,700	21	18,100	22	19,000	29	25,100
4	24	20,700	23	19,900	28	24,200	28	24,200
5	23	19,900	23	19,900	26	22,500	26	22,500
6	25	21,600	20	17,300	23	19,900	25	21,600
7	26	22,500	18	15,600	21	18,100	25	21,600
8	27	23,300	17	14,700	27	23,300	25	21,600
9	25	21,600	18M	15,600M	28	24,200	27	23,300
10	25	21,600	M	M	22	19,000	26	22,500
11	24	20,700	M	M	21	18,100	27	23,300
12	23M	19,900M	23M	19,900M	M	M	30	25,900
13	22	19,000	22M	19,000M	27M	23,300M	31	26,000
14	23	19,900	24M	20,700M	M	M	31	26,800
15	17	14,700	25M	21,600	28M	24,200M	30	25,900
16	17	14,700	22M	19,000M	26	22,500	30	25,900
17	16	13,800	21M	18,100M	25	21,600	31	26,800
18	22	19,000	20M	17,300M	28	24,200	29	25,100
19	20	17,300	20M	17,300M	25	21,600	30M	25,900M
20	23	19,900	21M	18,100M	25	21,600	M	M
21	22	19,000	21M	18,100M	25	21,600	M	M
22	20	17,300	20M	17,300M	28	24,200	M	M
23	21	18,100	20	17,300	29	25,100	30M	25,900M
24	26	22,500	25	21,600	24	20,700	27	23,300
25	20	17,300	21	18,100	26	22,500	29	25,100
26	21	18,100	20	17,300	24	20,700	30	25,900
27	23	19,900	20	17,300	24	20,700	29	25,100
28	27	23,300	20	17,300	30	25,900	28	24,200
29	-	-	20	17,300	30	25,900	32	27,600
30	-	-	20	17,300	23	19,900	31	26,800
31	-	-	24	20,700	-	-	30	25,900
Monthly Avg/Total	22.6M	547,800M	21.3M	570,500M	25.2M	653,200M	28.6M	766,000M

Notes:
(1) Daily average is determined from 8 values taken at 3-hour intervals.
(2) "M" after value means less than 8 valid readings for the day. "M" in place of value means no data for the day. Where part of the month is missing, the monthly total value is extrapolated from the monthly average value.

LONGWAVE RADIATION DATA SUMMARY (cont')
WATANA CLIMATE STATION

DAY	JUNE 1983 Daily Avg LW Rad (mw/cm2)	JUNE 1983 Daily Total LW Rad (kJ/m2-day)	JULY 1983 Daily Avg LW Rad (mw/cm2)	JULY 1983 Daily Total LW Rad (kJ/m2-day)	AUGUST 1983 Daily Avg LW Rad (mw/cm2)	AUGUST 1983 Daily Total LW Rad (kJ/m2-day)	SEPTEMBER 1983 Daily Avg LW Rad (mw/cm2)	SEPTEMBER 1983 Daily Total LW Rad (kJ/m2-day)
1	28	24,200	M	M	M	M	M	M
2	31	26,800	M	M	M	M	M	M
3	30	25,900	M	M	M	M	M	M
4	30	25,900	M	M	M	M	M	M
5	30	25,900	M	M	M	M	M	M
6	28	24,200	M	M	M	M	M	M
7	28	24,200	M	M	M	M	M	M
8	29	25,100	M	M	M	M	M	M
9	29	25,100	M	M	M	M	30M	25,900M
10	30	25,900	M	M	M	M	30M	25,900M
11	29	25,100	M	M	M	M	31	26,800
12	26	22,500	M	M	M	M	30	25,900
13	24	20,700	M	M	M	M	28	24,200
14	27M	23,300M	M	M	M	M	30	25,900
15	M	M	M	M	M	M	28	24,200
16	M	M	M	M	M	M	25	21,600
17	M	M	M	M	M	M	24	20,700
18	M	M	M	M	M	M	26	22,500
19	M	M	M	M	M	M	31	26,800
20	M	M	M	M	M	M	33	28,500
21	M	M	M	M	M	M	M	M
22	M	M	M	M	M	M	M	M
23	M	M	M	M	M	M	M	M
24	M	M	M	M	M	M	M	M
25	M	M	M	M	M	M	M	M
26	M	M	M	M	M	M	M	M
27	M	M	M	M	M	M	M	M
28	M	M	M	M	M	M	M	M
29	M	M	M	M	M	M	M	M
30	M	M	M	M	M	M	M	M
31	-	-	M	M	M	M	-	-
Monthly Avg/Total	24.4M	632,400M	M	M	M	M	28.8M	746,500M

Notes:
(1) Daily average is determined from 8 values taken at 3-hour intervals.
(2) "M" after value means less than 8 valid readings for the day. "M" in place of value means no data for the day. Where part of the month is missing, the monthly total value is extrapolated from the monthly average value.