

# EnecoTech

SEMI-ANNUAL  
AIR QUALITY AND METEOROLOGY  
MONITORING REPORT  
FOR THE BLANDING PROJECT  
JANUARY THROUGH JUNE 1985

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EDUCATION

## 1.0 INTRODUCTION

In 1977 a meteorological, air quality and radiological monitoring program was started at the Blanding Uranium Mill. The purpose of this monitoring program was to document the regional atmospheric baseline and to provide adequate data to assess the potential air quality impacts resulting from the mill. The monitoring program is ongoing to provide compliance monitoring for the mill operations. This report summarizes the data collected from this monitoring program for the period January through June 1985.

ENCLOSURE



## 2.0 MONITORING PROGRAM DESCRIPTION

### 2.1 Site Description

The region encompassing the UMETCO Blanding Uranium Mill is shown in Figure 2-1. The mill is located in an area known as the White Mesa and is approximately five miles south of the town of Blanding, Utah, just west of State Highway 47. The air monitoring station, located on the northern property boundary of the mill, is situated in the southwest corner of Section 22, T37S, R22E at an elevation of 5660 feet MSL. The site was located for the purpose of compliance monitoring for operations at the mill. Pertinent meteorological parameters and Total Suspended Particulates (TSP) are measured at this monitoring site. In addition, a low volume air sampler is used to collect air samples for quarterly analysis of radiological parameters.

### 2.2 Monitoring Instrumentation

The instruments, sensor accuracies and sampling heights used in the monitoring program are shown in Table 2.1. Weathertronics wind speed and wind direction instrumentation, coupled with a Campbell Scientific CR-5 Data Logger, continuously record wind speed, wind direction and sigma theta (the standard deviation of wind direction) at the standard ten meter height. A Weathertronics Model 6310 rain gauge is used for measurement of daily precipitation. All meteorological data are recorded on paper tapes, which provide hourly averages of each meteorological parameter.

Total suspended particulates are measured using General Metal Works' high volume air samplers (Hi-Vol). The samplers are mounted atop scaffolds such that the air intakes are approximately three meters above the surface (EPA guidelines state that sample intakes should be between 2 and 15 meters). As part of the quality assurance program, a colocated Hi-Vol is operated. Particulate samples are collected every third day on the

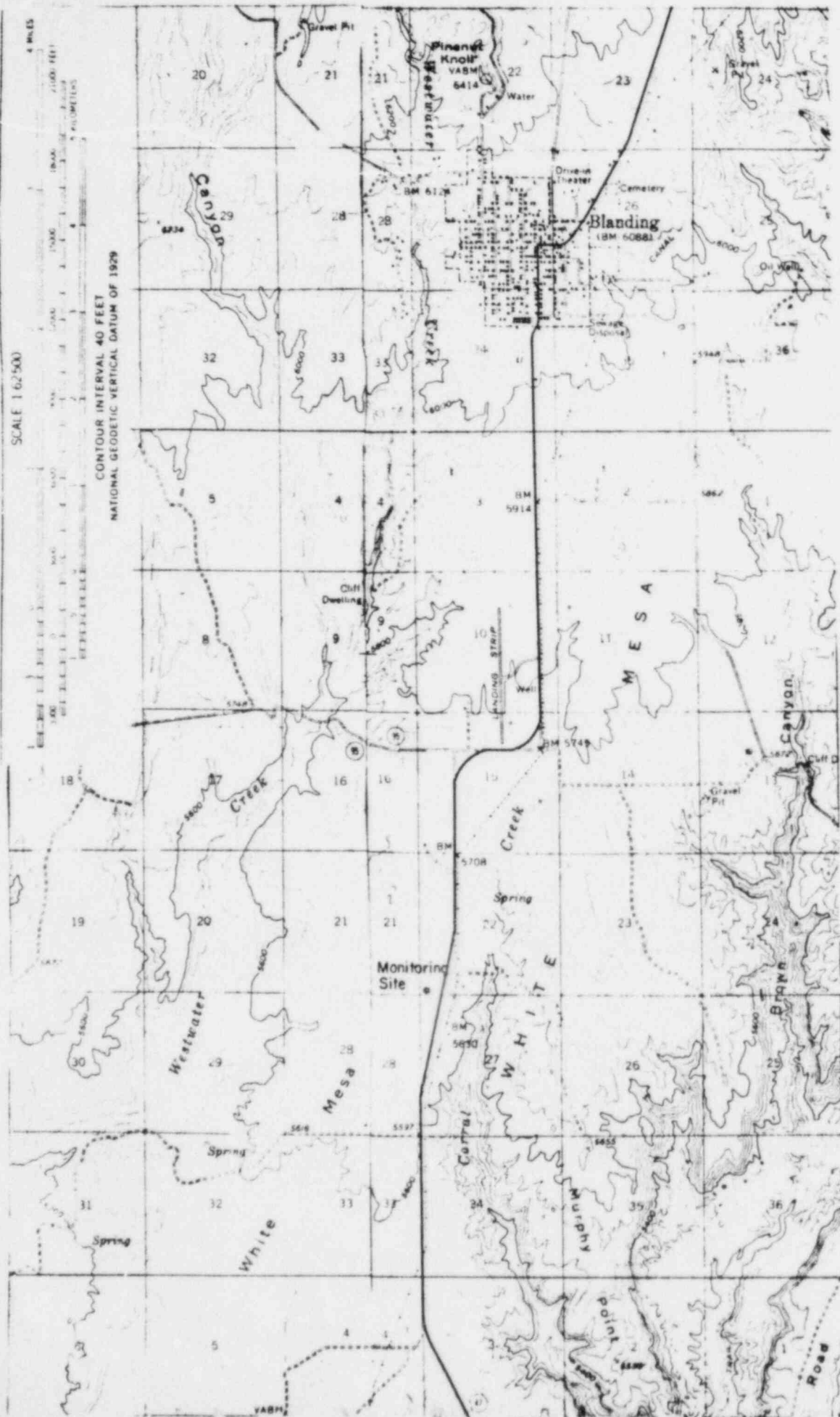


FIGURE 2-1  
LOCATION OF THE UMETCO  
BLANDING AIR MONITORING STATION

TABLE 2.1

INSTRUMENT SPECIFICATIONS FOR THE  
UMETCO BLANDING PROGRAM

<u>PARAMETER</u>	INSTRUMENT READING <u>ACCURACY</u>	<u>HEIGHT</u>	MANUFACTURER AND <u>MODEL NO.</u>
Wind Speed	0.34 m/sec	10	Weathertronics 2030
Wind Direction	+2.0	10	Weathertronics 2020
Data Logger	-	-	Campbell Scientific CR-5
Precipitation	0.5%/0.01 in.	2	Weathertronics 6310
Total Suspended Particulates $1 \mu\text{g}/\text{m}^3$		3	General Metal Works GMW-2310
Radiological (Low Volume Sampler)	0.2 pCi/l	1.8	Eberline RAS-2

primary Hi-Vol (A) and every sixth day on the colocated Hi-Vol (B). Both Hi-Vol samplers are instrumented with timers to assure that sampling is conducted from midnight to midnight Mountain Standard Time. Both samplers are powered by commercial AC power.

The low volume air sampler employed at the site is Eberline RAS-2, which is mounted on a sampling scaffold such that the air intake is approximately 1.8 meters above the surface. This unit operates continuously; however, filters are changed every six days. The low volume sampler has an elapsed time meter such that the sample time is accurately known. All filters collected in a quarterly period (three months) are composited and, in turn, analyzed for total uranium, lead-210, thorium-230, radium-226 and gross alpha.

### 2.3 Data Reduction

Meteorological data collected are transferred from paper tapes to computer keypunch sheets as hourly averages. These data are then entered into the computer and edited to check their accuracy and sequencing. Computer programs then place the data in the proper format for subsequent data analyses.

Prior to use in the monitoring program, the high volume filters are desiccated for 24 hours, then weighed. After sampling, the filters are again desiccated and weighed using a precision analytical balance. The difference between the pre-sampling and the post-sampling weight constitutes the TSP mass. The sample flow rate and sample time are then used to calculate the concentration of TSP in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

### 2.4 Quality Assurance

For quality assurance purposes, five percent of the meteorological data are independently cross-checked against values indicated on the corresponding strip charts. Values greater than ten degrees for wind direction

and 1.0 m/sec for wind speed are corrected. For precipitation, values are corrected if they exceed 0.01 inch. If more than ten percent of the quality assured data are found to be in error, the entire data set is reduced.

TSP quality assurance entails re-weighing ten percent of pre-exposed and ten percent of exposed filters. If the weights do not agree with 0.005 grams, all filters in the group are re-weighed and verified again.

The meteorological and TSP quality assurance checks are documented on data quality check forms. These forms are too massive to include in this report; however, they are on file at EnecoTech Inc.'s Denver office if needed.

Also, as a part of the quality assurance program, a colocated high volume air sampler is operated. The colocated unit (B) operates on a one day in six schedule, while the primary Hi-Vol (A) operates on a one day in three schedule. Thus the Hi-Vols operate simultaneously every sixth day, allowing a check of the precision of the TSP monitoring program.

### 3.0 RESULTS

#### 3.1 Data Recovery

Table 3.1 summarizes the data recovery for this semi-annual reporting period. Overall, meteorological data recovery was 92.6 percent. Data recoveries for wind speed, wind direction, sigma theta and precipitation were 93.6, 97.3, 98.6 and 80.7 percent, respectively. A bad cable connection to the anemometer was the major cause of wind speed data loss during this reporting period. The problem was corrected when the instrumentation was replaced on February 22, 1985.

Wind direction and sigma theta data loss were caused by site work load scheduling problems which prevented the site technician from changing the paper tapes on the Campbell Scientific CR-5 data logger in a timely fashion.

For precipitation, an instrument failure in December 1984 was the cause of data loss. The instrument was replaced in February 1985 with a nonrecording precipitation gauge.

TSP data recovery for the reporting period was 77.0 percent for the primary Hi Vol and 100 percent for the colocated Hi Vol. Fourteen samples were missed on the primary sampler and no samples were missed on the colocated sampler. All of the missing samples were caused by site work load scheduling problems which prevented timely filter changing.

#### 3.2 TSP Concentrations

The TSP concentrations measured at the Blanding Site are presented in Table 3.2. In addition to the individual (24-hour) concentrations measured at the station, the semi-annual arithmetic means, geometric means and standard deviations are presented for both the primary and



TABLE 3.1

DATA RECOVERY FOR THE  
UMETCO BLANDING PROGRAM  
JANUARY - JUNE 1985

<u>PARAMETER</u>	<u>RECOVERY (%)</u>
Wind Speed	93.6
Wind Direction	97.3
Sigma Theta	98.6
Precipitation	80.7
Overall Meteorological	92.6
TSP Primary Hi Vol	77.0
Colocated Hi Vol	100.0

TABLE 3.2

UMETCO BLANDING PROGRAM  
TSP CONCENTRATIONS MEASURED FROM  
JANUARY THROUGH JUNE 1985\*  
( $\mu\text{g}/\text{m}^3$ )

<u>DATE</u>	<u>HI VOL A</u>	<u>HI VOL B</u>
1/1/85	MSG	11A
1/4/85	11	
1/7/85	15	13
1/10/85	9	
1/13/85	25	9
1/16/85	12	
1/19/85	9	5
1/22/85	14	
1/25/85	MSG	5A
1/28/85	7	
1/31/85	8	20
2/3/85	12	
2/6/85	13	9
2/9/85	17	
2/12/85	MSG	9
2/15/85	19	
2/18/85	MSG	12
2/21/85	MSG	
2/24/85	MSG	12A
2/27/85	20	
3/2/85	36A	
3/5/85	12	95
3/8/85	MSG	
3/11/85	12A	30
3/14/85	MSG	
3/17/85	MSG	22
3/20/85	79	
3/23/85	21	22A

FBI/DOJ



TABLE 3.2  
(Continued)

<u>DATE</u>	<u>HI VOL A</u>	<u>HI VOL B</u>
3/26/85	MSG	
3/29/85	21A	28
4/1/85	MSG	28A
4/1/85	MSG	
4/7/85	MSG	15
4/10/85	21	
4/13/85	43	31
4/16/85	58	
4/19/85	31	28
4/22/85	7	
4/25/85	29	40
4/28/85	MSG	
5/1/85	24A	21
5/4/85	7	
5/7/85	18	29
5/10/85	15	
5/13/85	39	16
5/16/85	31	
5/19/85	25	21
5/22/85	21	
5/25/85	21	33
5/28/85	31	
5/31/85	25	25
6/3/85	31	30
6/6/85	25	
6/9/85	36	22
6/12/85	19	
6/15/85	22	26
6/18/85	26	
6/21/85	11	29
6/24/85	16	

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TABLE 3.2  
(Continued)

<u>DATE</u>	<u>HI VOL A</u>	<u>HI VOL B</u>
6/27/85	17	22
6/30/85	24	
Arithmetic Mean	21.9	23.2
Geometric Mean	19.2	19.4
Standard Deviation	13.4	16.1
Maximum	79	40

\* Concentrations are adjusted to standard temperature and pressure.  
A - Samples not following EPA TSP sampling schedule.

colocated Hi Vols. All TSP values are below the promulgated 24-hour state and federal secondary standard of  $150 \mu\text{g}/\text{m}^3$  which is also well below the promulgated secondary annual standard of  $60 \mu\text{g}/\text{m}^3$ .

A comparison of TSP values between the primary and colocated Hi Vol samplers reveals a significant difference in some of the simultaneous samples. It is suspected that either problems with timers on the samplers or setting errors caused the Hi Vol to run on different days. This causes wide variations in sample results and poor precision. It was determined that the elapsed time of the sample run used in the concentration calculations is accurate.

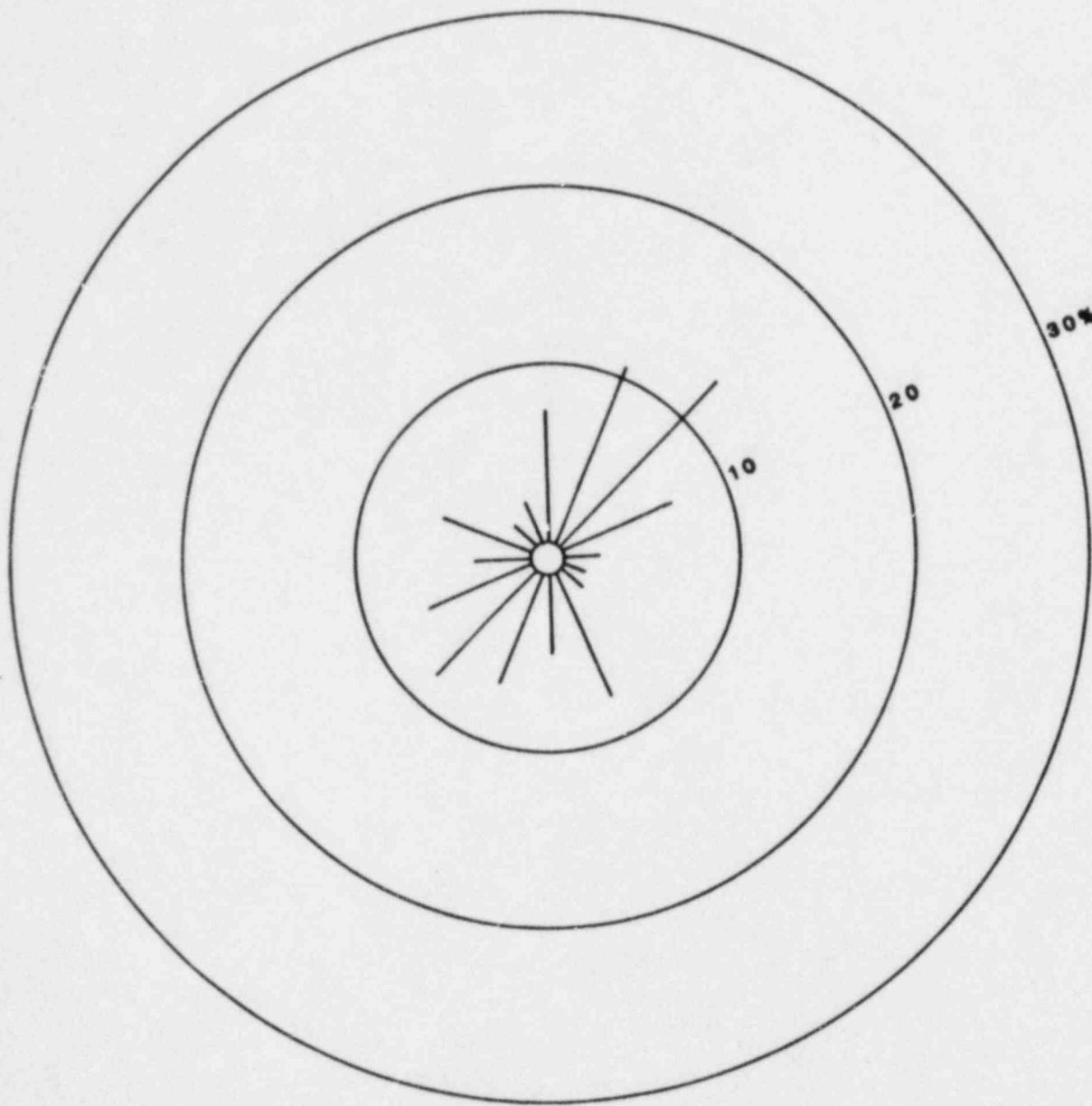
However, over the six month reporting period, the difference in arithmetic means of the data collected from the two high volume samplers (as shown in Table 3.2) was only 4.5 percent. Since the TSP values collected by the two Hi Vols compared favorably over the long term, this indicates good reliability of results.

### 3.3 Hourly Meteorological Data

Hourly values of wind speed, wind direction and sigma theta are presented in Appendix A in the Storage and Retrieval of Aerometric (SAROAD) format. This format is approved by the EPA as the standard method of presenting air quality/meteorological data. The SAROAD format also includes average monthly values hour, daily average, monthly average and the maximum and minimum values for each month.

#### 3.3.1 Wind Analysis

The standard wind rose (for all hours) from the reporting period is presented in Figure 3.1. The semi-annual distribution (wind roses) was developed for 4-hour segments throughout the day and are presented in Figure 3.2. A distribution of wind direction by wind speed classes (frequency distribution) was also developed from the



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**Wind Rose (All Hours)**

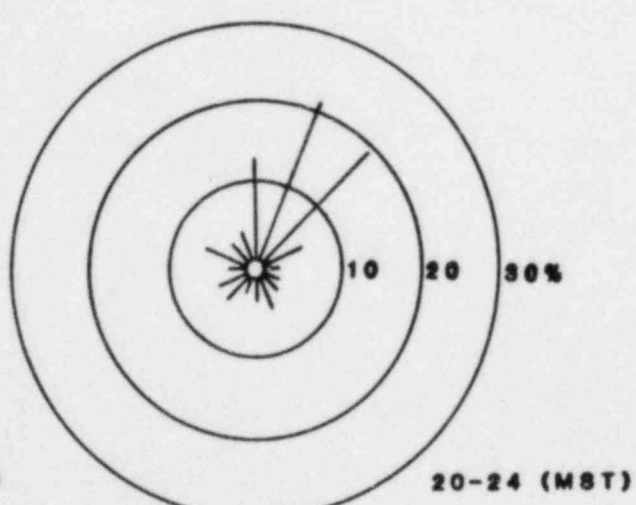
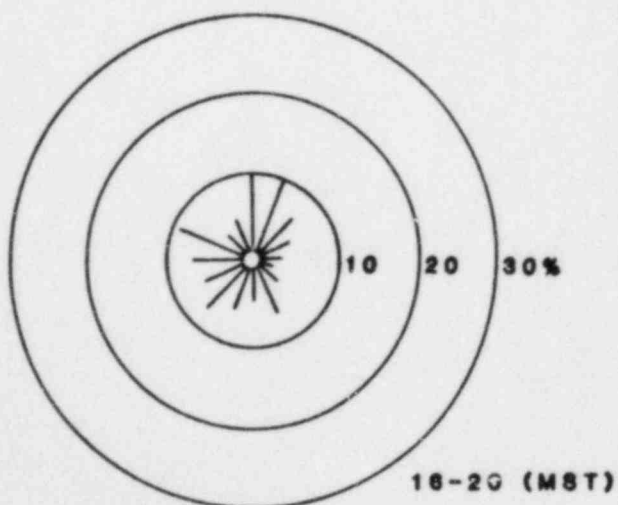
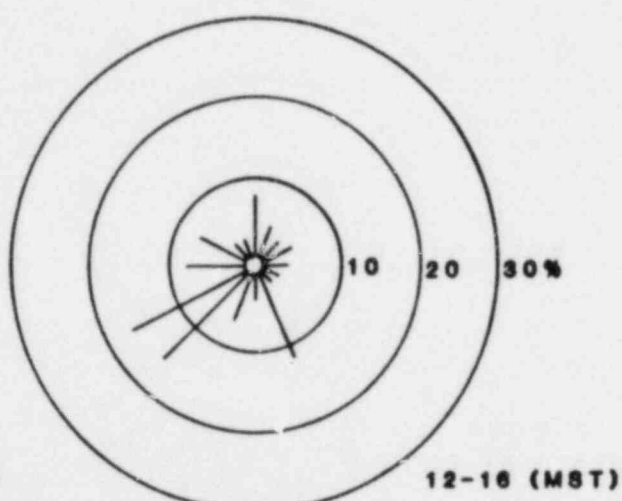
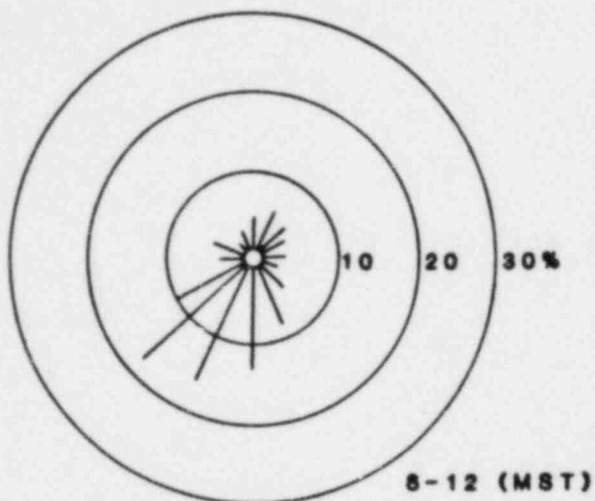
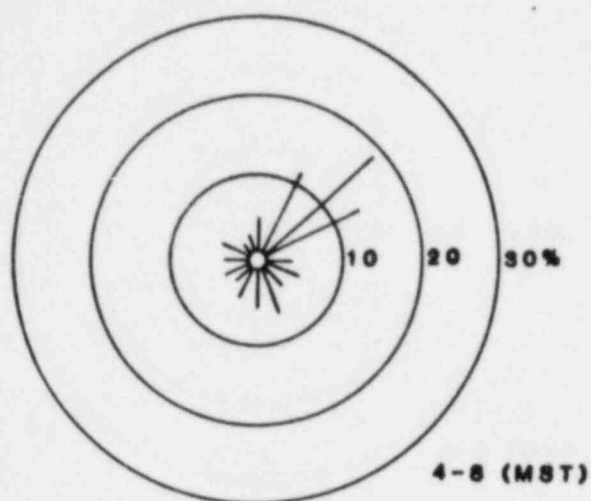
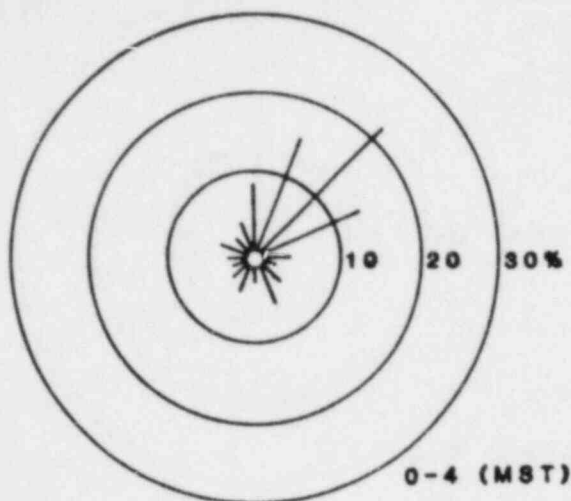
BLANDING SITE

January through June, 1985

FILE NO.

DATE

FIGURE NO. **3-1**



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### Segmented Wind Roses

BLANDING SITE

January through June, 1985

FILE NO. \_\_\_\_\_

DATE \_\_\_\_\_

FIGURE NO. **3-2**

data collected at the site over the reporting period. This frequency distribution is presented in Table 3.3.

Figures 3.1 and 3.2 show that the dominant feature in the wind roses is the persistent local drainage flow from the higher elevations to the north and northeast to the lower elevations to the south-southeast and southwest. This drainage flow develops just after sunset as shown by the 20-24 MST wind rose and is most pronounced throughout the nighttime hours. Table 3.3 shows that nearly 40 percent of the winds blew from the north through east-northeast sectors during the reporting period. Wind speeds of 1-3 m/sec (2.2-6.7 mph) throughout the reporting period.

As daytime heating sets in, upper level westerly winds are mixed to the surface and these westerly winds, along with an up-slope component from the south-southeast through west-southwest, dominate the wind regime at the site during the hours 08-16 MST. Southwesterly winds are most pronounced during the hours 08-12 MST. Daytime winds averaged 3.7 m/sec (8.3 mph) during the reporting period with west and southwest winds typically having the highest wind speeds. Table 3.3 shows that just over 30 percent of the winds blew from the south-southeast through west-southwest sectors during the reporting period.

### 3.3.2 Atmospheric Stability

Atmospheric dispersion stability classifications in the standard Pasquill scheme have been estimated for the Blanding site using the Mitchell-Timbre sigma theta technique. In this technique, Pasquill stability classes are derived from the hourly sigma theta (standard deviation of wind direction), average wind speed and solar angle algorithm to differentiate daytime from nighttime conditions. The Pasquill stability classification scheme involves delineating stability into six classes, A through F. Classes A through C reflect unstable conditions with Class A being more unstable than Class B,



TABLE 3.3

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
 FOR  
 JANUARY THROUGH JUNE 1985  
 UMETCO - BLANDING  
 TIME (MST): 0100-2400

DIRECTION	SPEED CLASS INTERVALS(M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	0.39	2.12	3.23	1.90	0.30	0.00	7.95	4.1
NNE	0.91	4.64	4.12	0.89	0.25	0.05	10.86	3.2
NE	1.18	7.18	3.80	0.17	0.00	0.00	12.34	2.6
ENE	1.06	4.27	1.11	0.49	0.12	0.02	7.08	2.7
E	0.81	1.36	0.74	0.27	0.02	0.00	3.21	2.6
ESE	0.67	1.23	0.30	0.00	0.00	0.00	2.20	2.0
SE	0.96	1.41	0.37	0.00	0.00	0.00	2.74	1.9
SSE	1.04	4.32	1.23	0.49	0.05	0.00	7.13	2.6
S	0.64	2.62	1.21	0.35	0.02	0.00	4.84	2.7
SSW	0.52	3.36	1.83	0.47	0.05	0.00	6.22	2.9
SW	0.54	2.49	3.41	1.23	0.54	0.00	8.22	3.9
WSW	0.54	2.02	1.95	1.38	0.89	0.00	6.79	4.4
W	0.22	1.18	1.43	0.96	0.37	0.00	4.17	4.3
WNW	0.62	1.92	1.70	1.26	0.42	0.00	5.92	4.0
NW	0.15	0.81	0.57	0.32	0.15	0.00	2.00	3.8
NNW	0.22	0.29	0.96	0.69	0.15	0.00	2.99	3.8
ALL	10.49	41.91	27.96	10.88	3.33	0.07	94.64	3.3

CALM (less than meter per second) = 5.4  
 PERIOD MEAN WIND SPEED = 3.1 M/S

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which is more unstable than Class C. Stable conditions are represented by Classes E through F, with Class F being more stable than Class E. Neutral conditions are denoted by a D classification.

Typically, unstable conditions occur when there is good solar heating (clear days) and low wind speeds. Neutral conditions occur with cloudy skies and/or high wind speeds. Stable conditions typically occur when there is radiational cooling (clear nights) and low wind speeds. Usually, stable conditions result in the worst dispersion of atmospheric released pollutants.

Table 3.4 presents the stability classification scheme and the frequency distribution for the reporting period at the Blanding site. This table shows that neutral conditions (Stability Class D) were quite common during the reporting period, occurring 35.3 percent of the time.

Unstable conditions also occurred 35 percent of the time during the reporting period, with the large majority of the unstable conditions (20.6 percent) falling into the extremely unstable category (Stability Class A). Stable conditions occurred nearly 30 percent of the time, with slightly stable (Class E) conditions somewhat more prevalent, at 16 percent, than moderately stable (Class F) conditions, at 14 percent.

The joint frequency distributions (JFD) of wind direction by wind speed class for each stability category are presented in Appendix. These JFDs are presented in the Standard National Weather Service format with wind speed classes presented in knots.

Thus, they are directly usable for any standard dispersion model requiring a JFD input. For reference, one knot equals 1.15 miles per hour.



TABLE 3.4

STABILITY CLASSIFICATION AND FREQUENCY OF OCCURRENCE  
OF PASQUILL STABILITY CLASSES  
BLANDING STATION

<u>STABILITY CLASSIFICATION</u>	<u>PASQUILL CATEGORIES</u>	<u>PERCENT OCCURRENCE</u>
Extremely Unstable	A	20.6
Moderately Unstable	B	8.3
Slightly Unstable	C	6.3
Neutral	D	35.3
Slightly Stable	E	15.5
Moderately Stable	F	14.0

### 3.3.3 Precipitation

Monthly totals and the semi-annual total of precipitation at the Blanding site are presented in Table 3.5.

To serve as a check on the precipitation values recorded, concurrent precipitation data collected at the cooperative weather station in the town of Blanding were obtained. These data are also presented in Table 3.5.

As mentioned, the precipitation gauge malfunctioned in December, 1984 and was replaced in early February, 1985. Therefore, precipitation data are missing at the Umetco Station for January.

According to the data recorded at the Umetco site, March had the greatest amount of precipitation during the reporting period, at 2.26 inches. June was the driest month, with a precipitation total of 0.21 inches. According to the downtown precipitation data, total rainfall for the semi-annual reporting period was 5.88 inches, which approximates the norm for the area.

TABLE 3.5

MONTHLY PRECIPITATION (INCHES)  
JANUARY - JUNE 1985

<u>MONTH</u>	<u>UMETCO SITE</u>	<u>HIGHEST DAILY ACCUMULATION</u>	<u>DATE of OCCURRENCE</u>	<u>DOWNTOWN BLANDING</u>
January	Missing			1.48
February	0.34	0.17*	10	0.12
March	2.26	0.90	18	1.89
April	1.85	1.14	25	1.72
May	0.41	0.29	12	0.53
June	0.21	0.11	16	0.14
Semi-Annual Total: 5.07				5.88

\*Water equivalent from snowfall.

#### 4.0 SUMMARY

Overall meteorological data recovery for this reporting period was 92.6 percent. No major problems which could have caused major extensive periods of data loss, were encountered during this reporting period. Wind speed data loss was caused by a bad cable connection to the anemometer. This problem was corrected when the meteorological instrumentation was replaced on February 22, 1985. Wind direction and sigma theta data loss was caused by site work load scheduling problems which prevented the site technician from changing the data logger paper tapes on schedule. Precipitation data for the month of January was missed due to a malfunctioning precipitation gauge. The instrument was replaced in February, 1985 with a nonrecording precipitation gauge.

TSP data recovery for the reporting period was 77.0 percent for the primary Hi Vol and 100 percent for the colocated Hi Vol. All missing samples were caused by site work load scheduling problems.

TSP concentrations at the site were all below the promulgated 24-hour state and federal secondary standard of  $150 \mu\text{g}/\text{m}^3$ . The highest concentration measured by the primary Hi Vol was  $79 \mu\text{g}/\text{m}^3$ , measured on March 20, 1985, and the second highest concentration was  $58 \mu\text{g}/\text{m}^3$ , measured on April 16, 1985. The geometric mean for this reporting period was  $19.2 \mu\text{g}/\text{m}^3$  which is also well below the promulgated annual standard.

The meteorological data collected during this reporting period are representative of the monitoring location. The dominant feature in the wind data is a local nocturnal drainage flow from the higher elevations to the north and northeast along with a daytime return flow from the south-southeast through southwest. Stable neutral and unstable atmospheric conditions occurred 30 percent, 35 percent and 35 percent of the time, respectively.

**APPENDIX A**

**SAROADS**

HOURLY AVERAGED WIND SPEED  
DATA RECORDED IN JANUARY 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	16	19	23	18	13	12	22	39	31	29	25	19	13	13	21
3	11	25	11	10	11	14	18	16	13	18	18	17	22	17	21	22	21	18	13	9	19	17	13	11	16
4	9	14	30	26	18	8	13	13	9	9	22	12	13	19	13	13	24	18	13	9	21	18	19	9	16
5	9	8	18	20	20	20	19	18	4	7	11	18	18	16	14	18	10	13	9	18	7	7	16	26	14
6	28	18	13	11	17	17	17	18	14	9	19	30	22	17	26	23	25	9	13	18	20	21	5	15	18
7	18	18	13	16	11	16	18	18	14	22	30	15	13	14	23	16	13	28	11	17	13	13	9	14	16
8	9	**	**	**	**	**	**	**	**	**	**	**	19	17	14	13	16	32	**	**	33	36	29	31	23
9	27	17	5	**	**	**	**	**	**	**	**	9	9	14	9	14	9	7	**	**	**	**	**	**	12
10	**	**	**	**	**	**	**	**	**	**	**	9	17	25	19	17	13	4	8	15	9	9	13	7	13
11	9	9	11	5	6	13	9	13	8	7	10	14	9	11	9	17	13	13	7	4	9	10	26	52	12
12	51	40	24	60	60	54	31	34	43	27	13	31	54	56	57	54	54	31	22	34	13	27	20	14	38
13	13	22	16	10	**	**	11	**	**	**	**	21	27	19	21	17	19	22	13	20	18	14	13	8	17
14	22	27	40	30	18	**	21	17	**	18	11	13	8	21	23	9	9	4	13	23	23	17	9	13	18
15	9	14	17	8	15	18	3	9	18	18	13	5	8	15	18	22	30	44	27	41	36	31	27	15	19
16	32	26	28	25	28	24	30	49	92	103	**	**	80	49	34	19	36	38	27	35	31	29	31	27	40
17	40	40	31	18	36	31	31	39	17	13	5	17	18	30	25	22	9	7	10	17	27	35	32	27	24
18	19	31	38	40	27	17	18	28	31	18	9	17	13	18	14	14	10	14	27	24	14	18	28	33	22
19	19	14	17	13	17	21	18	24	22	13	27	31	23	24	35	73	49	42	50	29	34	27	18	13	27
20	15	22	35	34	36	40	36	31	17	13	14	25	18	22	22	13	9	8	4	18	27	27	34	30	23
21	15	13	9	16	22	9	9	17	9	15	28	27	22	18	21	17	11	7	14	14	22	22	17	12	16
22	10	9	23	31	39	31	28	8	18	23	14	26	13	11	9	5	36	26	18	21	27	22	13	16	20
23	21	20	12	13	23	8	10	10	15	21	18	13	11	13	13	10	9	12	18	18	7	16	8	13	14
24	21	18	9	7	9	8	9	11	18	16	18	8	5	8	18	13	7	15	8	4	15	22	23	13	13
25	**	**	**	**	**	**	**	**	**	27	13	18	19	14	13	13	14	7	11	20	31	31	32	28	19
26	30	27	31	34	27	27	13	17	18	9	5	11	8	19	13	9	22	19	13	13	8	8	9	16	17
27	12	14	13	10	8	19	13	9	11	18	24	27	30	47	54	54	31	18	26	12	14	18	22	23	22
28	10	18	12	16	18	13	7	6	20	17	22	34	34	33	50	45	45	36	26	15	9	13	17	18	22
29	22	14	18	21	18	22	23	33	45	42	64	31	27	32	51	53	45	32	27	36	45	36	18	31	33
30	27	23	28	27	45	39	36	20	22	42	67	59	36	27	32	46	58	53	32	41	46	49	48	49	40
31	**	**	**	**	**	**	**	**	**	**	13	17	22	27	36	**	32	**	**	**	**	**	**	**	25
AVERAGE	20	20	20	21	23	21	18	20	22	22	20	21	21	22	24	23	23	21	18	21	22	22	20	21	21

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85



HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN JANUARY 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	135	133	128	117	120	164	125	51	119	141	117	110	141	135	133	141	164	156	156	141	94	117	34	127	
2	172	291	159	143	135	125	110	94	141	164	141	135	60	86	94	156	94	8	89	103	94	111	127	172	
3	156	156	166	133	141	141	143	164	84	77	42	42	8	51	34	34	31	22	45	164	164	135	89	166	
4	117	166	156	156	156	148	156	172	111	8	302	34	25	25	8	302	28	25	36	111	143	172	164	148	
5	133	161	164	164	164	159	164	169	200	237	291	302	298	302	19	28	25	36	94	135	127	103	151	156	
6	156	125	89	143	197	166	156	71	138	133	25	16	8	10	25	8	8	280	302	172	151	148	280	146	
7	148	172	215	161	117	102	172	42	215	148	247	291	204	247	302	298	291	302	172	159	215	218	251	269	
8	247	273	280	258	280	280	291	294	291	298	287	280	280	269	251	244	258	215	226	166	237	280	233	172	
9	156	166	117	34	280	302	34	226	143	164	280	291	204	276	8	148	51	159	135	156	117	159	156	151	
10	141	86	125	156	156	146	153	156	156	117	125	161	63	41	52	25	42	60	68	60	34	322	302	204	
11	258	280	197	94	117	37	302	237	269	287	302	291	247	258	86	51	42	36	34	127	141	125	161	164	
12	164	159	164	166	169	166	164	166	166	25	86	172	204	200	204	200	200	172	117	120	148	148	133	117	
13	102	151	226	117	151	141	133	164	164	164	141	25	31	34	31	34	25	22	94	141	135	117	133	172	
14	159	169	156	159	143	104	148	172	161	172	8	51	60	25	28	39	94	94	111	149	151	148	141	156	
15	151	143	156	247	164	164	237	141	151	166	302	77	8	127	204	302	42	51	156	141	148	148	86	247	
16	64	8	51	86	103	102	117	133	151	156	**	**	29	25	302	215	258	273	302	291	16	302	19	302	
17	13	291	8	283	16	280	19	273	45	143	172	172	164	164	159	156	164	130	41	34	25	31	25	34	
18	28	31	28	25	36	31	34	22	28	36	94	208	204	164	172	164	170	291	302	16	8	34	34	22	
19	302	16	36	16	25	22	25	25	28	302	204	164	159	156	237	283	302	291	302	237	291	16	68	94	
20	159	36	19	22	25	22	19	22	29	172	169	166	159	166	164	166	135	166	86	29	21	16	19	25	
21	60	127	141	73	91	94	68	45	8	141	117	125	110	97	156	156	204	156	8	22	8	13	19	34	
22	64	51	16	302	302	280	280	127	215	229	42	60	25	25	172	280	36	39	291	302	8	291	302	16	
23	19	31	8	8	302	148	172	25	51	42	42	204	247	77	111	103	68	302	244	233	141	63	29	280	
24	269	287	25	71	83	25	298	302	28	204	164	302	42	258	258	247	16	215	60	42	226	226	42	25	
25	164	8	25	25	22	25	25	36	31	19	8	133	156	148	125	148	79	112	29	19	13	16	8	19	
26	16	16	22	22	19	16	13	280	247	237	8	8	204	156	233	215	161	161	172	215	302	148	110	141	
27	102	117	146	156	102	146	148	110	135	156	161	164	164	159	172	208	280	16	42	42	34	34	8	22	
28	291	25	22	45	34	45	60	125	169	164	164	161	159	159	156	159	153	166	226	258	133	34	36	39	
29	39	68	103	124	154	247	237	280	280	280	298	291	156	167	218	237	240	237	215	211	211	215	258	244	
30	229	215	291	302	294	283	294	291	262	291	283	280	269	283	302	287	294	291	302	298	294	294	291	291	
31	291	294	294	302	302	294	302	302	25	51	16	302	215	94	77	42	8	302	294	298	8	302	34	280	

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85

HOURLY AVERAGED WIND SPEED  
DATA RECORDED IN FEBRUARY 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A METERS PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	51	41	34	29	22	26	23	17	19	33	35	**	**	**	30
2	**	**	**	**	**	**	**	22	20	18	27	25	28	28	31	29	23	10	25	21	20	20	18	22	23
3	22	31	22	17	31	22	18	19	25	30	30	13	27	23	19	31	38	40	46	30	24	24	22	22	26
4	17	10	9	13	18	**	27	**	**	17	12	36	32	31	37	38	34	21	31	27	35	**	**	**	25
5	**	**	**	**	**	**	**	**	**	**	9	18	16	14	14	20	13	4	10	18	28	36	17	17	17
6	30	27	29	39	36	**	**	26	18	4	15	25	21	12	17	18	13	16	9	9	18	22	27	31	21
7	34	**	**	**	**	**	**	13	16	9	20	16	14	14	17	23	14	13	24	27	22	14	13	13	18
8	10	22	8	13	14	25	25	15	23	21	32	28	23	25	22	18	10	13	30	25	13	8	23	13	19
9	22	18	17	31	24	23	22	29	27	27	42	47	26	10	18	36	40	17	19	21	**	**	**	**	26
10	**	**	**	**	36	76	58	**	58	80	83	103	107	89	88	80	63	58	45	31	28	32	27	13	61
11	17	17	**	30	**	**	26	**	29	13	18	27	25	22	22	18	18	21	16	9	20	18	22	22	21
12	18	14	9	13	13	16	22	18	9	6	13	10	13	10	13	15	13	8	13	26	38	26	13	14	15
13	8	11	17	27	36	35	23	9	17	9	21	27	22	18	13	13	13	20	36	22	27	20	22	32	21
14	13	18	9	26	24	18	14	17	13	32	13	17	27	20	17	22	14	8	8	35	27	19	15	21	19
15	27	29	23	18	16	22	29	13	10	10	11	13	18	22	17	18	13	21	16	9	27	22	23	23	19
16	27	31	30	22	17	9	9	11	18	8	9	22	20	20	23	15	19	19	9	20	32	31	23	31	20
17	36	22	17	6	12	20	22	19	18	14	14	15	13	13	11	9	16	25	31	20	27	31	31	30	20
18	16	22	29	16	27	22	22	27	27	22	13	13	17	10	14	18	27	27	33	28	31	18	27	31	22
19	34	27	27	22	14	13	18	23	14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	21
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	24	25	50	51	58	69	95	79	52	60	51	68	61	46	65	57
23	69	65	68	78	83	92	83	91	114	112	96	92	89	78	76	59	64	70	57	56	39	14	18	19	70
24	28	21	16	13	7	18	22	25	12	18	18	20	22	29	27	31	37	29	17	6	24	32	34	21	22
25	22	25	23	19	15	14	16	14	11	18	27	27	21	21	16	15	15	16	48	49	37	34	36	74	26
26	18	29	36	39	44	43	17	17	25	20	14	18	16	20	15	14	14	19	22	14	20	26	29	32	23
27	25	20	18	19	23	9	8	7	19	16	23	20	18	18	21	21	39	37	29	38	26	16	26	17	21
28	12	8	4	12	20	27	32	20	19	17	10	14	18	22	38	45	54	49	29	15	30	23	23	21	23
AVERAGE	24	23	22	24	26	28	26	22	25	24	26	29	29	26	27	29	28	25	27	26	29	25	24	27	26

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85



HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN FEBRUARY 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	10	8	34	8	280	291	42	25	302	258	262	255	226	215	302	156	159	159	8	34	31	29	29	25	
2	25	45	45	41	41	60	77	94	79	110	133	107	111	148	156	156	156	215	94	54	34	39	28	31	
3	77	119	119	119	116	103	113	116	120	110	117	204	135	156	159	151	159	164	215	215	244	204	164	156	
4	104	172	63	25	28	36	25	22	19	42	164	161	156	148	143	148	269	280	302	16	25	294	302	269	
5	8	16	36	16	302	280	302	22	22	16	197	164	172	164	164	166	166	102	71	19	25	31	315	25	
6	19	13	22	22	22	19	13	8	10	8	161	156	164	172	159	156	159	148	148	215	16	34	25	22	
7	19	16	34	8	302	117	56	29	16	77	116	172	117	102	110	102	86	33	13	10	19	302	302	13	
8	94	42	31	25	42	42	42	51	48	111	133	151	166	151	148	197	302	86	135	140	125	51	204	141	
9	141	128	130	148	117	141	148	161	159	148	159	156	237	204	143	151	164	204	204	226	237	302	294	280	
10	133	233	283	294	280	296	302	291	291	298	291	287	291	291	291	287	291	291	283	13	302	302	247	302	
11	51	237	247	13	25	56	302	302	8	280	156	164	159	156	156	151	159	153	143	258	16	19	19	302	
12	8	28	42	34	8	302	28	36	86	148	172	215	125	204	226	156	164	172	258	291	302	25	215	148	
13	103	94	34	28	25	25	302	226	25	164	151	159	164	197	148	141	127	280	298	302	283	302	291	291	
14	51	127	25	25	28	302	258	8	94	222	204	164	164	215	164	159	164	156	302	291	302	10	8	8	
15	302	302	8	48	48	34	16	302	247	156	204	172	172	172	164	164	161	164	215	25	16	8	13	16	
16	19	22	16	302	302	51	237	16	33	94	200	164	164	164	156	204	148	148	86	29	22	19	16	22	
17	16	19	25	280	302	22	25	28	36	77	110	148	247	51	302	8	68	34	8	291	302	298	302	302	
18	291	302	302	291	258	269	283	8	31	45	51	77	164	8	215	68	60	42	34	25	302	302	302	8	
19	13	25	8	302	8	94	34	31	51	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
22	**	**	**	**	**	**	**	**	**	328	334	346	352	357	6	2	354	14	11	8	356	347	345	11	
23	8	2	360	10	9	16	16	16	14	15	15	16	17	26	39	27	11	12	14	17	5	348	41	46	
24	47	49	46	316	1	58	65	54	155	227	199	212	236	246	244	231	238	238	208	176	48	40	38	49	
25	46	44	52	56	57	68	60	56	244	233	204	187	214	207	206	209	211	136	34	19	23	13	14	14	
26	3	335	337	346	2	21	112	65	90	105	184	149	234	251	259	245	220	224	253	314	16	33	44	32	
27	26	51	55	58	45	50	248	273	203	255	193	213	237	222	237	218	286	287	308	10	29	62	31	5	
28	69	65	169	20	26	33	46	57	125	189	159	246	241	251	264	274	260	287	51	27	28	49	52	66	

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SARQAD(V1.0) 07/24/85

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION  
 DATA RECORDED IN FEBRUARY 1985  
 BLANDING - UTAH  
 UNITS ARE TENTHS OF A DEGREE

HOURLY OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22	--	--	--	--	--	--	--	--	--	135	243	102	128	107	111	85	308	289	119	110	111	173	179	128	57
23	124	76	68	153	131	212	190	212	207	215	192	201	191	212	195	235	142	153	159	160	84	356	258	261	70
24	229	209	283	226	316	67	76	62	497	227	288	310	278	212	244	178	149	118	161	291	89	33	37	113	22
25	99	49	63	80	75	88	42	88	383	249	241	278	293	266	433	349	335	298	265	195	225	122	149	212	26
26	258	133	115	138	199	539	416	397	156	229	574	448	596	324	535	498	409	131	115	304	156	62	44	44	23
27	22	99	56	65	30	65	174	471	195	244	258	250	321	439	367	315	209	98	200	108	220	154	164	163	21
28	230	148	481	390	152	45	75	118	312	198	628	419	449	323	279	227	112	476	192	179	56	133	75	76	23
AVERAGE	160	119	178	175	151	169	162	225	292	214	346	287	322	269	309	270	238	223	173	192	134	148	129	142	211

\* Indicates calibration of sensors

\*\* Indicates invalid data

-- Indicates no data collected

ENECOTECH INC.  
 SAROAD(V1.0) 07/24/85

HOURLY AVERAGED WIND SPEED  
DATA RECORDED IN MARCH 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A METERS PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	27	25	24	19	10	12	18	12	8	1	26	47	54	56	46	48	47	36	14	11	9	12	2	12	24
2	11	12	17	15	14	11	6	4	11	56	80	69	105	104	106	98	104	80	87	72	75	70	76	60	56
3	36	24	34	28	23	17	8	24	35	56	67	68	66	79	82	67	42	56	52	53	53	30	31	30	44
4	32	30	26	25	20	19	30	31	23	24	26	34	33	35	36	38	36	18	8	27	29	31	36	29	28
5	23	12	7	19	20	19	14	5	14	27	35	30	47	44	28	23	16	16	22	15	19	23	33	31	23
6	23	23	22	12	13	28	33	18	35	76	87	98	104	104	99	98	99	94	88	76	64	66	51	55	61
7	44	15	16	16	23	25	33	22	24	52	72	81	86	85	95	96	75	61	25	18	24	46	31	36	46
8	40	23	34	28	33	35	41	35	25	12	20	23	23	24	22	15	6	2	11	31	36	33	25	12	25
9	32	25	13	23	26	31	31	35	38	32	29	24	19	20	22	21	21	13	18	30	31	30	23	22	25
10	25	19	18	8	10	19	25	27	37	42	40	46	41	40	35	38	35	14	11	15	23	7	12	12	25
11	21	35	22	7	8	11	12	14	13	25	25	27	59	20	20	21	22	19	31	28	43	42	36	31	25
12	32	23	27	29	31	20	30	25	51	71	74	71	80	74	79	63	63	37	18	25	18	30	28	12	42
13	8	21	23	17	24	13	24	21	10	17	18	17	21	20	25	20	20	21	25	27	8	15	30	38	20
14	38	35	30	32	30	25	23	20	43	53	51	63	82	72	67	71	72	70	56	60	41	35	51	55	49
15	72	52	46	37	31	25	30	22	28	31	28	19	20	23	42	39	34	32	24	28	21	11	14	23	31
16	35	33	19	15	19	23	16	9	3	11	12	16	7	14	16	13	19	11	14	22	32	36	27	23	19
17	24	27	23	10	15	22	23	21	37	32	21	34	39	35	30	30	23	20	12	8	19	28	28	23	24
18	17	17	25	23	23	24	27	17	23	17	15	19	21	29	32	29	24	14	24	30	32	40	44	37	25
19	30	71	62	42	31	31	34	16	11	4	6	8	12	14	14	21	38	36	21	20	22	11	16	23	25
20	12	16	20	19	33	38	21	19	5	17	25	18	24	25	24	38	43	29	15	29	15	31	24	34	24
21	29	28	23	25	26	20	21	15	27	31	30	32	38	43	49	65	71	94	70	31	37	52	66	63	41
22	31	38	28	17	20	8	18	12	18	52	57	66	61	53	58	39	28	30	27	26	14	20	19	17	32
23	15	7	3	18	14	12	14	5	13	20	24	22	32	37	40	40	46	36	20	7	30	32	30	26	23
24	20	22	25	31	28	23	22	8	23	25	26	26	27	28	28	28	28	23	13	20	38	31	28	31	25
25	22	16	23	27	25	28	23	14	31	45	54	64	68	65	97	99	99	101	102	107	100	84	72	62	60
26	38	30	54	61	56	64	62	69	57	67	81	90	85	95	91	73	61	34	11	7	46	86	95	107	63
27	103	100	90	98	85	83	90	102	104	104	101	107	107	107	103	106	99	95	78	64	79	45	37	34	88
28	28	58	72	76	63	54	39	38	40	43	31	22	46	51	37	28	33	14	15	24	17	14	13	4	36
29	10	4	1	1	1	1	1	1	1	39	60	65	59	51	54	42	39	60	25	45	28	21	23	28	28
30	41	47	56	45	63	48	61	44	44	38	62	72	59	57	74	55	63	68	52	29	36	36	35	18	50
31	21	17	12	22	13	22	18	18	10	18	28	29	37	84	91	77	79	75	73	40	36	52	56	46	41
AVERAGE	30	29	29	27	27	26	27	23	27	37	42	45	50	51	53	50	48	42	34	33	35	35	35	33	36

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85

HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN MARCH 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

	HOUR OF THE DAY																								
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	24	327	11	15	332	355	39	33	199	528	260	252	256	266	245	244	226	207	165	127	90	90	116	105	
2	126	153	161	177	104	109	104	211	184	210	206	207	228	227	238	242	245	268	269	243	221	233	238	288	
3	285	224	204	211	212	259	202	217	207	247	256	255	291	293	302	314	301	343	333	8	11	359	7	356	
4	352	4	354	341	330	26	37	87	167	203	217	222	231	229	232	234	226	254	46	54	40	40	37	36	
5	36	40	64	41	39	49	7	25	209	188	178	173	196	198	198	188	198	270	16	65	191	191	206	209	
6	198	199	210	242	212	201	212	222	199	213	218	238	259	260	257	254	257	251	247	246	246	236	229	228	
7	230	38	62	73	53	50	51	66	174	212	216	232	228	223	249	263	281	288	298	47	9	9	351	334	
8	4	45	53	61	54	52	39	51	88	180	165	185	226	193	243	261	258	282	54	39	51	46	49	309	
9	4	164	31	63	92	82	77	74	96	108	116	111	131	148	161	151	163	130	67	47	45	47	42	62	
10	54	62	60	13	77	151	171	188	211	217	228	234	222	230	237	237	244	197	162	177	308	131	49	47	
11	299	342	275	284	51	60	50	56	137	178	191	196	218	287	108	62	135	166	173	196	184	184	183	202	
12	209	196	213	244	235	252	263	270	298	291	289	302	283	291	314	300	300	311	340	3	8	14	47	42	
13	202	244	290	33	43	67	5	342	91	90	147	127	92	109	60	79	97	82	59	49	140	64	38	47	
14	51	52	73	78	67	56	61	117	152	168	178	175	172	168	157	158	174	174	159	157	171	163	154	162	
15	155	147	130	139	79	107	53	54	83	143	189	200	164	164	175	176	165	175	174	184	186	216	220	178	
16	174	165	155	84	64	170	144	142	163	141	171	210	286	251	298	327	305	197	141	64	47	37	42	51	
17	56	54	51	58	55	59	73	130	164	188	171	178	195	203	210	201	202	217	201	274	19	32	30	31	
18	39	56	69	43	56	56	54	92	177	204	172	166	158	175	180	212	146	135	83	84	54	54	72	195	
19	359	60	69	209	152	124	75	47	178	318	251	111	202	179	276	278	227	289	317	190	128	358	305	293	
20	95	20	55	30	9	4	66	20	321	90	95	207	221	216	248	253	268	245	224	268	359	360	33	46	
21	62	60	55	58	61	58	70	94	169	192	204	223	224	250	276	254	272	276	344	2	359	23	16	5	
22	27	11	351	70	11	25	346	287	235	332	360	354	9	17	21	16	29	19	17	19	75	46	342	29	
23	38	53	23	56	42	59	41	69	233	202	215	242	243	247	247	226	200	201	186	90	47	45	43	39	
24	49	56	43	50	48	50	53	63	164	171	174	192	199	202	208	232	203	198	157	70	45	42	71	65	
25	93	60	62	55	71	53	60	104	190	193	195	224	230	232	233	235	241	246	241	241	243	243	245	248	
26	210	201	234	231	221	234	259	269	264	278	312	288	288	283	293	285	276	273	266	203	235	240	234	234	
27	234	230	232	237	233	233	237	245	250	240	241	254	259	275	273	264	266	272	263	266	280	310	294	335	
28	35	86	75	68	67	71	61	60	72	74	76	261	289	297	299	245	216	166	164	206	281	273	128	128	
29	155	143	528	528	528	528	528	528	528	224	223	245	260	253	249	248	5	8	39	1	356	9	10	13	
30	14	17	14	3	3	360	1	3	3	355	356	358	8	2	346	1	3	356	3	308	54	327	334	321	
31	307	286	77	51	85	55	51	141	222	244	240	248	360	360	4	1	356	355	356	7	13	6	359	360	

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85



HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION  
 DATA RECORDED IN MARCH 1985  
 BLANDING - UTAH  
 UNITS ARE TENTHS OF A DEGREE

HOUR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	122	319	200	302	417	184	83	138	447	10	129	161	147	183	245	202	182	110	146	190	158	249	190	178	24
2	239	164	80	347	229	262	508	163	293	162	95	210	123	110	109	78	120	103	111	130	76	76	209	138	56
3	164	149	73	80	250	171	315	224	139	112	111	116	127	101	127	220	395	144	102	127	133	100	81	104	44
4	71	89	97	161	143	253	75	275	201	260	254	244	277	206	187	197	169	200	250	118	45	53	48	44	28
5	79	255	375	188	119	64	180	602	181	208	169	198	207	188	245	200	195	479	134	194	183	53	106	87	23
6	81	76	111	324	219	74	108	188	129	95	101	169	117	117	151	93	84	80	63	61	56	98	53	52	61
7	78	601	84	86	97	37	28	160	280	148	106	155	153	134	137	105	142	80	222	554	204	128	75	77	46
8	71	260	68	75	37	55	37	129	139	409	309	321	324	290	269	312	375	621	109	90	44	50	64	718	25
9	374	384	701	243	212	50	69	76	84	112	156	202	303	298	270	269	164	122	92	68	48	55	60	103	25
10	120	99	126	269	258	133	94	131	97	83	87	76	121	78	83	82	103	194	123	138	614	610	138	419	25
11	227	228	312	648	149	132	148	192	101	117	151	128	290	407	157	197	229	186	118	188	104	93	100	173	25
12	121	84	91	75	78	114	65	88	100	123	95	138	117	124	277	196	196	130	227	201	250	221	110	214	42
13	468	209	367	161	226	248	236	105	137	393	372	459	313	350	405	308	**	217	**	264	465	160	50	43	20
14	37	58	50	76	93	60	123	304	186	139	141	164	120	174	139	145	112	92	112	131	219	174	96	115	49
15	90	102	82	109	173	281	179	188	242	215	213	409	**	216	163	209	143	117	113	76	151	118	129	116	31
16	83	109	140	246	191	102	137	130	269	**	246	182	685	410	318	412	189	418	151	101	51	32	78	55	19
17	68	48	48	342	108	52	65	293	139	205	311	240	240	217	260	276	165	125	141	446	336	45	53	48	24
18	94	242	179	94	68	112	46	298	175	302	377	440	426	382	343	282	227	242	90	229	102	49	102	588	25
19	647	135	83	561	388	216	107	197	741	742	720	344	346	278	356	320	138	172	727	316	265	620	520	252	25
20	417	551	137	231	123	141	242	257	430	434	308	470	314	366	415	233	125	108	181	99	388	178	113	50	24
21	51	71	52	41	104	111	64	443	156	185	231	224	200	220	163	137	140	93	332	88	214	150	168	133	41
22	205	390	435	337	437	552	631	236	492	412	161	166	192	211	197	271	204	184	80	70	357	152	171	280	32
23	106	119	280	95	88	67	110	380	323	289	325	281	180	156	198	163	129	118	203	213	48	36	25	42	23
24	125	109	38	34	74	65	80	224	149	177	205	219	251	261	268	252	204	132	217	109	47	72	83	50	25
25	225	118	107	59	176	78	128	412	127	131	138	140	127	256	101	92	103	77	62	64	62	60	71	66	60
26	210	208	63	59	59	90	98	124	230	225	178	143	157	145	123	133	120	124	261	300	159	73	72	64	63
27	60	60	68	71	69	63	80	67	109	67	70	98	94	97	107	104	118	79	81	78	150	113	180	135	88
28	516	97	65	65	70	64	152	105	85	85	157	429	143	133	114	204	210	227	98	459	324	317	336	359	36
29	127	263	134	109	111	192	215	180	275	84	86	100	89	100	66	119	383	120	332	76	124	101	162	259	28
30	150	181	149	72	87	75	97	114	90	198	128	88	191	270	107	128	121	78	108	171	110	34	105	255	50
31	144	348	261	169	248	144	148	399	565	216	176	166	477	141	150	139	126	89	86	105	205	132	53	63	41

AVERAGE 180 198 163 185 165 137 150 220 229 211 203 222 228 214 202 196 177 170 169 176 184 142 123 170 184

\* Indicates calibration of sensors  
 \*\* Indicates invalid data

ENECOTECH INC.  
 SAROAD(V1.0) 07/24/85

HOURLY AVERAGED WIND SPEED  
DATA RECORDED IN APRIL 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A METERS PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	36	12	14	17	26	25	28	18	14	15	13	17	23	17	23	19	14	23	24	7	14	38	33	23	21
2	28	31	20	19	24	30	11	12	5	17	15	17	26	25	19	23	52	55	35	23	30	26	27	24	25
3	26	21	15	14	8	16	13	8	21	22	26	25	31	41	53	55	69	77	53	45	33	36	29	28	32
4	19	21	10	23	31	15	13	9	19	45	66	81	81	88	97	93	79	51	52	48	42	47	44	41	46
5	42	48	41	29	44	26	13	17	16	27	35	38	36	64	48	49	61	50	41	51	59	49	38	43	40
6	28	29	37	44	30	39	43	31	56	56	41	37	35	36	36	31	35	39	38	43	36	32	22	32	37
7	28	40	37	23	10	16	7	7	18	22	26	29	32	35	26	24	31	52	39	42	43	42	29	34	29
8	44	44	38	18	13	10	12	10	26	32	32	31	27	17	22	24	28	54	22	18	36	21	28	41	27
9	20	24	45	24	24	24	16	27	37	35	42	31	43	50	51	76	81	60	29	38	39	41	46	19	38
10	14	21	38	35	31	32	26	15	18	20	22	25	32	40	37	47	30	24	26	35	29	28	28	33	29
11	34	12	22	27	26	7	5	9	20	27	29	27	33	43	62	60	61	53	28	14	22	30	29	39	30
12	14	13	10	20	11	10	11	13	11	22	20	30	54	50	56	56	65	65	48	48	37	44	51	56	34
13	48	25	50	55	25	46	44	50	58	51	42	36	26	23	28	25	52	48	29	41	39	34	27	47	40
14	41	28	19	25	19	22	10	7	14	26	27	35	30	27	34	32	38	32	34	42	19	12	26	32	26
15	31	18	18	12	6	18	18	11	17	21	24	29	29	30	32	26	21	23	23	13	37	36	38	26	23
16	30	23	26	22	20	24	19	22	40	42	53	56	64	77	62	61	66	47	64	45	29	14	21	26	40
17	20	22	24	18	26	15	8	34	27	36	48	53	69	90	86	86	69	76	75	55	51	27	12	28	44
18	19	24	9	51	34	24	32	36	28	64	75	50	65	102	50	33	29	38	30	23	28	38	20	30	39
19	29	18	13	9	9	19	17	24	31	34	27	28	30	36	32	48	44	31	18	17	29	22	38	35	27
20	26	40	47	44	26	22	53	66	78	71	73	74	71	79	58	73	85	85	67	58	46	49	70	45	59
21	36	47	46	45	56	40	36	30	28	29	30	25	38	39	44	42	44	42	34	30	21	27	26	15	35
22	15	20	8	3	7	10	22	33	34	30	33	51	73	55	64	68	79	68	52	55	44	40	20	39	38
23	33	9	9	12	12	13	11	20	14	13	12	18	25	29	35	43	40	33	22	14	31	37	31	14	22
24	25	27	17	16	17	18	16	19	22	26	25	30	35	40	53	75	69	49	35	60	80	40	16	22	35
25	38	31	31	32	25	16	38	56	56	54	58	103	96	89	76	79	74	60	59	46	15	29	31	37	51
26	19	8	21	15	22	22	19	13	17	24	56	32	10	104	95	101	110	105	88	58	23	34	38	25	48
27	21	18	19	17	19	26	14	16	11	19	24	33	42	43	28	24	15	13	40	48	36	25	45	35	26
28	42	38	35	33	38	35	24	21	40	50	46	35	27	27	32	40	43	58	41	22	21	21	15	22	34
29	25	40	18	23	14	15	16	22	20	22	30	25	48	67	94	78	75	59	47	37	35	47	45	56	40
30	57	56	49	16	13	4	4	8	6	10	23	22	17	18	17	39	27	23	17	23	39	26	41	50	25
AVERAGE	30	27	26	25	22	21	20	22	27	32	36	37	45	49	48	51	53	50	40	37	35	33	32	33	35

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85

HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN APRIL 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	9	15	345	41	90	12	66	103	280	357	42	60	293	329	265	310	185	166	125	304	17	9	16	34	
2	49	39	38	38	59	50	57	83	122	118	160	194	213	241	250	236	353	357	5	52	42	31	17	34	
3	32	21	40	27	56	45	20	295	242	245	226	240	233	242	250	284	303	296	301	314	18	18	358	16	
4	315	319	335	1	25	16	77	116	210	263	287	332	335	336	328	349	347	346	19	17	11	349	349	345	
5	354	4	9	353	29	316	83	193	210	229	242	243	292	3	352	336	333	337	349	15	15	21	13	357	
6	337	324	349	12	33	19	357	336	343	353	3	303	6	1	14	353	349	6	24	25	32	34	357	18	
7	9	2	23	49	87	87	38	313	238	202	205	231	243	236	219	244	8	13	17	38	43	33	48	42	
8	39	40	50	353	61	52	50	107	192	183	179	192	214	230	236	280	252	273	303	39	46	20	336	10	
9	79	60	34	148	161	256	349	303	210	219	222	232	262	272	332	320	336	38	18	21	18	13	15	238	
10	56	55	39	39	42	45	52	121	193	205	197	205	228	226	105	97	144	145	103	59	42	348	24	54	
11	45	38	41	51	42	30	53	142	190	205	224	221	236	233	291	282	290	291	280	287	28	14	359	5	
12	280	74	79	193	200	285	71	254	249	205	233	335	18	11	5	16	28	24	21	31	35	20	9	19	
13	29	339	14	24	35	52	46	63	76	91	92	92	45	102	73	89	76	64	21	14	14	13	11	13	
14	25	13	15	45	47	14	25	275	238	235	243	237	246	281	259	241	238	242	274	42	46	19	17	20	
15	28	13	45	53	74	69	52	155	186	195	214	222	222	234	195	232	230	257	290	314	37	45	47	41	
16	7	69	63	65	62	60	62	180	222	229	228	226	245	261	250	241	269	256	292	301	269	234	59	60	
17	65	60	52	102	157	152	101	189	167	193	220	229	222	211	230	237	232	238	250	250	260	246	166	193	
18	117	98	119	256	284	334	39	8	346	54	80	86	285	286	308	109	132	100	72	90	95	360	36	340	
19	34	56	51	329	200	206	180	193	211	227	253	243	237	212	202	237	259	253	156	144	150	147	191	215	
20	253	226	216	215	196	188	221	235	238	236	223	211	226	247	253	246	276	283	299	297	303	308	287	311	
21	271	266	263	264	255	228	227	209	214	229	222	245	215	220	188	194	173	172	184	175	185	168	67	120	
22	101	157	88	117	165	238	238	241	256	224	256	15	8	354	357	9	334	353	1	12	356	360	20	13	
23	359	178	181	227	68	57	122	192	174	180	6	260	274	244	230	250	218	202	167	90	54	48	39	46	
24	55	50	57	70	74	94	88	100	157	175	199	198	218	231	238	277	265	266	341	351	356	352	53	143	
25	80	94	82	44	44	29	162	181	238	292	259	251	282	304	306	299	315	315	332	350	315	304	310	293	
26	262	135	71	79	48	56	33	62	70	91	81	79	66	76	66	66	68	76	95	236	312	3	354	357	
27	42	62	49	48	41	25	31	46	129	170	175	144	173	188	172	189	91	102	101	88	43	46	120	99	
28	60	60	62	52	46	47	166	48	74	193	184	184	182	197	208	208	191	167	159	147	36	310	329	287	
29	242	299	261	196	147	142	150	152	173	183	211	221	13	18	10	7	10	4	2	5	12	6	13	8	
30	7	14	11	189	245	143	80	258	228	217	249	243	249	101	162	253	209	260	21	61	24	24	51	59	

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION  
DATA RECORDED IN APRIL 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A DEGREE

HOUR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	250	294	447	406	371	302	214	275	451	437	422	477	507	606	370	403	482	238	149	704	210	46	98	125	21
2	66	60	111	138	142	61	137	197	38	376	376	641	406	282	**	269	271	64	192	200	178	195	374	88	25
3	348	332	180	198	324	59	119	478	200	**	213	199	213	240	204	217	164	88	84	271	224	42	131	184	32
4	589	307	503	385	181	557	120	597	295	108	142	135	148	148	110	189	122	144	163	137	121	73	74	56	46
5	87	39	32	172	69	513	178	383	264	192	190	197	380	231	225	267	137	110	200	87	186	139	105	146	40
6	272	60	170	71	227	166	48	314	109	141	219	245	342	260	270	256	195	173	61	71	41	92	207	91	37
7	160	167	229	220	306	101	448	502	286	174	201	245	219	212	344	452	500	137	143	209	83	142	117	117	29
8	44	43	37	335	146	60	102	410	199	170	209	236	235	453	359	466	266	121	194	338	83	191	438	136	27
9	360	240	176	702	475	651	226	396	149	152	214	231	216	226	275	215	118	163	100	109	122	125	87	342	38
10	556	63	54	28	35	50	82	375	249	230	255	282	280	257	595	149	142	129	484	164	132	101	161	85	29
11	63	498	113	107	60	379	162	371	239	185	200	230	261	260	159	182	142	148	71	558	93	174	138	136	30
12	508	369	275	411	135	498	368	220	335	207	495	509	167	214	170	200	124	156	104	79	42	144	92	139	34
13	156	327	114	151	153	46	45	93	113	152	235	322	595	566	210	324	130	226	150	81	107	158	166	134	40
14	132	215	349	124	165	285	335	338	255	151	184	237	293	433	356	264	192	169	291	151	138	186	95	62	26
15	76	359	96	133	594	397	187	267	258	238	188	222	165	180	172	329	274	348	93	572	43	315	127	212	23
16	350	102	86	89	74	53	142	386	120	111	170	139	164	174	128	159	160	244	121	126	128	308	75	63	40
17	89	125	75	418	106	206	424	175	157	215	175	208	171	153	120	111	110	118	67	57	62	228	142	213	44
18	549	265	416	192	393	411	220	201	202	146	133	205	188	84	449	318	181	107	127	218	542	379	121	510	39
19	140	93	330	226	174	209	132	84	150	87	143	120	134	166	217	122	149	199	243	125	156	357	121	352	27
20	245	55	49	67	115	150	102	74	103	101	109	104	133	102	117	208	179	133	105	92	116	75	96	123	59
21	111	123	77	78	67	161	68	112	123	153	217	481	224	164	144	128	110	81	78	83	102	119	484	346	35
22	217	229	358	420	384	476	66	84	158	192	520	161	145	158	200	180	116	141	139	176	65	67	202	79	38
23	177	612	580	411	623	326	575	265	348	453	503	375	333	261	232	147	151	155	118	215	51	36	44	189	22
24	68	68	108	217	225	174	145	214	165	206	239	199	190	185	165	150	203	264	299	108	90	154	667	186	35
25	149	72	126	72	114	482	153	98	311	159	146	105	213	141	157	174	133	126	93	85	364	147	207	389	51
26	282	308	102	125	196	122	103	169	311	316	111	96	77	86	72	109	75	72	277	112	340	90	72	187	48
27	94	145	88	108	232	183	367	241	293	422	322	291	224	189	238	357	316	222	125	178	132	143	459	246	26
28	92	66	82	73	46	83	561	624	197	174	118	152	196	170	230	160	94	129	134	292	333	486	538	539	34
29	**	123	408	149	148	131	158	142	150	212	183	181	408	191	157	141	136	112	68	54	97	86	66	32	40
30	34	143	208	179	211	446	371	345	477	402	377	352	687	622	634	622	169	116	650	202	157	255	61	43	25
AVERAGE	216	197	199	214	216	258	212	281	224	216	240	253	264	247	244	242	185	154	171	195	151	168	192	185	213

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85



HOUR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	45	49	28	10	30	12	24	25	13	25	23	22	14	31	45	30	52	31	51	41	44	48	38	23	31
2	26	18	29	29	23	22	13	13	24	19	22	27	26	28	32	33	27	24	17	4	27	37	36	26	24
3	29	25	28	22	16	14	18	26	48	38	32	28	35	40	54	35	45	39	28	58	30	17	24	30	32
4	22	8	16	26	24	17	18	17	25	28	25	47	54	57	28	29	31	31	27	10	17	35	26	19	27
5	23	14	35	34	35	38	28	17	15	19	29	34	41	43	46	41	43	36	30	16	21	23	65	39	32
6	26	29	15	20	32	23	23	25	24	16	20	31	40	45	44	42	49	36	22	17	24	26	25	28	28
7	24	29	24	33	29	28	21	19	38	40	32	39	39	45	50	29	21	22	39	44	23	15	13	10	29
8	22	24	24	25	24	24	11	25	40	36	40	43	42	49	45	30	15	24	19	16	33	35	31	36	30
9	34	25	17	29	34	29	17	20	18	17	30	34	35	45	41	65	69	19	25	19	18	11	15	14	28
10	17	19	31	38	31	22	37	68	87	94	93	76	96	100	97	94	92	97	60	47	48	27	23	19	59
11	49	39	26	12	11	17	22	19	26	27	43	52	56	53	48	39	39	28	32	24	26	27	38	28	33
12	27	22	18	20	13	15	20	10	38	66	69	58	29	22	14	18	28	32	18	26	23	53	34	31	29
13	24	53	36	33	47	43	59	77	68	91	95	83	89	77	70	35	78	52	38	26	33	37	24	34	54
14	23	18	13	17	16	15	12	15	**	**	39	41	45	42	33	34	35	37	30	15	32	32	40	41	28
15	36	24	20	24	23	5	8	15	32	39	28	33	47	42	39	49	59	58	41	15	12	10	8	11	28
16	20	23	19	15	28	16	13	33	56	71	70	61	50	54	40	43	43	39	32	33	41	37	35	32	38
17	29	23	22	31	20	34	26	11	22	26	26	36	54	46	52	33	40	50	46	32	26	43	39	32	33
18	23	28	25	28	29	23	17	10	26	25	26	36	98	27	41	33	63	52	18	7	21	18	30	23	30
19	13	22	23	24	23	24	19	13	10	18	27	27	34	24	40	37	57	57	47	49	49	32	29	26	30
20	19	29	27	29	27	23	15	9	18	23	30	29	42	76	48	34	62	66	60	37	26	33	37	17	34
21	16	22	18	38	33	30	47	62	58	65	64	35	35	38	51	38	74	39	6	13	12	14	17	24	35
22	28	17	19	20	22	22	12	10	17	22	19	20	19	32	49	43	25	8	16	26	18	22	30	30	23
23	32	14	16	21	28	26	12	16	20	20	22	25	37	39	17	33	14	12	18	29	28	29	34	35	24
24	29	30	25	15	29	24	8	11	19	21	26	27	27	27	28	41	34	30	25	32	30	34	34	35	27
25	31	17	27	26	19	21	9	11	11	17	26	36	36	33	41	51	47	37	38	49	41	38	35	43	31
26	47	21	22	22	23	22	16	21	28	33	33	41	52	57	66	75	64	73	42	38	36	33	27	19	38
27	17	13	22	26	24	30	19	21	22	42	61	55	51	61	57	65	63	69	39	34	30	30	26	30	38
28	34	35	42	34	11	12	20	25	41	46	44	53	49	64	79	58	51	48	43	30	36	32	19	11	38
29	23	15	17	19	24	16	25	30	47	63	84	90	84	92	93	91	94	97	82	71	63	72	71	70	60
30	63	51	38	25	34	24	18	30	15	21	23	43	37	34	46	28	33	29	45	98	89	79	51	42	42
31	13	12	11	13	24	23	25	45	49	45	41	66	69	57	54	49	53	38	30	26	21	21	13	22	34
AVERAGE	26	25	24	24	25	22	20	24	32	37	40	43	47	48	48	44	48	42	34	32	32	32	31	28	34

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85

HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN MAY 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	55	48	17	95	61	79	310	298	141	175	161	161	156	348	1	87	70	43	196	166	150	149	146	82	
2	53	28	349	359	16	49	102	161	179	165	181	177	176	175	189	193	196	197	203	126	49	47	46	45	
3	57	65	60	64	83	68	139	177	176	163	182	207	222	247	239	253	207	204	189	347	44	122	34	50	
4	54	94	58	52	51	65	72	161	193	199	218	220	236	241	233	241	226	228	206	145	47	47	35	55	
5	59	82	57	57	52	52	76	126	150	179	186	207	217	251	242	228	242	223	221	205	328	16	23	28	
6	54	14	75	66	55	70	76	165	163	176	213	247	227	226	214	232	217	196	183	215	29	37	40	53	
7	50	62	69	53	57	52	64	108	204	218	203	215	206	205	231	251	241	208	206	228	217	211	215	101	
8	71	71	76	67	60	63	87	209	214	220	222	228	234	259	248	217	183	311	337	64	36	32	31	40	
9	46	49	82	49	51	71	71	141	178	206	151	236	235	228	235	304	300	200	185	148	106	73	118	112	
10	127	89	128	147	162	172	177	212	215	216	236	244	252	256	273	280	298	304	307	290	295	277	271	280	
11	290	289	305	329	68	273	276	259	273	255	275	285	284	283	278	319	316	311	317	335	11	44	37	46	
12	50	46	71	270	134	37	56	31	1	357	340	332	337	354	81	143	322	5	101	268	312	348	357	343	
13	354	335	346	349	338	343	339	354	15	358	6	14	13	10	2	10	11	14	6	52	42	49	64	46	
14	20	9	29	73	29	35	333	243	**	**	230	223	229	237	230	220	212	197	190	136	51	49	46	44	
15	44	61	79	54	57	33	46	169	181	179	188	300	223	198	198	186	210	220	219	158	96	126	80	71	
16	43	60	64	66	228	146	94	149	160	182	170	160	178	166	250	88	98	140	115	64	51	50	46	45	
17	45	67	69	55	54	49	67	112	180	199	234	228	236	258	263	15	281	280	273	279	359	46	88	54	
18	358	16	49	49	58	59	55	112	186	209	256	19	12	1	283	289	328	34	39	224	124	119	87	296	
19	16	48	57	40	62	63	72	77	194	197	199	218	75	74	16	47	60	79	90	98	90	8	103	74	
20	60	35	30	33	50	49	50	131	185	196	209	206	16	70	68	86	68	80	72	82	72	68	36	20	
21	338	195	55	31	47	76	99	79	67	54	50	40	59	59	79	91	215	232	341	44	327	65	69	47	
22	30	33	4	37	27	36	59	241	226	235	234	34	54	292	284	360	50	140	216	252	56	55	50	53	
23	44	58	339	334	5	12	15	186	201	213	209	205	270	357	61	98	61	231	282	332	1	27	51	31	
24	44	50	44	34	17	23	55	134	195	200	211	227	194	221	236	328	348	353	14	19	37	63	51	52	
25	44	43	54	58	75	75	23	117	144	193	207	221	242	225	237	243	222	211	262	335	43	47	57	54	
26	45	65	40	52	47	55	76	157	195	201	225	228	243	246	251	290	277	259	269	270	253	244	298	28	
27	8	65	74	65	61	54	75	125	195	220	227	234	231	242	237	263	244	246	256	253	256	277	223	239	
28	216	228	243	249	90	71	196	197	214	218	211	235	234	253	285	279	294	282	303	340	10	12	333	333	
29	334	292	314	355	51	69	195	204	216	225	231	240	243	247	240	238	244	248	254	266	250	243	241	245	
30	263	274	288	282	293	343	55	5	19	287	303	263	275	279	246	271	229	225	210	221	222	229	211	208	
31	154	165	93	177	190	175	197	213	223	243	266	249	258	275	273	280	291	308	336	11	35	42	57	338	

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION  
DATA RECORDED IN MAY 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A DEGREE

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	33	39	328	343	63	326	117	322	476	217	324	373	420	241	179	200	167	566	166	98	84	99	95	259	31
2	89	177	61	70	172	95	353	217	186	261	270	260	280	286	266	235	200	191	174	374	30	20	49	122	24
3	54	53	44	62	120	132	182	185	128	186	249	230	314	184	284	240	199	136	207	183	418	103	204	56	32
4	112	448	179	51	32	61	206	195	181	212	333	206	197	191	203	138	151	140	114	642	239	35	181	321	27
5	93	185	92	46	46	42	156	181	286	212	235	257	276	275	235	278	198	79	61	157	348	621	188	100	32
6	114	187	597	170	68	93	159	244	177	247	439	278	259	232	208	185	164	117	86	524	129	114	90	482	28
7	255	89	66	49	46	39	69	355	130	176	255	293	230	321	166	175	278	207	79	117	144	271	371	453	29
8	96	107	68	79	206	129	230	218	123	120	132	159	148	162	163	322	270	470	392	213	50	68	106	32	30
9	56	414	433	45	82	74	82	261	222	332	250	357	219	114	202	209	140	601	165	219	167	252	239	323	28
10	173	166	84	149	111	88	111	97	105	121	106	114	109	125	154	182	147	135	126	127	80	161	195	174	59
11	76	97	217	489	658	512	126	233	217	310	239	234	200	184	230	246	199	283	187	111	175	177	46	58	33
12	54	250	485	308	155	418	369	367	166	114	86	111	164	231	357	219	196	181	682	313	279	125	87	126	29
13	338	66	103	111	54	76	79	94	177	92	139	177	175	187	181	155	171	163	128	114	105	142	85	151	54
14	219	238	437	386	260	138	440	204	**	**	213	184	236	241	263	179	160	209	106	289	66	47	56	61	28
15	78	86	133	101	136	445	340	243	150	159	254	321	174	245	294	304	144	103	96	225	268	445	304	181	28
16	73	183	87	164	493	339	166	158	104	179	198	147	191	161	630	460	379	149	210	201	60	62	75	57	38
17	101	115	145	73	84	50	140	283	153	191	239	216	176	232	247	680	317	160	82	51	430	68	302	137	33
18	184	213	107	141	97	177	94	432	248	308	356	399	175	487	**	221	362	138	106	679	523	187	210	380	30
19	228	90	104	96	154	72	90	172	451	317	259	510	408	194	150	179	98	92	164	95	91	319	213	130	30
20	233	94	80	108	126	146	135	278	234	273	330	325	648	91	174	460	185	92	74	271	439	204	221	133	34
21	666	271	511	131	126	144	87	83	95	101	109	258	306	216	124	333	78	218	590	90	350	195	234	68	35
22	47	239	178	91	78	64	157	350	305	249	428	530	671	527	113	505	311	375	125	438	229	84	72	81	23
23	42	228	285	97	65	52	197	309	175	280	387	358	217	557	586	290	**	228	318	59	80	50	203	121	24
24	114	71	49	112	42	66	150	317	234	316	252	266	413	244	255	448	242	140	121	103	40	283	45	43	27
25	43	200	70	184	387	471	371	447	363	343	264	243	175	323	230	245	118	131	523	661	72	90	98	78	31
26	52	431	71	72	54	67	201	177	187	203	199	201	218	227	198	134	189	139	148	65	95	90	114	533	38
27	596	112	95	69	110	89	144	315	256	137	211	223	251	188	199	173	128	84	77	93	115	85	236	82	38
28	94	64	85	363	588	118	199	201	121	133	161	210	221	189	76	234	135	218	103	119	66	69	171	268	38
29	151	199	209	260	110	540	140	158	108	153	139	143	134	143	109	137	105	110	98	79	63	68	64	70	60
30	127	74	121	132	105	465	432	159	463	385	561	220	335	279	217	435	316	323	138	73	89	76	113	184	42
31	209	255	337	203	165	104	173	75	308	182	165	138	135	169	242	222	157	209	109	53	124	151	487	333	34
AVERAGE	155	175	189	153	161	182	190	233	218	217	251	256	260	240	231	272	211	206	186	221	176	154	166	181	203

\* Indicates calibration of sensors  
\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 7/24/85

HOURLY AVERAGED WIND SPEED  
DATA RECORDED IN JUNE 1985  
BLANDING - UTAH  
UNITS ARE TENTHS OF A METERS PER SECOND

HOUR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	14	25	23	23	26	25	13	36	46	62	63	61	59	58	62	67	65	59	51	29	18	31	35	21	41
2	19	31	22	23	28	24	9	30	38	33	35	42	51	49	56	60	60	50	42	27	35	35	41	54	37
3	30	21	13	16	27	31	19	8	7	22	34	35	43	52	52	51	33	18	16	19	22	27	24	21	27
4	15	24	33	14	37	32	21	12	26	46	52	35	58	56	23	36	22	73	68	35	20	27	28	27	34
5	28	24	22	29	29	19	8	32	17	21	22	27	31	36	41	32	28	33	39	30	30	34	31	17	28
6	24	21	16	26	22	21	13	22	23	19	17	21	22	23	36	32	36	18	9	12	28	32	33	35	23
7	26	34	18	15	19	23	6	24	23	16	18	23	27	43	40	33	32	29	16	16	16	36	42	29	25
8	10	39	25	15	28	23	11	22	19	24	33	37	56	60	**	**	**	**	**	**	**	**	**	**	29
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	71	55	36	43	30	52	75	75	57	32	47	48	60	71	54
11	56	46	23	27	21	24	24	11	7	14	22	33	44	47	53	48	58	53	56	36	33	42	38	40	36
12	49	49	48	37	21	12	15	7	17	26	26	23	21	29	31	37	40	50	37	31	31	23	29	30	30
13	34	11	16	30	22	25	14	24	26	17	21	24	32	40	62	48	63	60	49	32	35	41	39	44	34
14	47	49	21	20	19	12	17	10	12	28	25	28	35	42	58	49	57	48	46	33	42	44	53	43	35
15	35	29	29	19	24	27	13	30	28	16	21	23	27	35	29	18	25	21	27	26	28	33	33	35	26
16	41	28	27	14	19	22	18	21	24	19	30	33	40	47	58	41	28	26	47	39	69	73	36	31	35
17	42	48	42	27	15	29	16	8	20	13	21	21	37	25	49	47	21	37	47	47	24	24	26	16	29
18	29	36	31	26	36	24	12	17	7	23	24	29	34	31	23	22	47	62	55	49	42	30	43	36	32
19	24	12	13	21	11	15	32	32	39	34	37	23	27	26	28	37	44	42	31	33	22	17	31	23	27
20	26	22	19	21	16	17	30	30	29	24	21	28	38	49	42	46	56	70	68	43	46	39	39	31	35
21	24	21	20	26	27	18	14	15	22	29	29	33	25	38	44	33	50	48	35	40	39	46	34	36	31
22	30	14	14	9	21	18	11	20	16	17	27	37	49	33	31	54	63	52	29	21	22	18	24	36	28
23	24	24	33	33	30	22	20	27	25	19	19	26	30	26	39	41	45	44	33	23	41	31	30	35	30
24	27	14	12	15	23	23	26	24	47	47	55	50	45	54	41	80	82	81	62	21	22	18	17	18	38
25	16	14	18	23	21	24	34	36	47	66	72	77	74	74	82	83	81	80	45	51	38	50	30	25	48
26	17	30	40	15	23	17	38	56	52	44	42	46	51	49	50	47	48	49	34	34	38	39	32	41	39
27	30	36	35	22	27	33	43	19	19	18	18	19	23	30	39	43	40	33	24	20	26	37	37	38	30
28	38	36	19	19	11	9	14	20	28	30	34	28	26	33	31	27	43	46	30	32	37	37	17	22	28
29	23	16	23	30	18	10	19	22	18	19	25	28	51	38	45	42	39	41	23	29	32	26	21	26	28
30	18	20	10	17	19	15	21	26	38	43	38	35	36	39	32	32	34	31	24	28	43	52	33	41	30
AVERAGE	28	28	24	22	23	21	19	23	26	28	33	34	39	42	43	44	47	47	39	31	33	35	33	33	32

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85



HOURLY AVERAGED WIND DIRECTION  
DATA RECORDED IN JUNE 1985  
BLANDING - UTAH  
UNITS ARE DEGREES AZIMUTH

HOUR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	72	51	49	51	52	48	68	203	210	231	215	220	222	234	237	240	250	262	275	273	323	9	17	37	
2	68	32	46	49	60	56	105	207	221	197	217	224	210	224	224	221	222	220	219	213	218	226	246	255	
3	244	202	139	172	56	44	55	42	162	245	230	227	238	206	227	226	217	243	256	296	9	7	138	111	
4	343	340	354	51	54	49	13	5	21	75	88	56	153	93	85	68	56	184	185	189	148	75	71	75	
5	55	60	43	33	19	31	139	186	185	201	207	218	223	234	261	265	291	324	333	329	358	11	29	36	
6	48	98	98	69	62	55	105	159	168	185	214	231	215	247	237	251	264	279	357	185	33	17	351	15	
7	23	37	35	61	34	34	125	141	167	172	208	229	224	231	236	229	219	250	231	203	351	23	16	69	
8	39	37	351	48	43	40	73	159	188	193	230	230	262	262	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	58	66	34	21	43	321	349	344	334	358	14	15	11	8	
11	7	10	34	337	32	358	30	48	179	207	321	338	352	7	11	9	15	17	19	22	32	24	21	17	
12	14	12	9	28	43	36	64	322	237	220	221	222	226	225	247	230	231	3	358	5	20	29	23	22	
13	18	191	54	40	60	50	68	168	171	193	218	220	243	286	338	326	345	343	336	342	360	6	10	14	
14	11	10	165	31	49	69	76	135	179	207	219	218	272	325	312	327	332	325	340	353	10	16	21	12	
15	22	352	1	203	287	264	203	234	220	213	218	191	229	282	7	20	9	36	51	28	31	21	27	18	
16	20	65	51	28	347	49	34	122	177	186	241	208	226	45	47	350	356	48	60	57	72	70	115	71	
17	50	40	36	77	62	34	31	194	205	223	212	237	10	60	322	344	10	34	61	66	89	59	77	96	
18	69	40	37	39	36	35	58	179	134	177	204	206	265	341	2	359	28	17	14	19	24	43	51	66	
19	120	33	35	193	50	227	198	170	184	189	177	178	244	259	325	325	331	7	60	28	71	69	51	65	
20	48	39	340	327	257	161	174	190	196	246	239	225	226	252	299	312	314	360	6	3	291	252	294	5	
21	236	50	50	60	45	62	135	237	264	293	355	13	37	335	342	11	7	14	12	23	20	8	14	7	
22	17	9	34	340	348	53	129	197	198	266	250	232	264	311	280	289	291	293	314	1	20	31	27	37	
23	54	52	43	48	67	95	179	180	198	203	246	215	220	271	216	221	198	259	316	340	288	350	26	33	
24	30	310	202	61	45	95	184	350	133	162	179	179	203	11	351	308	305	307	315	299	185	169	212	178	
25	183	313	49	46	55	108	174	200	227	221	238	245	241	252	342	359	357	352	7	360	2	9	11	7	
26	341	342	326	69	17	27	343	359	358	4	3	357	358	355	360	4	6	8	18	11	7	10	15	12	
27	24	32	47	31	8	49	71	58	56	59	16	137	226	252	242	228	218	216	228	318	46	26	28	22	
28	21	19	23	3	290	169	165	201	215	229	248	271	299	273	263	242	284	321	347	33	34	36	19	13	
29	30	52	58	47	52	103	154	173	183	187	188	231	275	274	244	252	275	307	320	8	6	321	338	356	
30	56	65	52	35	54	73	168	179	205	213	244	231	261	255	243	269	294	310	314	358	8	11	25	29	

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
SAROAD(V1.0) 07/24/85

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION  
 DATA RECORDED IN JUNE 1985  
 BLANDING - UTAH  
 UNITS ARE TENTHS OF A DEGREE

---  
 HOUR OF THE DAY  
 ---

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	253	112	85	94	58	49	419	120	105	147	135	164	195	158	166	194	175	127	88	65	302	63	45	118	41
2	391	63	64	68	58	45	397	174	158	184	303	215	197	203	188	226	147	154	92	72	153	58	57	66	37
3	421	615	336	192	384	71	149	226	604	213	166	193	188	220	203	232	369	455	204	220	90	340	226	490	27
4	478	278	100	665	136	196	149	296	282	239	187	330	316	394	338	288	298	161	117	139	280	159	124	136	34
5	194	115	38	44	73	219	537	190	387	276	396	345	241	240	293	391	319	199	179	69	97	79	105	286	28
6	67	414	221	62	99	90	447	222	193	297	384	339	295	399	254	248	283	390	113	547	113	95	88	72	23
7	75	53	371	160	128	41	536	167	179	360	314	329	311	296	276	373	278	258	261	195	195	116	84	373	25
8	57	41	322	147	33	41	401	139	187	226	182	264	197	96	**	**	**	**	**	**	**	**	**	**	29
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	132	185	346	316	573	305	153	115	109	122	70	128	172	199	54
11	165	165	616	344	132	140	80	147	625	548	439	398	255	213	157	193	145	145	108	81	45	86	43	145	36
12	112	134	64	314	128	329	109	351	236	220	268	331	452	376	409	266	223	282	115	65	56	95	63	73	30
13	264	316	183	65	120	71	235	194	192	308	317	313	348	307	214	194	141	127	172	42	100	114	46	74	34
14	70	91	698	179	212	254	164	359	335	305	268	351	499	375	184	352	189	152	121	101	59	90	87	124	35
15	126	154	495	301	101	391	212	102	171	362	416	418	368	413	392	636	252	255	167	139	100	49	52	118	26
16	103	145	85	566	649	231	305	398	562	298	625	259	237	647	138	290	530	95	109	101	71	65	227	178	35
17	147	113	59	512	183	59	92	574	254	525	328	430	550	396	515	360	634	128	117	104	97	121	206	155	29
18	164	42	57	46	52	100	139	303	480	363	424	408	440	682	563	287	145	117	158	151	121	193	34	154	32
19	200	487	289	250	554	277	290	233	250	251	316	353	498	520	500	316	206	195	82	58	660	118	97	482	27
20	99	99	155	106	383	238	161	175	252	361	379	382	378	301	290	206	124	165	159	100	547	80	457	207	35
21	544	561	163	113	121	190	297	252	291	518	459	316	658	280	213	265	219	118	129	52	53	81	106	69	31
22	280	205	123	264	602	97	485	261	393	629	551	387	303	299	350	236	150	111	63	307	94	175	185	59	28
23	221	88	36	32	68	341	204	212	257	380	472	362	333	398	239	177	151	368	112	110	178	172	221	72	30
24	104	511	454	223	149	138	403	305	136	222	184	237	493	447	437	99	106	97	177	494	147	120	223	100	38
25	165	607	397	172	140	334	154	220	142	188	152	139	190	133	362	133	155	104	163	167	117	169	141	246	48
26	368	128	175	214	143	343	208	174	212	244	187	278	234	264	188	221	172	157	130	92	90	128	153	199	39
27	129	125	48	106	135	163	145	360	595	486	600	504	440	408	223	177	136	103	88	324	123	69	51	54	30
28	57	34	187	527	218	239	333	203	185	290	370	542	351	367	412	445	219	125	150	60	29	49	242	125	28
29	72	137	68	72	188	226	167	188	209	340	216	361	232	287	257	191	249	123	109	83	98	130	167	65	28
30	154	65	122	203	132	316	135	176	190	216	282	468	394	334	342	459	268	146	150	109	119	136	194	67	30
AVERAGE	196	211	215	216	192	187	263	240	288	321	326	331	343	337	310	277	230	178	134	149	150	117	139	161	230

\* Indicates calibration of sensors

\*\* Indicates invalid data

ENECOTECH INC.  
 SAROAD(V1.0) 07/24/85



**APPENDIX B**

**FREQUENCY OF WINDS**

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS A  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)						MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21	
N	0.48	1.77	2.89	0.64	0.00	0.00	6.8
NNE	0.80	0.64	1.28	0.16	0.00	0.00	5.5
NE	0.48	2.25	0.80	0.00	0.00	0.00	4.6
ENE	0.64	1.28	0.64	0.00	0.00	0.00	4.4
E	0.64	1.77	1.28	0.16	0.00	0.00	5.1
ESE	1.93	1.28	0.32	0.00	0.00	0.00	3.2
SE	2.09	1.61	0.16	0.00	0.00	0.00	3.0
SSE	1.28	2.41	0.00	0.16	0.00	0.00	3.9
S	2.25	5.30	1.61	0.00	0.00	0.00	4.4
SSW	1.12	11.08	2.09	0.00	0.00	0.00	4.7
SW	1.12	9.15	5.78	0.64	0.00	0.00	5.6
WSW	1.77	5.78	4.01	0.64	0.00	0.00	5.5
W	0.96	2.41	3.69	0.80	0.00	0.00	6.3
WNW	0.48	1.44	1.44	0.32	0.00	0.00	5.8
NW	0.32	0.96	0.96	0.16	0.00	0.00	6.1
NNW	0.32	0.48	1.61	0.32	0.00	0.00	6.7
ALL	16.85	49.60	28.57	4.01	0.00	0.00	5.2

Calm (less than one knot) = 1.0%  
Period mean wind speed = 5.1 knots  
Percent occurrence for A stability class 20.6%

ENECOTECH INC.  
SBWIND(1.0) 7/24/85

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS B  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)							MEAN SPEED
	1, <3	3, <6	6, <10	10, <16	16, <21	>21	ALL	
N	0.00	0.00	5.58	0.80	0.00	0.00	6.37	8.8
NNE	0.40	0.40	0.00	1.20	0.00	0.00	1.99	8.1
NE	0.40	1.20	0.80	0.00	0.00	0.00	2.39	4.5
ENE	0.40	1.99	0.80	0.40	0.00	0.00	3.59	5.4
E	0.40	0.80	0.40	0.40	0.00	0.00	1.99	6.4
ESE	0.00	0.40	0.00	0.00	0.00	0.00	0.40	4.7
SE	0.00	1.59	0.40	0.00	0.00	0.00	1.99	4.4
SSE	0.40	3.59	1.20	0.00	0.00	0.00	5.18	5.1
S	0.00	9.96	3.19	0.40	0.00	0.00	13.55	5.5
SSW	0.80	9.16	5.18	0.80	0.00	0.00	15.94	5.8
SW	0.00	5.58	14.34	3.19	0.00	0.00	23.11	7.5
WSW	0.80	3.59	6.37	1.59	0.00	0.00	12.35	7.1
W	0.00	0.40	1.59	0.80	0.00	0.00	2.79	8.7
WNW	0.00	0.40	1.59	1.59	0.00	0.00	3.59	9.0
NW	0.00	0.40	1.99	0.40	0.00	0.00	2.79	7.9
NNW	0.00	0.40	1.20	0.40	0.00	0.00	1.99	8.3
ALL	3.59	39.84	44.62	11.95	0.00	0.00	100.00	6.7

Calm (less than one knot) = 0.0%  
 Period mean wind speed = 6.7 knots  
 Percent occurrence for B stability class 8.3%

ENECOTECH INC.  
 SBWIND(1.0) 7/24/85

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS C  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)							MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21	ALL	
N	0.00	1.06	2.12	4.23	0.00	0.00	7.41	9.4
NNE	0.53	0.53	1.06	2.65	0.00	0.00	4.76	8.5
NE	1.59	0.53	1.06	1.06	0.00	0.00	4.23	5.8
ENE	2.12	3.70	1.59	1.06	0.00	0.00	8.47	5.3
E	1.06	1.59	0.53	0.53	0.00	0.00	3.70	5.2
ESE	0.00	1.06	0.00	0.00	0.00	0.00	1.06	4.8
SE	0.53	1.06	1.06	0.00	0.00	0.00	2.65	5.8
SSE	0.00	4.76	2.12	1.06	0.00	0.00	7.94	5.8
S	0.00	3.70	5.29	0.53	0.00	0.00	9.52	6.4
SSW	0.00	4.76	8.99	2.12	0.00	0.00	15.87	7.4
SW	0.00	2.12	11.11	2.12	0.00	0.00	15.34	8.1
WSW	0.00	2.12	3.17	1.06	0.00	0.00	6.35	7.6
W	0.00	1.06	3.17	1.59	0.00	0.00	5.82	8.9
WNW	0.00	0.00	0.53	2.12	0.00	0.00	2.65	10.0
NW	0.00	0.00	1.59	0.00	0.00	0.00	1.59	8.2
NNW	0.00	1.06	0.00	0.53	0.00	0.00	1.59	7.4
ALL	5.82	29.10	43.39	20.63	0.00	0.00	98.94	7.3

Calm (less than one knot) = 1.1%  
 Period mean wind speed = 7.2 knots  
 Percent occurrence for C stability class 6.3%

FNECOTECH INC.  
 SBWIND(1.0) 7/24/85

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS D  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)							MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21	ALL	
N	0.09	1.87	5.43	5.71	0.84	0.00	13.95	10.0
NNE	0.09	2.72	6.46	2.43	0.84	0.19	12.73	8.8
NE	1.03	7.68	3.18	0.47	0.00	0.00	12.36	5.5
ENE	0.56	5.24	2.34	1.40	0.47	0.09	10.11	7.2
E	0.00	0.47	1.31	0.66	0.09	0.00	2.53	8.6
ESE	0.00	0.09	0.37	0.00	0.00	0.00	0.47	6.4
SE	0.19	0.19	0.47	0.00	0.00	0.00	0.84	5.6
SSE	0.19	0.47	0.75	1.12	0.00	0.00	2.53	8.6
S	0.00	1.50	1.40	0.75	0.09	0.00	3.75	7.8
SSW	0.00	1.03	1.78	0.66	0.09	0.00	3.56	8.0
SW	0.09	0.37	2.53	3.00	1.97	0.00	7.96	12.1
WSW	0.00	0.75	1.40	4.21	3.37	0.00	9.74	13.7
W	0.00	0.56	0.94	2.43	1.31	0.00	5.24	12.9
WNW	0.00	0.37	1.97	2.90	0.84	0.00	6.09	11.6
NW	0.00	0.56	0.84	1.22	0.28	0.00	2.90	10.7
NNW	0.00	1.12	1.40	2.34	0.28	0.00	5.15	10.0
ALL	2.25	25.00	32.58	29.31	10.49	0.28	99.91	9.5

Calm (less than one knot) = 0.1%

Period mean wind speed = 9.5 knots

Percent occurrence for D stability class 35.3%

ENECOTECH INC.  
SBWIND(1.0) 7/24/85

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS E  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)						MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21	
N	0.00	3.41	5.76	0.00	0.00	0.00	6.8
NNE	0.00	7.89	7.25	0.00	0.00	0.00	6.1
NE	1.92	21.32	18.34	0.00	0.00	0.00	5.7
ENE	2.13	10.45	1.07	0.00	0.00	0.00	4.5
E	0.43	1.49	0.64	0.00	0.00	0.00	4.5
ESE	0.00	0.64	0.00	0.00	0.00	0.00	4.6
SE	0.64	0.64	0.00	0.00	0.00	0.00	3.0
SSE	1.07	0.43	0.21	0.00	0.00	0.00	3.2
S	0.21	1.28	0.00	0.00	0.00	0.00	4.1
SSW	0.64	1.92	0.21	0.00	0.00	0.00	4.1
SW	0.21	1.07	1.28	0.00	0.00	0.00	5.9
WSW	0.21	0.43	0.43	0.00	0.00	0.00	5.6
W	0.00	1.07	0.64	0.00	0.00	0.00	5.6
WNW	0.00	0.21	0.21	0.00	0.00	0.00	5.8
NW	0.00	1.07	0.21	0.00	0.00	0.00	6.0
NNW	0.00	1.71	1.28	0.00	0.00	0.00	5.8
ALL	7.46	55.01	37.53	0.00	0.00	0.00	5.5

Calm (less than one knot) = 0.0%

Period mean wind speed = 5.5 knots

Percent occurrence for E stability class 15.5%

ENECOTECH INC.  
SBWIND(1.0) 7/24/85



FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS F  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	1.18	4.95	0.00	0.00	0.00	0.00	6.13	3.8
NNE	3.54	7.78	0.00	0.00	0.00	0.00	11.32	3.5
NE	4.01	10.85	0.00	0.00	0.00	0.00	14.86	3.7
ENE	5.90	6.60	0.00	0.00	0.00	0.00	12.50	3.2
E	4.95	3.07	0.00	0.00	0.00	0.00	8.02	3.0
ESE	2.36	1.89	0.00	0.00	0.00	0.00	4.25	3.1
SE	2.59	1.42	0.00	0.00	0.00	0.00	4.01	2.8
SSE	1.65	3.07	0.00	0.00	0.00	0.00	4.72	3.6
S	1.89	1.18	0.00	0.00	0.00	0.00	3.07	2.6
SSW	1.89	2.36	0.00	0.00	0.00	0.00	4.25	3.2
SW	1.65	1.18	0.00	0.00	0.00	0.00	2.83	3.2
WSW	0.71	2.36	0.00	0.00	0.00	0.00	3.07	3.8
W	0.94	2.36	0.00	0.00	0.00	0.00	3.30	3.5
WNW	1.18	2.36	0.00	0.00	0.00	0.00	3.54	3.5
NW	1.89	3.07	0.00	0.00	0.00	0.00	4.95	3.4
NNW	2.59	4.25	0.00	0.00	0.00	0.00	6.84	3.5
ALL	38.92	58.73	0.00	0.00	0.00	0.00	97.64	3.4

Calm (less than one knot) = 2.4%  
 Period mean wind speed = 3.3 knots  
 Percent occurrence for F stability class 14.0%

ENECOTECH INC.  
 SBWIND(1.0) 7/24/85

FREQUENCY OF WINDS BY DIRECTION AND SPEED  
FOR STABILITY CLASS ALL  
DATA RECORDED FROM JANUARY THROUGH JUNE 1985  
BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS(KNOTS)							MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21	ALL	
N	0.30	2.31	4.00	2.48	0.30	0.00	9.39	8.5
NNE	0.76	3.47	3.74	1.16	0.30	0.07	9.49	7.0
NE	1.46	8.13	4.27	0.23	0.00	0.00	14.09	5.2
ENE	1.65	5.06	1.29	0.60	0.17	0.03	8.80	5.4
E	1.03	1.36	0.89	0.33	0.03	0.00	3.64	5.3
ESE	0.73	0.76	0.20	0.00	0.00	0.00	1.69	3.7
SE	0.99	0.89	0.30	0.00	0.00	0.00	2.18	3.6
SSE	0.76	1.75	0.53	0.50	0.00	0.00	3.54	5.4
S	0.76	3.04	1.42	0.33	0.03	0.00	5.59	5.5
SSW	0.66	4.33	2.08	0.43	0.03	0.00	7.54	5.6
SW	0.53	2.94	4.17	1.59	0.69	0.00	9.92	8.0
WSW	0.56	2.28	2.12	1.82	1.19	0.00	7.97	9.2
W	0.33	1.29	1.52	1.19	0.46	0.00	4.79	8.8
WNW	0.26	0.83	1.19	1.36	0.30	0.00	3.94	9.1
NW	0.33	1.03	0.79	0.50	0.10	0.00	2.74	7.4
NNW	0.43	1.46	1.12	0.96	0.10	0.00	4.07	7.4
ALL	11.54	40.94	29.63	13.46	3.70	0.10	99.37	6.8

Calm (less than one knot) = 0.6%

Period mean wind speed = 6.7 knots

Percent occurrence for ALL stability classes 100.0%

ENECOTECH INC.  
SBWIND(1.0) 7/24/85