Summary of Wind Data from Nuclear Power Plant Sites

by
M. Gary Verholek

March 1977

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FROM
NUCLEAR POWER PLANT SITES

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INTRODUCTION

Our country's urgent need to develop alternate energy sources has spawned federal support for a national Wind Energy Conversion Program (WECP). This program is sponsored by the U. S. Energy Research and Development Administration (ERDA) through the Wind System Branch of the Department of Solar Energy. The primary goal of the WECP is the development and commercialization of durable and economically viable Wind Energy Conversion Systems (WECS). In order to determine where WECS turbines could be effectively used and how much energy is available for exploitation, special wind climatology studies are required. While several such studies have been conducted already^{1,2,3,4}, further work is needed to expand and improve our existing data base. This study is intended to provide additional data for inclusion in assessments of available wind energy.

OBJECTIVE

This study was undertaken to provide a summary of wind data from nuclear power plant sites. National Weather Service archives are an immediately obvious source of wind data, but additional data sources are also available. Utility companies proposing to build nuclear power plants are required to establish on-site meteorological monitoring programs that include towers for collecting wind and temperature data for

use in environmental impact assessments. These data are available for more than one hundred planned or operating nuclear power plant sites (Figure 1). A list of the sites, by state, is provided in Appendix A, while Appendix B contains an alphabetical list of the sites.

This site wind data provides a valuable addition to the existing NWS data sets, and significantly enlarges the multi-level data presently available. The wind data published through the NRC is assembled and assessed here in order to provide a supplement to existing data sets.

DATA

The Nuclear Regulatory Commission licensing process for nuclear reactor power plants requires that the controlling utility conduct an extensive meteorological monitoring program on the proposed power plant site. Information about on-site meteorological programs is published through the NRC under a docket number assigned to each nuclear unit. Depending on the appropriate stage of the licensing procedure and plant construction phase, relevant meteorological information is published in such documents as Environmental Reports (ER), Preliminary Safety Analysis Reports (PSAR), and/or Final Safety Analysis Reports (FSAR), which are available to the general public.

These documents are maintained at PNL in loose-leaf and microfiche form. The microfiche files were the primary source of most of the information.

The meteorological studies are required by the NRC to provide information on the diffusive characteristics of the atmosphere at the plant sites. The studies provide stability

FIGURE 1. Nuclear Power Plant Sites

and wind information for input into diffusion estimates. Because of the NRC requirement for stability data, the on-site meteorological program usually consists of a meteorological tower for wind and temperature lapse rate determination. Very often the utility company installs more than the required number of wind sensors on the tower. The data from supplemental sensors are not always published, even though the data were often found to be available at the utility company offices. Processing and publication of the additional data are left to the discretion of the utility companies. We have included such data when made available to us.

Wind data are usually published as joint frequency tables (speed and direction) for each stability category. For the purpose of this study, these data are summarized on an annual basis to include all stability classes. The annual joint frequency tables are presented as a part of Appendix C.

The records available through the NRC usually cover a period of one or two years, primarily because sufficient time has not elapsed for longer coverage. Fully licensed, operating units are required to maintain meteorological monitoring systems, but they are not required to publish data on a continuing basis. Hence, longer (>2 yr) periods of data are available at the utility company for longer periods, as well as for additional tower levels, but often these are not published. We have tried to collect and present all wind data published through the NRC, as well as some additional data from sites where publication of wind data is not yet required.

Descriptive information was gathered in addition to wind data in order to help assess the representativeness of the relatively short-term data. Information includes details of site location and topography, which are needed to assess the

effect of local influences on the general wind field. The meteorological towers were placed on-site to satisfy requirements for diffusion studies; thus the location may not be ideal by WECS standards. Site and topographical information is vital in assessing the applicability of the data to WECS requirements.

A brief description of the on-site wind measurement program was also obtained in order to provide some level of appreciation for the scope of the overall meteorological program. Those sites where data have not been obtained for all instrumented levels are shown in Appendix C. Information on specific wind instrumentation used at each site is also presented in this report. It is sufficient to note that the NRC has a rigorous Quality Assurance program and, therefore, the data should be viewed with a rather high degree of confidence while being assessed for its representativeness.

The descriptive information on Site Location, Topography and On-site Wind Measurements is included in Appendix C. Each site is presented in alphabetical order, with the site description followed by the wind data for that site.

ANALYSIS

The power available in the wind is a product of the kinetic energy per unit mass of moving air and the mass flow rate through a cross-sectional area A , so that

$$P = \frac{1}{2} \dot{m} v^2 = \frac{1}{2} (\rho A v) v^2 = \frac{1}{2} \rho A v^3 \quad (1)$$

where v is wind speed and ρ is air density. Another common form is expressed as power per unit area:

$$\frac{P}{A} = \frac{1}{2} \rho v^3 \quad (2)$$

Previous estimates of wind power potential in the United States^{1,2,4} have been based on statistics of the mean wind speed at various locations across the country. However, because of the cubic response to wind speed, a climatological distribution of speeds, rather than a mean wind speed, should be used to calculate power. For a given distribution $f(v)$ of wind speed v , the average power $\bar{P}$ from a wind-powered generator is given by

$$\bar{P} = \int_0^{\infty} P(v) f(v) dv \quad (3)$$

where P is given in (1) above. The frequency distributions of wind speeds must then be specified in order to determine the average available power.

In attempting to apply the above expression to the wind data from the nuclear power plants, a preview of the data revealed that frequency distributions were generally in the form of frequency per wind speed interval. In a great many cases, the upper wind speed interval was unbounded, and the size of the wind speed categories, the number of categories and the lower limits of the unbounded high speed categories varied considerably from site to site. In view of the non-uniformity of the data, several approaches were examined in order to select a single method capable of adequately specifying the frequency distribution to be used in power estimations.

The simplest approach would be to take the median value of the given speed intervals and use a summation approximation of the form:

$$\frac{P}{A} = \frac{1}{2} \rho \sum_i f_i v_i^3 \quad (4)$$

According to Reed (1974), this provides an acceptable approximation to within 20% and is extremely easy to use. However, since a great many of the data sets from the nuclear sites have unbounded upper speed intervals, a corresponding median value cannot be calculated. Assigning a systematically, but arbitrarily, determined median value would still result in power estimates of questionable validity.

Of the 184 distributions in this report, 141 have unbounded upper intervals. Frequencies for these intervals range as high as 55% with speeds as low as $> 5.59 \text{ m s}^{-1}$ (Clinton). As a more typical example, we might use the 91 m level at the Browns Ferry site in Alabama, summarized in Table 1.

TABLE 1. Velocity, Frequency Distribution
for Browns Ferry, AL (91 m)

u^* (ms^{-1})	Freq. (%)
0.22	0.11
1.52	5.75
2.41	9.98
3.31	11.54
5.54	30.45
8.22	27.55
10.91	10.63
>10.91	3.98

*This is the upper limit of the speed interval except where shown as $>v$.

Using equation (4) above with $\rho = 1.293 \text{ Kg}\cdot\text{m}^{-3}$, and assigning arbitrary limits to the upper speed category, power estimates can be obtained and are shown in Table 2.

TABLE 2. Power Estimates for Browns Ferry
Based on Arbitrary Velocity Limits

$v_{\max}$ (m/s)	P/A (w/m^2)
12	176
15	193
20	232
30	358

It is evident that even though the unbounded interval accounts for only 3.98% of the wind speeds, the cubic relationship causes the power estimate to be very sensitive to the velocity chosen as the upper limit. Since the majority of the distributions have unbounded upper intervals, we have no choice but to consider this method to be inappropriate for use with these data.

On the other hand, the reported frequencies could be used to determine an approximating distribution function, such as the Weibull⁵, the Normal⁶ or perhaps a Square Root-Normal⁷. Applications of proper integration techniques require extensive curve-fitting calculations and efforts to fit Weibull distributions to the NRC data did not produce satisfactory results.

For the Weibull distribution the cumulative probability of finding a speed less than or equal to v_* is given by

$$p(v \leq v_*) = 1 - \exp \left[- (v_*/c)^k \right] . \quad (5)$$

Justus, et al.⁵ rearranged Equation 5 into the form

$$\ln [- \ln (1 - p)] = k \ln v_* - k \ln c$$

and determined k and c by least-squares fit of $y = a + bx$,

where y is $\ln [-\ln (1 - p)]$, b is k , a is $-k \ln c$, and x is $\ln v_*$. Using wind data from the 60 m level at South Texas (Table 3), we obtain $c = 8.51$ and $k = 2.05$. As shown in Figure 2, the plot of the observed velocity-duration curves differs considerably from the values obtained from the Weibull distribution. Data from several other sites were also examined and the results were similar. Use of a Weibull approximation is, therefore, considered to be inadequate.

After further examination of the data from the NRC reports, it became evident that 1) the data had to be summarized by hand calculation because of the wide variety of formats the utilities used in reporting to the NRC, and 2) with little additional effort a graphical treatment was possible. The square root of the upper value of each wind speed category versus the cumulative frequency for the category, $\sum f (v \leq v_i)$, was plotted on probability paper, and a straight line was subjectively placed through the plotted points to approximate a Root-Normal distribution function. This graphical procedure was applied to the data from each site, and in very nearly every case, the line was drawn with confidence. The adequacy of the procedure is typified in Figure 3 as it applied to wind data from South Texas. As an example of a case where the fit was not very good, two plots of Pebble Springs data are presented. Figure 4 is a curvilinear normal approximation and Figure 5 is the straight line, Root Normal approximation. Power estimates are also shown for comparison purposes. While the curvilinear fit is obviously better, the power estimate from the straight line fit is being cited in order to maintain uniformity in the method of calculation.

Available power calculations were made from similar graphs for each site using the summation approximation (4) to the integral form (3). Velocities v_* corresponding to certain

Table 3. Joint Frequency Distribution
of Velocity for South Texas, TX

SOUTH TEXAS

JOINT FREQUENCY DISTRIBUTION

DIRECTION	SPEED (m/s)										LOCATION	
	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95			SITE	SE - TEXAS
N			0.13	0.46	1.38	2.65	1.93	1.09				
NNE			0.08	0.31	1.73	2.65	1.13	0.12				
NE			0.14	0.64	1.92	2.10	0.87	0.02				
ENE			0.07	0.64	1.39	1.42	0.38	0.02				
E			0.12	0.65	1.34	1.65	0.57	0.05				
ESE			0.11	0.52	1.80	2.02	0.73	0.15				
SE			0.11	0.67	2.78	5.11	1.94	0.69				
SSE			0.07	0.72	3.10	8.06	4.63	1.74				
S			0.09	0.77	3.27	6.51	4.72	3.03				
SSW			0.11	0.55	1.14	2.37	1.21	0.45				
SW			0.18	0.41	0.92	0.99	0.58	0.38				
W'SW			0.09	0.20	0.45	0.22	0.12	0.02				
W			0.09	0.34	0.28	0.28	0.14	0.12				
W'NW			0.08	0.31	0.36	0.35	0.14	0.12				
NW			0.14	0.47	0.61	0.52	0.36	0.29				
NNW			0.07	0.29	0.60	0.78	0.71	1.08				
TOT	0.08	1.68	7.94	23.08	37.69	20.16	9.38					
SUM	0.08	1.77	9.70	32.78	70.46	90.62	100.0					

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FIGURE 2. Observed Versus Calculated Velocity-Duration Curves for South Texas, TX

FIGURE 3. Square Root Normal Distribution for South Texas, TX

FIGURE 4. Curvilinear Normal Distribution for Pebble Springs, OR

FIGURE 5. Square Root Normal Distribution for Pebble Springs, OR

cumulative frequencies, ($\Sigma f = 0.02, 0.05, 0.1-0.9, 0.95, 0.98, 0.9999$) where $\Sigma f = \Sigma f (v \leq v_*)$, were determined from the graphs. Two successive velocities determined a velocity interval for which a median value was calculated; the difference of two successive cumulative frequencies determined the frequency of the velocity interval. Equation (4) then becomes:

$$\frac{P}{A} = \frac{\rho}{2} \sum_i (\Sigma f_i - \Sigma f_{i-1}) \left(\frac{v_i + v_{i-1}}{2} \right)^3 \quad (6)$$

Using this method, the distribution curve allows 99.99% of the frequency distribution to be used in the power calculations, even though the upper limit of the wind speed interval was not specified in the data.

The power estimates given in this report use the density adjusted to sensor elevation according to:

$$\rho(z) = \rho_0 \exp \left[- \frac{gm}{RT} \cdot z \right] \quad (7)$$

If we let:

$$\begin{aligned} \rho_0 &= 1.293 \text{ kg} \cdot \text{m}^{-3} \\ g &= 9.80665 \text{ m} \cdot \text{s}^{-2} \\ m &= 28.9 \text{ gm} \cdot \text{mole}^{-1} \\ R &= 8.3144 \times 10^7 \text{ erg} \cdot ^\circ\text{K}^{-1} \cdot \text{mole}^{-1} \\ T &= 273^\circ\text{K} \end{aligned}$$

then (7) becomes

$$\rho(z) = \rho_0 \cdot \exp (-1.25 \times 10^{-4} \cdot z) .$$

This adjustment can amount to decreases in power estimates of 1% at 100 m, 4% at 300 m and 6% at 500 m. When compared to estimates based on standard density, the estimates in this report are more conservative and more realistic.

RESULTS

Wind data and descriptions for the nuclear power plant sites across the United States have been assembled and presented in narrative and tabular form. This report embodies the following significant features:

- wind data from 104 previously unreported locations
- information from 55 sites that have data at more than one level
- 184 joint frequency distributions available for further analysis
- velocity duration curves for each distribution
- site descriptions including locations and topography
- calculated mean wind speeds
- average available wind power estimates for each distribution
- assemblage and tabulation of a unique data set

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APPENDIX A

Tabulation by State of Nuclear Power Plant Sites and Selected Wind Energy Related Data

Legend

El. (Base Elevation, MSL)	m
Ht. (Sensor Height, AGL)	m
$\bar{u}$ (Mean Wind Speed)	m/s
P/A (Power per Unit Area)	
Frequency Distribution	
u (Categorical Upper Limit of Wind Speed)	m/s
f (Categorical Frequency)	%

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution									
ALABAMA																
Alan R. Barton	32.75	86.40	138		2.20	24	u	0.22	1.56	3.35	5.59	8.27	10.73	>10.73		
				11			f	1.80	32.10	43.04	18.41	4.34	0.31	0.00		
Bellefonte	34.71	85.93	186		1.72	22	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
				10			f	6.50	43.40	29.89	16.53	3.31	0.33	0.04		
				40	3.35	70	f	1.43	10.84	41.64	31.41	11.51	2.43	0.74		
Browns Ferry	34.72	87.10	181		1.70	18	u	0.22	1.52	2.41	3.31	5.54	8.22	10.91	>10.91	
				10			f	0.22	41.13	28.77	13.77	12.79	3.13	0.21	0.02	
				91	4.88	199	f	0.11	5.75	9.98	11.54	30.45	27.55	10.63	3.98	
Joseph M. Farley	31.22	85.11	55		2.22	17	u	0.22	1.56	2.46	3.35	5.59	8.27	10.95	>10.95	
				10*			f	0.43	32.55	29.75	18.11	16.59	2.55	0.01	00.00	
ARIZONA																
Paio Verde	33.39	112.86	290		2.28	46	u	0.22	0.67	1.56	2.46	3.80	6.48	9.16	>9.16	
				11			f	0.51	6.03	25.79	23.94	19.64	17.95	5.05	1.09	
				61			f	0.17	3.18	16.54	18.49	21.26	24.45	11.22	4.69	
ARKANSAS																
Arkansas	35.31	93.22	103		2.10	28	u	0.30	0.90	1.80	2.70	3.60	4.50	>4.50		
				12			f	1.60	15.90	24.60	22.70	14.40	9.20	11.60		
							u	0.26	1.80	3.34	5.40	8.49	>8.49			
				58	3.50	71	f	0.40	16.50	36.30	29.70	13.90	3.20			
CALIFORNIA																
Diablo Canyon	35.21	120.85	38		3.65	187	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
				8			f	3.66	25.04	23.46	18.89	14.64	9.97	4.34		
							u	0.40	1.34	1.34	5.36	7.05	10.73	15.65	20.12	>20.12
				10	3.84	194	f	0.12	12.92	12.92	31.59	21.20	10.42	7.21	0.34	0.00
Humboldt Bay	40.73	124.22	60		3.84	152	u	0.67	1.12	1.56	3.35	5.59	8.27	10.95	22.57	>22.57
				76			f	5.88	3.58	6.27	29.96	27.83	15.93	6.78	3.77	0.00

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
CALIFORNIA (contd.)																		
Ranch Seco	38.30	121.14	61		2.56	55	u	0.50	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
				15			f	4.30	7.52	25.69	24.72	16.98	8.71	4.90	2.24	1.40	0.99	2.55
San Onofre	32.37	117.56	45		3.17	53	u	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
				10			f	0.07	4.53	21.50	25.34	21.92	13.32	6.51	3.41	1.50	0.86	1.05
				40			f	0.72	7.71	22.68	23.70	19.65	11.78	6.12	3.13	1.68	1.08	1.73
COLORADO																		
Fort St. Vrain	40.23	104.87	1460		1.99	75	u		1.79	3.58	5.36	7.15	8.94	11.18	>11.18			
				64			f		43.58	28.48	13.64	6.40	3.57	2.37	1.69			
CONNECTICUT																		
Connecticut Yankee	41.48	72.50	7		1.54	34	u	0.22	1.56	5.59	10.95	>10.95						
				2			f	2.09	49.69	42.83	5.29	0.09						
				30			f	17.21	24.19	48.56	9.88	0.18						
Millstone Point	41.31	72.17	0		2.86	86	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				10			f	5.11	23.56	28.49	25.51	13.13	4.21	0.00				
				46			f	2.08	10.65	23.11	30.02	19.90	14.24	0.00				
				4			u	0.50	1.50	3.30	5.50	8.20	10.80	15.00	20.00	>20.00		
				10			f	1.33	11.48	30.24	33.38	16.81	5.26	1.43	0.07	0.00		
				43			f	0.66	4.47	19.51	33.99	26.42	10.43	3.95	0.57	0.01		
				114			f	0.10	2.31	10.36	25.40	32.90	18.46	8.43	1.84	0.21		
DELAWARE																		
Summit	39.42	75.69	6		2.72	46	u		1.50	3.00	5.00	7.50	10.00	>10.00				
				9			f		21.35	37.80	26.60	11.51	2.46	0.27				

Site	Lat	Long	E1.	Ht.	$\bar{u}$	P/A	Frequency Distribution							
FLORIDA														
Crystal River	28.96	82.70	2				u	1.56	3.35	5.59	8.27	10.95	14.08	>14.08
				10	3.35	51	f	8.34	41.97	40.70	7.95	0.99	0.05	0.00
St. Lucie	27.33	80.25	5				u	0.45	1.79	3.80	5.81	8.49	11.18	13.86
				10*	3.03	38	f	1.78	17.78	46.87	30.03	3.41	0.13	0.00
							u	0.22	1.56	3.35	5.59	8.27	10.95	14.08
Turkey Point	25.43	80.33	1	15	3.31	52	f	3.22	7.58	39.82	38.59	9.64	1.10	0.05
														0.00
				9	4.00	82	f	0.04	6.23	31.59	41.66	17.82	2.55	0.13
GEORGIA														
Edwin I. Hatch	31.93	82.34	37				u	1.56	3.35	5.59	8.27	10.95	14.53	>14.53
				23	3.06	63	f	15.26	43.99	29.97	8.82	1.61	0.32	0.03
				46	3.96	120	f	8.06	31.34	39.83	15.42	3.98	1.16	0.22
Alvin W. Vogtle	33.14	81.76	67				u	0.22	1.56	3.35	5.59	8.27	10.95	14.53
				10	2.62	30	f	0.48	18.76	51.96	22.77	5.56	0.46	0.01
ILLINOIS														
Braidwood	41.24	88.23	183				u	0.22	1.56	3.35	5.59	10.95	>10.95	
				9	3.50	80	f	0.75	13.38	34.41	32.02	18.77	0.68	
Byron	42.08	89.28	265				u	0.22	1.56	3.35	5.59	10.95	>10.95	
				9	3.80	97	f	0.43	10.72	31.74	33.13	22.98	1.00	
Clinton	40.17	88.83	224				u	1.56	5.59	>5.59				
				10	3.80	20	f	8.89	66.61	24.51				
				60	5.76	292	f	3.38	41.53	55.09				
Dresden	41.33	88.25	157				u	1.56	3.35	5.59	8.27	10.95	14.08	17.21
							f	6.38	37.26	32.51	17.17	5.37	1.11	0.20
				46	4.97	205	f	2.13	20.78	37.02	26.15	9.72	3.27	0.72
				91	6.00	293	f	1.71	14.43	28.61	33.10	15.54	5.24	1.11
Quad Cities	41.72	90.32	184				u	0.22	1.56	3.35	5.59	8.27	10.95	14.08
							f	0.04	9.22	38.86	34.00	14.72	2.67	0.48
				11	3.61	71	f	0.03	4.38	29.03	39.07	21.35	5.13	0.94
				38	4.49	181	f	0.03	2.90	16.71	24.79	31.34	17.07	5.78
				91	5.90	287	f					1.10	0.25	0.03

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution										
ILLINOIS (contd.)																	
Zion	42.45	87.80	180				u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	>17.21	
				11	3.35	84	f	1.96	11.01	37.27	30.69	14.40	3.83	0.77	0.07	0.00	
							u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79
				76	6.40	371	f	0.86	1.66	10.71	25.49	32.85	18.68	7.11	2.07	0.47	0.10
INDIANA																	
Bailly	41.63	87.18	189				u	0.40	1.56	3.35	5.59	8.27	10.73	>10.73			
				18	3.53	78	f	1.40	10.00	34.20	36.40	14.70	2.90	0.40			
				46	5.10	191	f	0.50	3.40	18.70	37.30	27.00	9.70	3.50			
Marble Hill	38.60	85.45	240				u	0.25	1.50	3.00	5.00	8.00	10.00	>10.00			
				10	2.69	41	f	2.19	17.41	34.44	31.56	12.70	1.56	0.18			
IOWA																	
Duane Arnold	42.03	91.76	230				u	0.22	0.67	1.12	1.56	3.35	5.59	8.27	>8.27		
				11	3.10	68	f	0.23	5.48	6.97	7.27	35.43	28.86	12.67	3.09		
							u	0.22	0.67	1.56	3.35	5.59	8.27	10.95	>10.95		
				100*	5.70	286	f	0.45	1.43	2.68	14.55	28.11	30.88	14.36	7.55		
KANSAS																	
Wolf Creek	38.24	95.69	338				u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00			
				10	4.28	133	f	0.04	4.55	25.73	32.88	23.19	9.58	4.03			
				60	7.08	403	f	0.05	1.29	4.70	14.48	32.39	28.63	18.46			
LOUISIANA																	
River Bend	30.76	91.33	29				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95			
				9	1.64	10	f	5.48	40.72	42.03	11.12	0.65	0.01	0.00			
				46	2.96	36	f	0.61	12.77	48.86	31.34	5.90	0.41	0.10			
Waterford	30.00	90.47	4				u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08		
				9	2.53	35	f	1.26	25.78	39.70	26.49	6.32	0.41	0.03	0.00		

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution						
MAINE													
Maine Yankee	43.95	69.70	14	45	3.61	111	u	0.22	1.56	3.35	5.59	8.27	>8.27
							f	1.54	12.11	33.03	28.24	18.40	6.64
MARYLAND													
Calvert Cliffs	38.41	76.43	15	10	2.28	29	u	0.22	1.56	3.35	5.14	>5.14	
							f	0.03	30.70	42.23	19.07	7.98	
Douglas Point	38.45	77.26	15	30	2.56	39	u	0.04	1.56	3.35	5.59	8.27	10.95
							f	0.38	20.23	53.09	20.66	5.10	0.47
												14.53	>14.53
												0.06	0.00
MASSACHUSETTS													
Montague	42.58	72.53	95	10	1.17	10	u	0.40	1.50	3.30	5.50	8.20	10.80
				46	2.89	54	f	19.53	42.59	29.41	7.47	0.92	0.07
				99	3.84	124	f	1.99	18.89	36.42	30.00	10.47	2.07
				151	4.67	184	f	2.11	13.04	27.34	29.55	19.89	5.91
							f	0.76	8.11	22.98	28.78	25.34	9.88
Pilgrim	41.94	70.58	7	10	3.80	105	u	0.45	1.79	3.35	5.36	8.49	10.95
				49	5.43	239	f	0.11	12.63	30.01	34.85	17.37	3.91
				67	6.30	345	f	0.09	5.49	14.59	29.63	35.35	9.83
							f	0.07	3.00	11.36	21.66	38.28	16.68
Yankee Rowe	42.73	72.93	350	9	1.54	36	u	1.56	3.35	5.59	8.27	10.95	>10.95
							f	50.28	30.77	12.51	4.59	1.34	0.51
MICHIGAN													
Big Rock Point	45.35	85.18	190	78	5.86	363	u	1.56	3.35	5.59	8.27	10.95	>10.95
							f	6.24	12.60	25.69	27.89	17.43	10.15
Donald C. Cook	42.03	86.49	210	15	3.57	116	u	0.22	1.56	3.35	5.59	8.27	>8.27
				61	5.66	340	f	1.50	17.00	27.00	29.10	18.40	7.00
							f	1.10	4.10	19.90	23.10	24.90	26.90
Enrico Fermi	41.96	83.26	178	150	4.56	145	u	0.22	1.56	3.35	5.59	8.27	10.95
							f	0.32	3.90	25.81	35.73	23.98	8.27

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution												
MICHIGAN (contd.)																			
Greenwood	43.09	87.68	233	11	3.35	76	u	1.12	2.91	3.80	5.14	6.58	8.27	10.50	>10.50				
							f	9.02	33.44	16.10	18.02	11.71	8.05	3.11	0.55				
Midland	43.58	84.23	187	10	4.00	101	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
							f	0.26	6.06	32.59	34.84	21.13	4.25	0.86					
Palisades	42.35	86.23	185	17	8.88	1084	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
							f	1.66	0.51	4.78	15.45	23.28	19.13	34.41					
Quanicassee	43.59	83.77	180	10	4.08	113	u	0.22	1.56	3.35	5.59	8.27	10.95	13.63	>13.63				
							f	0.12	7.41	32.32	34.20	18.01	5.47	2.11	0.36				
MINNESOTA																			
Monticello	45.33	98.83	283	10	3.65	78	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
							f	0.02	9.60	33.91	35.15	18.40	2.76	0.16					
							100	6.45	356	f	0.00	3.03	12.51	20.05	32.19	25.68	6.91		
							43	5.57	196	f	0.08	2.31	12.22	34.16	36.69	11.04	3.19		
Prairie Island	44.62	92.63	210	12	4.08	111	u	0.22	1.56	3.35	5.59	8.97	10.95	>10.95					
							f	0.00	7.85	29.60	33.57	22.04	5.93	1.01					
MISSISSIPPI																			
Grand Gulf	32.01	91.05	49	10	2.07	14	u		1.56	3.35	5.59	7.82	10.50	>10.50					
							f		35.60	46.84	16.51	1.03	0.02	0.00					
River Bend	30.76	91.33	29	9	1.64	10	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
							f	5.48	40.72	42.03	11.12	0.65	0.01	0.00					
							46	2.96	36	f	0.61	12.77	48.86	31.34	5.90	0.41	0.10		
Yellow Creek	34.96	88.22	154	10	1.99	18	u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95			
							f	1.14	10.06	27.95	24.66	17.28	16.07	2.77	0.07	0.00			
							46	3.35	61	f	0.27	1.03	10.03	19.73	22.15	33.48	11.14	1.94	0.22
MISSOURI																			
Callaway	38.76	91.78	251	10	3.71	50	u	0.67	1.34	2.24	3.35	4.47	>4.47						
							f	0.58	5.19	17.34	26.90	21.19	28.80						
							u		1.50	3.00	5.00	7.50	10.00	>10.00					
							f		4.27	15.37	31.62	33.94	11.31	3.49					

Site	Lat	Long	E1.	Ht.	$\bar{u}$	P/A	Frequency Distribution									
NEBRASKA																
Cooper	40.33	95.63	270	97	6.15	289	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	0.03	1.42	12.23	27.67	34.87	15.18	8.56		
Fort Calhoun	41.52	96.08	300	11	4.04	172	u		1.40	2.90	4.40	5.90	8.90	>8.90		
							f		12.88	22.58	16.71	19.04	19.72	9.07		
NEW HAMPSHIRE																
Seabrook	42.90	70.85	3	9	2.25	44	u		1.50	4.00	6.00	8.00	>8.00			
							f		31.60	48.30	13.40	4.60	2.10			
NEW JERSEY																
Atlantic	38.47	74.26	0	11	5.75	266	u	0.40	1.56	3.35	5.59	8.27	10.73	>10.73		
							f	0.10	1.90	14.60	34.30	29.30	12.50	7.30		
Forked River/ Oyster Creek	39.81	74.21	3	23	3.39	96	u		1.56	3.35	5.59	8.27	11.40	14.53	18.10	>18.10
							f		13.54	35.89	32.40	13.52	4.09	0.49	0.04	0.03
Hope Creek/Salem	39.46	75.53	3	9	3.35	66	u	0.22	1.56	3.35	5.59	8.27	>8.27			
							f	0.28	13.61	40.50	31.39	11.24	2.98			
							f	0.12	4.71	14.08	26.67	30.26	24.17			
NEW YORK																
James A. Fitzpatrick/Nine Mile Point	43.47	76.50	80	10	3.61	239	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	6.55	14.39	30.11	19.20	14.97	7.15	7.63		
							u	0.22	1.80	3.86	6.43	9.52	12.61	>12.61		
							f	1.73	3.25	13.99	25.27	28.76	12.67	14.33		
R.E. Ginna	43.28	77.31	84	15	3.61	100	u	0.22	1.56	3.35	5.59	>5.59				
							f	1.87	10.13	33.61	31.41	22.98				
							u	0.67	0.89	1.56	3.35	5.59	8.27	10.95	>10.95	
							f	0.13	1.50	5.97	27.98	31.39	20.52	8.44	4.07	
Greene	42.15	73.91	9	10	2.56	33	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	1.20	23.18	41.37	27.71	6.15	0.39	0.00		
							f	0.47	12.22	28.17	27.76	22.17	7.35	1.89		

Site	Lat	Long	E1.	Ht.	u	P/A	Frequency Distribution											
NEW YORK (contd.)																		
Indian Point	41.25	73.95	36				u		1.56	3.35	5.59	8.27	10.95	>10.95				
				10	1.60	14	f	48.79	37.66	11.70	1.78	0.06	0.01					
				122	4.00	159	f	14.62	27.15	27.19	20.06	7.94	3.05					
Jamesport	40.99	72.59	25				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				10	4.37	143	f	0.06	7.47	28.12	32.82	22.36	7.06	2.11				
				61	6.50	361	f	0.01	1.46	11.23	25.84	32.03	18.62	10.81				
			122	7.51	581	f	0.01	1.27	9.69	19.06	27.48	22.55	19.93					
Shoreham	40.96	72.87	39				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				10	2.96	38	f	0.19	12.84	48.16	30.45	7.88	0.48	0.00				
				46	5.02	163	f	0.03	2.59	18.98	38.05	29.26	8.77	2.32				
Sterling	43.39	76.98	105				u	0.22	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
				10	3.39	60	f	0.04	11.91	37.48	35.27	13.69	1.46	0.16	0.00			
NORTH CAROLINA																		
Brunswick	33.96	78.01	5				u	0.04	1.34	3.13	5.36	8.05	10.73	14.30	>14.30			
				10*	3.00	54	f	1.90	16.82	31.45	33.92	14.57	1.62	0.15	0.05			
				107	5.50	216	f	0.36	1.64	11.94	29.40	37.34	16.09	4.44	0.77			
Shearon Harris	35.63	87.18	70				u	0.34	1.56	3.35	5.59	8.27	11.18	>11.18				
				11	1.21	11	f	22.64	34.94	32.11	8.95	1.31	0.04	0.01				
				61	3.65	78	f	0.45	9.12	32.92	40.68	14.25	2.30	0.28				
Wm. B. McGuire	35.43	80.95	232				u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
				10	2.50	36	f	1.87	23.95	28.39	19.10	12.52	6.61	3.76	2.07	1.05	0.35	0.36
				40	3.61	76	f	0.18	8.38	22.21	22.11	16.88	11.84	8.10	4.94	2.90	1.29	1.19
Perkins	35.85	80.45	215				u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
				9	1.82	12	f	3.84	39.86	27.61	16.33	7.41	3.71	0.97	0.19	0.06	0.01	0.00
OHIO				40	2.99	41	f	0.91	13.53	28.35	26.24	14.62	7.83	4.38	2.40	1.07	0.43	0.22
Davis-Besse	41.60	83.09	174				u	0.22	1.12	2.91	5.14	6.48	8.27	10.50	13.63	17.66	>17.66	
				6	3.46	93	f	2.54	7.68	29.76	34.05	12.65	8.60	4.49	1.00	0.04	0.00	
				178			u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				11	4.12	121	f	0.12	7.80	29.89	35.85	19.27	5.31	1.77				

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
OHIO (contd.)																		
Perry	41.80	81.14	190				u	0.22	2.01	2.91	3.80	5.14	6.48	8.27	10.50	13.63	17.66	>17.66
				11	3.17	73	f	0.57	28.31	18.29	15.41	15.33	10.56	8.05	2.62	0.79	0.06	0.00
				61	5.29	281	f	0.23	10.10	10.21	12.44	19.53	17.05	14.81	8.89	4.33	1.59	0.82
Wm. H. Zimmer	38.87	84.23	155				u	0.50	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
				9	1.51	16	f	15.57	20.35	28.65	17.42	9.24	4.87	2.34	0.85	0.36	0.21	0.14
OKLAHOMA																		
Black Fox	36.12	95.55	174				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				11	3.35	81	f	0.86	16.15	34.23	28.26	16.53	4.13	0.61				
OREGON																		
Pebble Springs	45.70	120.14	220				u	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	>10.00
				9	4.08	197	f	8.61	17.93	13.72	11.09	9.34	8.29	7.03	6.17	5.80	4.20	7.82
				40	5.15	314	f	2.66	13.27	15.26	11.15	8.16	8.81	7.82	7.26	5.89	4.71	15.03
Trojan	46.04	122.87	7				f	1.81	12.00	12.32	10.25	8.02	7.69	6.91	7.54	6.44	5.65	21.36
				9	3.65	123	u	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50	>10.50	
							f	0.03	11.31	13.52	13.56	13.15	17.84	13.27	9.95	6.68	0.69	
PENNSYLVANIA																		
Beaver Valley/ Shippingport	40.62	80.43	205				u	0.00	1.79	2.68	3.58	4.92	6.26	8.05	10.28	>10.28		
				15	1.51	21	f		60.13	15.09	10.21	8.26	4.13	1.62	0.41	0.18		
				46	2.77	44	u	0.89	1.79	2.68	3.58	4.92	6.26	8.05	10.28	>10.28		
Fulton/ Flach Bottom	39.76	76.24	36				f	2.80	44.54	16.00	12.11	11.70	6.13	4.31	2.08	0.31		
							u	0.67	1.56	3.35	5.59	8.27	>8.27					
				9	0.94	11	f	41.10	24.98	21.45	10.24	2.16	0.08					
				30	1.61	28	f	30.72	18.37	26.47	17.21	6.46	0.78					
				80	1.54	25	f	27.41	20.40	30.72	15.71	5.16	0.60					
				112	2.34	41	f	13.40	16.70	32.23	25.62	10.37	1.68					
				98	4.37	155	f	3.25	6.03	20.13	31.71	27.36	11.51					
33	2.16	58	f	18.89	18.71	28.27	20.86	10.37	2.90									

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
PENNSYLVANIA (contd.)																		
Limerick	41.08	76.12	76				u		1.56	3.35	5.59	8.27	10.50	>10.50				
				9	2.07	44	f		38.80	32.90	18.50	7.80	1.70	0.30				
				53	3.53	110	f		14.82	32.34	31.04	15.48	4.24	2.08				
				82	4.20	156	f		9.86	25.70	34.70	20.63	5.68	3.44				
Susquehanna	41.10	76.13	199				u	0.35	1.50	3.00	5.00	7.50	10.00	12.50	>12.50			
				9	1.82	16	f	0.99	48.69	30.77	14.92	4.42	0.20	0.01	0.00			
				91	3.24	49	f	1.68	18.97	27.83	27.68	19.74	3.55	0.55	0.00			
Three Mile Island	40.13	76.73	91				u	0.22	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
				30	2.31	53	f	1.27	35.26	35.11	16.80	8.07	2.89	0.56	0.03			
SOUTH CAROLINA																		
Catawba	35.05	81.07	196				u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	>7.49		
				10	1.56	12	f	5.44	33.98	32.62	17.23	8.08	2.36	0.28	0.01	0.00		
Cherokee	35.04	81.51	160				u	0.45	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50		
				9	1.30	7	f	5.49	45.54	30.62	13.83	3.10	1.11	0.20	0.07	0.04	>8.50	
				40	2.70	32	f	0.45	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50	9.50	>9.50
Oconee	34.79	87.90	243				u	0.21	15.03	29.79	25.07	15.81	8.75	3.15	1.30	0.57	0.24	
				10	1.96	25	f	0.24	15.19	31.57	23.45	12.65	7.40	3.82	2.44	1.74	0.65	0.84
				46	2.82	51	f	1.16	30.23	38.41	16.22	7.40	3.46	1.84	0.83	0.30	0.06	0.09
				46*	1.66	17	f	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
H. B. Robinson	34.40	80.16	83				u	0.34	1.56	3.35	5.59	8.27	11.18	>11.18				
				11	2.04	17	f	3.41	29.25	48.52	17.17	1.59	0.06	0.01				
				61	3.80	82	f	0.55	7.66	31.30	40.10	16.79	3.01	0.58				
virgil C. Summer	34.30	81.32	100				u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08			
				60	2.82	48	f	3.00	16.10	39.60	31.30	8.60	1.20	0.20	0.00			
TENNESSEE																		
Clinch River	35.89	84.38	248				u		1.49	3.29	5.14	8.23	10.80	>10.80				
				23	1.44	13	f		58.13	29.25	9.66	2.74	0.21	0.01				
				61	2.10	39	f		39.03	32.32	17.65	8.54	1.14	0.33				

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
TENNESSEE (contd.)																		
Hartsville	36.35	78.95	165		2.19	30	u	0.22	1.52	3.31	5.54	8.22	10.91	>10.91				
				10			f	1.88	37.71	35.36	17.63	6.21	1.18	0.04				
Phipps Bend	36.46	82.81	362		1.49	11	u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	11.85	>11.85		
				10			f	5.82	13.76	36.13	21.41	11.61	10.08	1.15	0.08	0.00		
				46	2.40	37	f	1.21	8.25	31.27	22.09	12.94	17.82	5.33	0.94	0.18		
Sequoyah	35.23	85.09	230		1.82	13	u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95		
				10			f	2.25	10.16	34.81	25.13	14.86	11.97	0.77	0.03	0.02		
Watts Bar	35.63	84.79	220		1.37	8	u	0.22	1.56	3.35	5.59	8.27	>8.27					
				10			f	11.64	49.72	29.65	8.17	0.81	0.00					
			217		1.78	27	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				40			f	7.91	35.97	34.23	17.68	3.48	0.62	0.08				
							u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95		
				10			f	0.38	14.72	32.59	19.33	13.41	15.81	3.33	0.35	0.03		
91	3.28	77	f	0.04	1.66	15.31	19.94	16.39	28.51	13.85	3.55	0.75						
TEXAS																		
Allens Creek	29.68	96.10	41		2.90	63	u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00				
				10			f	1.24	13.70	35.13	30.41	16.45	2.75	0.31				
			60	5.20			222	f	0.23	2.35	10.75	30.30	36.71	15.35	4.29			
Blue Hills	31.14	93.69	82		2.02	18	u	0.25	1.50	3.00	5.00	8.00	10.00	>10.00				
				10			f	0.19	34.43	40.60	21.51	3.25	0.04	0.00				
			55	3.84			75	f	0.01	5.72	26.66	40.99	23.85	2.08	0.68			
Comanche Peak	32.30	97.79	250		3.46	65	u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00				
				9			f	2.81	12.70	32.52	31.82	15.69	3.87	0.59				
South Texas	28.80	96.05	7		4.41	146	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
				10			f	1.04	5.92	27.43	31.54	23.79	8.04	2.22				
			60	6.66			358	f	0.08	1.68	7.94	23.08	37.69	20.16	9.38			
VERMONT																		
Vermont Yankee	42.78	72.52	84		2.66	89	u	0.22	1.56	3.35	5.59	8.27	>8.27					
				43			f	4.98	26.76	28.09	20.88	13.52	5.28					

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution												
VIRGINIA																			
North Anna	38.06	77.79	81				u	0.22	2.01	3.80	5.14	6.48	8.27	10.50	>10.50				
				11	3.06	71	f	0.82	29.72	31.98	18.39	9.43	6.16	2.72	0.78				
				46	2.79	43	f	2.12	29.35	37.83	18.45	7.31	3.71	1.10	0.12				
Surry	37.17	76.70	1				u	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50	>10.50		
				6	2.53	39	f	3.52	14.25	19.54	19.78	19.13	14.36	5.91	2.42	0.64	0.44		
				8	3.31	61	f	0.73	4.66	13.07	21.73	26.14	18.93	8.15	4.59	1.52	0.48		
WASHINGTON																			
Skagit	48.53	122.09	128				u	0.22	1.56	3.35	5.59	8.29	10.50	>10.50					
				10	2.50	25	f	0.26	29.89	36.30	28.31	5.16	0.07	0.01					
				60	3.80	118	f	0.05	14.78	26.65	32.13	18.56	5.87	1.97					
WPPSS - Hanford	46.47	119.32	134				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
				2	1.99	37	f	0.00	38.70	36.09	17.30	6.30	1.48	0.13					
				10	2.89	83	f	0.01	22.49	39.37	23.11	10.29	3.43	1.31					
HMS			223	75	4.28	197	f	0.00	11.15	30.68	26.04	18.07	8.59	5.47					
				15	2.92	80	f	0.22	23.20	33.40	23.80	11.50	4.20	1.20	0.20	0.10	0.00		
				61	3.88	198	f	1.50	17.60	25.30	22.90	19.10	8.50	3.90	0.80	0.30	0.10		
WPPSS - Satsop	45.96	123.47	90	122	4.24	301	f	2.20	16.10	22.90	20.80	19.10	10.30	5.80	2.20	0.50	0.10		
							u	0.31	1.34	3.13	5.36	8.05	10.73	14.30	>14.30				
				10	1.77	14	f	9.88	25.49	46.77	16.26	1.46	0.15	0.00	0.00				
				60	3.17	59	f	3.38	12.16	31.76	37.18	13.48	1.68	0.36	0.00				
WISCONSIN																			
Kewaunee	44.34	87.54	194				u	0.22	2.01	3.80	6.48	8.27	10.50	>10.50					
				46	5.29	228	f	0.86	7.85	20.02	35.32	20.42	10.25	5.28					
Koshkonong	42.86	88.89	260				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95					
				10	3.72	84	f	0.84	10.16	30.99	36.21	18.26	3.09	0.44					
				60	5.62	213	f	0.12	2.28	12.23	34.92	35.10	12.05	3.30					
La Crosse	45.34	91.21	366				u	0.22	1.56	3.35	5.59	8.37	10.95	>10.95					
				30	4.41	123	f	0.08	6.38	24.15	39.77	22.29	5.68	1.64					

Site	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution							
WISCONSIN (contd.)														
Point Beach	44.28	87.54	185	46	4.93	221	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
							f	0.91	6.45	16.21	31.76	28.73	10.92	5.02
Tyrone	44.70	91.83	253	10	2.92	68	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
							f	0.47	19.92	37.16	29.30	11.72	1.37	0.06
PUERTO RICO														
Puerto Rico	18.49	66.62	14	10	2.79	32	u	0.34	1.34	3.13	5.36	8.05	10.73	>10.73
							f	2.86	23.75	30.57	20.85	20.64	1.33	0.00

APPENDIX B

Alphabetical Tabulation of Nuclear Power Plant Sites and Selected Wind Energy Related Sites

Legend

El. (Base Elevation, MSL)	m
Ht. (Sensor Height, AGL).	m
$\bar{u}$ (Mean Wind Speed).	m/s
P/A (Power per Unit Area).	W/m ²
Frequency Distribution	
u (Categorical Upper Limit of Wind Speed)	m/s
f (Categorical Frequency)	%

Site	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution									
Allens Creek	TX	29.68	96.10	41				u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00		
					10	2.90	63	f	1.24	13.70	35.13	30.41	16.45	2.75	0.31		
					60	5.20	222	f	0.23	2.35	10.75	30.30	36.71	15.35	4.29		
Arkansas	AK	35.31	93.22	103				u	0.30	0.90	1.80	2.70	3.60	4.50	>4.50		
					12	2.10	28	f	1.60	15.90	24.60	22.70	14.40	9.20	11.60		
								u	0.26	1.80	3.34	5.40	8.49	>8.49			
					58	3.50	71	f	0.40	16.50	36.30	29.70	13.90	3.20			
Duane Arnold	IA	42.03	91.76	230				u	0.22	0.67	1.12	1.56	3.35	5.59	8.27	>8.27	
					11	3.10	68	f	0.23	5.48	6.97	7.27	35.43	28.86	12.67	3.09	
								u	0.22	0.67	1.56	3.35	5.59	8.27	10.95	>10.95	
					100*	5.70	286	f	0.45	1.43	2.68	14.55	28.11	30.88	14.36	7.55	
Atlantic	NJ	38.47	74.26	0				u	0.40	1.56	3.35	5.59	8.27	10.73	>10.73		
					11	5.75	266	f	0.10	1.90	14.60	34.30	29.30	12.50	7.30		
Bailey	IN	41.63	87.18	189				u	0.40	1.56	3.35	5.59	8.27	10.73	>10.73		
					18	3.53	78	f	1.40	10.00	34.20	36.40	14.70	2.90	0.40		
					46	5.10	191	f	0.50	3.40	18.70	37.30	27.00	9.70	3.50		
Alan R. Barton	AL	32.75	86.40	138				u	0.22	1.56	3.35	5.59	8.27	10.73	>10.73		
					11	2.20	24	f	1.80	32.10	43.04	18.41	4.34	0.31	0.00		
Beaver Valley/ Shippingport	PA	40.62	80.43	205				u	0.00	1.79	2.68	3.58	4.92	6.26	8.05	10.28	>10.28
					15	1.51	21	f		60.13	15.09	10.21	8.26	4.13	1.62	0.41	0.18
								u	0.89	1.79	2.68	3.58	4.92	6.26	8.05	10.28	>10.28
					46	2.77	44	f	2.80	44.54	16.00	12.11	11.70	6.13	4.31	2.08	0.31
Bellefonte	AL	34.71	85.93	186				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
					10	1.72	22	f	6.50	43.40	29.89	16.53	3.31	0.33	0.04		
					40	3.35	70	f	1.43	10.84	41.64	31.41	11.51	2.43	0.74		
Big Rock Point	MI	45.35	85.18	190				u		1.56	3.35	5.59	8.27	10.95	>10.95		
					78	5.86	363	f		6.24	12.60	25.69	27.89	17.43	10.15		

Site	ST	Lat	Long	El.	Ht.	u	P/A	Frequency Distribution									
Black Fox	OK	36.12	95.55	174	11	3.35	81	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
								f	0.08	16.15	34.23	28.26	16.53	4.13	0.61		
Blue Hills	TX	31.14	93.69	82	10	2.02	18	u	0.25	1.50	3.00	5.00	8.00	10.00	>10.00		
					55	3.84	75	f	0.19	34.43	40.60	21.51	3.25	0.04	0.00		
								f	0.01	5.72	26.66	40.99	23.85	2.08	0.68		
Braidwood	IL	41.24	88.23	183	9	3.50	80	u	0.22	1.56	3.35	5.59	10.95	>10.95			
								f	0.75	13.38	34.41	32.02	18.77	0.68			
Browns Ferry	AL	34.72	87.10	181	10	1.70	18	u	0.22	1.52	2.41	3.31	5.54	8.22	10.91	>10.91	
					91	4.88	199	f	0.22	41.13	28.77	13.77	12.79	3.13	0.21	0.02	
								f	0.11	5.75	9.98	11.54	30.45	27.55	10.63	3.98	
Brunswick	NC	33.96	78.01	5	10*	3.00	54	u	0.04	1.34	3.13	5.36	8.05	10.73	14.30	>14.30	
					107	5.50	216	f	1.90	16.82	31.45	33.92	14.57	1.62	0.15	0.05	
								f	0.36	1.64	11.94	29.40	37.34	16.09	4.44	0.77	
Byron	IL	42.08	89.28	265	9	3.80	97	u	0.22	1.56	3.35	5.59	10.95	>10.95			
								f	0.43	10.72	31.74	33.13	22.98	1.00			
Callaway	MO	38.76	91.78	251	10	3.71	59	u	0.67	1.34	2.24	3.35	4.47	4.47			
								f	0.58	5.19	17.34	26.90	21.19	28.80			
					60	5.16	159	u	1.50	3.00	5.00	7.50	10.00	>10.00			
								f	4.27	15.37	31.62	33.94	11.31	3.49			
Calvert Cliffs	MD	38.41	76.43	15	10	2.28	29	u	0.22	1.56	3.35	5.14	>5.14				
								f	0.03	30.70	42.23	19.07	7.98				
Catawba	SC	35.05	81.07	196	10	1.56	12	u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	>7.49
								f	5.44	33.98	32.62	17.23	8.08	2.36	0.28	0.01	0.00
Cherokee	SC	35.04	81.51	160	9	1.30	7	u	0.45	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50
					40	2.70	32	f	5.49	45.54	30.62	13.83	3.10	1.11	0.20	0.07	0.04
								u	0.45	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50
								f	0.21	15.03	29.79	25.07	15.61	8.75	3.15	1.30	0.57
Clinch River	TN	35.89	84.38	248	23	1.44	13	u	1.49	3.29	5.14	8.23	10.80	>10.80			
					61	2.10	39	f	58.13	29.25	9.66	2.74	0.21	0.01			
								f	39.03	32.32	17.65	8.54	1.14	0.33			

Site	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution							
Clinton	IL	40.17	88.83	224				u	1.56	5.59	>5.59				
					10	3.80	90	f	8.89	66.61	24.51				
					60	5.76	292	f	3.38	41.53	55.09				
Comanche Peak	TX	32.30	97.79	250				u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00
					9	3.46	65	f	2.81	12.70	32.52	31.82	15.69	3.87	0.59
Connecticut Yankee	CT	41.48	72.50	7				u	0.22	1.56	5.59	10.95	>10.95		
					2	1.54	34	f	2.09	49.69	42.83	5.29	0.09		
					30	2.13	66	f	17.21	24.19	48.56	9.88	0.18		
Donald C. Cook	MI	42.03	86.49	210				u	0.22	1.56	3.35	5.59	8.27	>8.27	
					15	3.57	116	f	1.50	17.00	27.00	29.10	18.40	7.00	
					61	5.66	340	f	1.10	4.10	19.90	23.10	24.90	26.90	
Cooper	NB	40.33	95.63	270				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
					97	6.15	289	f	0.03	1.42	12.23	27.67	34.87	15.18	8.56
Crystal River	FL	28.96	82.70	2				u	1.56	3.35	5.59	8.27	10.95	14.08	>14.08
					10	3.35	51	f	8.34	41.97	40.70	7.95	0.99	0.05	0.00
Davis-Besse	OH	41.60	83.09	174				u	0.22	1.12	2.91	5.14	6.48	8.27	10.50
					6	3.46	93	f	2.54	7.68	29.76	34.05	12.65	8.60	4.49
					178			u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
Diablo Canyon	CA	35.21	120.85	38				u	0.12	7.80	29.89	35.85	19.27	5.31	1.77
					8	3.65	187	f	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
					10	3.84	194	f	3.66	25.04	23.46	18.89	14.64	9.97	4.34
Douglas Point	MD	38.45	77.26	15				u	0.40	1.34	3.13	5.36	7.05	10.73	15.65
					30	2.56	39	f	0.12	12.92	31.59	21.20	16.31	10.42	7.21
								f	0.12	12.92	31.59	21.20	16.31	10.42	7.21
Dresden	IL	41.33	88.25	157				u	0.04	1.56	3.35	5.59	8.27	10.95	14.53
					30	2.56	39	f	0.38	20.23	53.09	20.66	5.10	0.47	0.06
					11	3.65	108	f	1.56	3.35	5.59	8.27	10.95	14.08	17.21
Dresden	IL	41.33	88.25	157				u	6.38	37.26	32.51	17.17	5.37	1.11	0.20
					46	4.97	205	f	2.13	20.78	37.02	26.15	9.72	3.27	0.72
					91	6.00	293	f	1.71	14.43	28.61	33.10	15.54	5.24	1.11

Site	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution									
Joseph M. Farley	AL	31.22	85.11	55	10*	2.22	17	u	0.22	1.56	2.46	3.35	5.59	8.27	10.95	>10.95	
								f	0.43	32.55	29.75	18.11	16.59	2.55	0.01	00.00	
Enrico Fermi	MI	41.96	83.26	178	150	4.56	145	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
								f	0.32	3.90	25.81	35.73	23.98	8.27	1.99		
James A Fitzpatrick/Nine Mile Point	NY	43.47	76.50	80	10	3.61	239	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
								f	6.55	14.39	30.11	19.20	14.97	7.15	7.63		
								u	0.22	1.80	3.86	6.43	9.52	12.61	>12.61		
					62	7.08	640	f	1.73	3.25	13.99	25.27	28.76	12.67	14.33		
Forked River/ Oyster Creek	NJ	39.81	74.21	3	23	3.39	96	u	1.56	3.35	5.59	8.27	11.04	14.53	18.10	>18.10	
								f	13.54	35.89	32.40	13.52	4.09	0.49	0.04	0.03	
Fort Calhoun	NB	41.52	96.08	300	11	4.04	172	u	1.40	2.90	4.40	5.90	8.90	>8.90			
								f	12.88	22.58	16.71	19.04	19.72	9.07			
Fort St. Vrain	CO	40.23	104.87	1460	64	1.99	75	u	1.79	3.58	5.36	7.15	8.94	11.18	>11.18		
								f	43.85	28.48	13.64	6.40	3.57	2.37	1.69		
Fulton/Peach Bottom	PA	39.76	76.24	36	9	0.94	11	u	0.67	1.56	3.35	5.59	8.27	>8.27			
								f	41.10	24.98	21.45	10.24	2.16	0.08			
					30	1.61	28	f	30.72	18.37	26.47	17.21	6.46	0.78			
					80	1.54	25	f	27.41	20.40	30.72	15.71	5.16	0.60			
					112	2.34	41	f	13.40	16.70	32.23	25.62	10.37	1.68			
					98	4.37	155	f	3.25	6.03	20.13	31.71	27.36	11.51			
					33	2.16	58	f	18.89	18.71	28.27	20.86	10.37	2.90			
R. E. Ginna	NY	43.28	77.31	84	15	3.61	100	u	0.22	1.56	3.35	5.59	>5.59				
								f	1.87	10.13	33.61	31.41	22.98				
								u	0.67	0.89	1.56	3.35	5.59	8.27	10.95	>10.95	
					10	4.71	179	f	0.13	1.50	5.97	27.98	31.39	20.52	8.44	4.07	
Grand Gulf	MS	32.01	91.05	49	10	2.07	14	u	1.56	3.35	5.59	7.82	10.50	>10.50			
								f	35.60	46.84	16.51	1.03	0.02	0.00			
Greene	NY	42.15	73.91	9	10	2.56	33	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
								f	1.20	23.18	41.37	27.71	6.15	0.39	0.00		
					60	4.12	135	f	0.47	12.22	28.17	27.76	22.17	7.35	1.89		

Site	ST	Lat.	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution									
Greenwood	MI	43.09	87.68	233				u	1.12	2.91	3.80	5.14	6.48	8.27	10.50	>10.50	
					11	3.35	76	f	9.02	33.44	16.10	18.02	11.71	8.05	3.11	0.55	
Shearon Harris	NC	35.63	87.18	70				u	0.34	1.56	3.35	5.59	8.27	11.18	>11.18		
					11	1.21	11	f	22.64	34.94	32.11	8.95	1.31	0.04	0.01		
					61	3.65	78	f	0.45	9.12	32.92	40.68	14.25	2.30	0.28		
Hartsville	TN	36.35	78.95	165				u	0.22	1.52	3.31	5.54	8.22	10.91	>10.91		
					10	2.19	30	f	1.88	37.71	35.36	17.63	6.21	1.18	0.04		
Edwin I. Hatch	GA	31.93	82.34	37				u		1.56	3.35	5.59	8.27	10.95	14.53	>14.53	
					23	3.06	63	f		15.26	43.99	29.97	8.82	1.61	0.32	0.03	
					46	3.96	120	f		8.06	31.34	39.83	15.42	3.98	1.16	0.22	
Hope Creek/Salem	NJ	39.46	75.53	3				u	0.22	1.56	3.35	5.59	8.27	>8.27			
					9	3.35	66	f	0.28	13.61	40.50	31.39	11.24	2.98			
					91	5.76	308	f	0.12	4.71	14.08	26.67	30.26	24.17			
Humboldt Bay	CA	40.73	124.22	60				u	0.67	1.12	1.56	3.35	5.59	8.27	10.95	22.57	>22.57
					76	3.84	152	f	5.88	3.58	6.27	29.96	27.83	15.93	6.78	3.77	0.00
Indian Point	NY	41.25	73.95	36				u		1.56	3.35	5.59	8.27	10.95	>10.95		
					10	1.60	14	f		48.79	37.66	11.70	1.78	0.06	0.01		
					122	4.00	159	f		14.62	27.15	27.19	20.06	7.94	3.05		
Jamesport	NY	40.99	72.59	25				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
					10	4.37	143	f	0.06	7.47	28.12	32.82	22.36	7.06	2.11		
					61	6.50	361	f	0.01	1.46	11.23	25.84	32.03	18.62	10.81		
Kewaunee	WI	44.34	87.54	194				u	0.22	2.01	3.80	6.48	8.27	10.50	>10.50		
					46	5.29	228	f	0.86	7.85	20.02	35.32	20.42	10.25	5.28		
Koshkonong	WI	42.86	88.89	260				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
					10	3.72	84	f	0.84	10.16	30.99	36.21	18.26	3.09	0.44		
					60	5.62	213	f	0.12	2.28	12.23	34.92	35.10	12.05	3.30		

Site	ST	Lat	Long	E1.	Ht.	u	P/A	Frequency Distribution											
La Crosse	WI	45.34	91.21	366	30	4.41	123	u f	0.22 0.08	1.56 6.38	3.35 24.15	5.59 39.77	8.37 22.29	10.95 5.68	>10.95 1.64				
Limerick	PA	41.08	76.12	76	9 53 82	2.07 3.53 4.20	44 110 156	u f f f		1.56 38.80 14.82 9.86	3.35 32.90 32.34 25.70	5.59 18.50 31.04 34.70	8.27 7.80 15.48 20.63	10.50 1.70 4.24 5.68	>10.50 0.30 2.08 3.44				
Maine Yankee	ME	43.95	69.70	14	45	3.61	111	u f	0.22 1.54	1.56 12.11	3.35 33.03	5.59 28.24	8.27 18.40	<8.27 6.64					
Marble Hill	IN	38.60	85.45	240	10	2.69	41	u f	0.25 2.19	1.50 17.41	3.00 34.44	5.00 31.56	8.00 12.70	10.00 1.56	>10.00 0.18				
Wm. B. McGuire	NC	35.43	80.95	232	10 40	2.50 3.61	36 76	u f f	0.44 1.87 0.18	1.49 23.95 8.38	2.49 28.39 22.21	3.49 19.10 22.11	4.49 12.52 16.88	5.49 6.61 11.84	6.49 3.76 8.10	7.49 2.07 4.94	8.49 1.05 2.90	9.49 0.35 1.29	>9.49 0.36 1.19
Midland	MI	43.58	84.23	187	10	4.00	101	u f	0.22 0.26	1.56 6.06	3.35 32.59	5.59 34.84	8.27 21.13	10.95 4.25	>10.95 0.86				
Millstone Point	CT	41.31	72.17	0	10 46 4	2.86 4.28	86 200	u f f u f f f f	0.22 5.11 2.08 0.50 1.33 0.66 0.10 0.10	1.56 23.56 10.65 1.50 11.48 4.47 2.31 2.26	3.35 28.49 23.11 3.30 30.24 19.51 10.36 10.19	5.59 25.51 30.02 5.50 33.38 33.99 25.40 23.61	8.27 13.13 19.90 8.20 16.81 26.42 32.90 30.36	10.95 4.21 14.24 15.00 5.26 10.43 18.46 20.47	>10.95 0.00 0.00 15.00 1.43 3.95 8.43 10.42	20.00 20.00 0.07 0.00 0.57 1.84 2.22	20.00 0.00 0.01 0.21 0.37		
Montague	MA	42.58	72.53	95	10 46 99 151	1.17 2.89 3.84 4.67	10 54 124 184	u f f f f	0.40 19.53 1.99 2.11 0.76	1.50 42.59 18.89 13.04 8.11	3.30 29.41 36.42 27.34 22.98	5.50 7.47 30.00 29.55 28.78	8.20 0.92 10.47 19.89 25.34	10.80 0.07 2.07 5.91 9.88	15.00 0.00 0.15 2.04 3.71	20.00 20.00 0.00 0.11 0.41	>20.00 0.00 0.01		
Monticello	MN	45.33	93.83	283	10 100 43	3.65 6.45 5.57	78 356 196	u f f f	0.22 0.02 0.00 0.08	1.56 9.60 3.03 2.31	3.35 33.91 12.15 12.22	5.59 35.15 20.05 34.16	8.27 18.40 32.19 36.69	10.95 2.76 25.68 11.04	>10.95 0.16 6.91 3.19				

Site	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
North Anna	VA	38.06	77.79	81				u	0.22	2.01	3.80	5.14	6.48	8.27	10.50	>10.50			
					11	3.06	71	f	0.82	29.72	31.98	18.39	9.43	6.16	2.72	0.78			
					46	2.79	43	f	2.12	29.35	37.83	18.45	7.31	3.71	1.10	0.12			
Oconee	SC	34.79	87.90	243				u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
					10	1.96	25	f	0.34	27.26	35.33	19.43	8.60	4.54	2.54	1.00	0.48	0.27	0.21
					46	2.82	51	f	0.24	15.19	31.57	23.45	12.65	7.40	3.82	2.44	1.74	0.65	0.84
					46*	1.66	17	f	1.16	30.23	38.41	16.22	7.40	3.46	1.84	0.83	0.30	0.06	0.09
Palisades	MI	42.35	86.23	185				u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
					17	8.88	1084	f	1.66	0.51	4.78	15.45	23.28	19.13	34.41				
Palo Verde	AZ	33.39	112.86	290				u	0.22	0.67	1.56	2.46	3.80	6.48	9.16	>9.16			
					11	2.28	46	f	0.51	6.03	25.79	23.94	19.64	17.95	5.05	1.09			
					61	3.31	107	f	0.17	3.18	16.54	18.49	21.26	24.45	11.22	4.69			
Pebble Springs	OR	45.70	120.14	220				u	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	>10.00
					9	4.08	197	f	8.61	17.93	13.72	11.09	9.34	8.29	7.03	6.17	5.80	4.20	7.82
					40	5.15	314	f	2.66	13.27	15.26	11.15	8.16	8.81	7.82	7.26	5.89	4.71	15.03
					70	5.86	435	f	1.81	12.00	12.32	10.25	8.02	7.69	6.91	7.54	6.44	5.65	21.36
Perkins	NC	35.85	80.45	215				u	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
					9	1.82	12	f	3.84	39.86	27.61	16.33	7.41	3.71	0.97	0.19	0.06	0.01	0.00
					40	2.99	41	f	0.91	13.53	28.35	26.24	14.62	7.83	4.38	2.40	1.07	0.43	0.22
Perry	OH	41.80	81.14	190				u	0.22	2.01	2.91	3.80	5.14	6.48	8.27	10.50	13.63	17.66	>17.66
					11	3.17	73	f	0.57	28.31	18.29	15.41	15.33	10.56	8.05	2.62	0.79	0.06	0.00
					61	5.29	281	f	0.23	10.10	10.21	12.44	19.53	17.05	14.81	8.89	4.33	1.59	0.82
Phipps Bend	TN	36.46	82.81	362				u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	11.85	>11.85		
					10	1.49	11	f	5.82	13.76	36.13	21.41	11.61	10.08	1.15	0.08	0.00		
					46	2.40	37	f	1.21	8.25	31.27	22.09	12.94	17.82	5.33	0.94	0.18		
Pilgrim	MA	41.94	70.58	7				u	0.45	1.79	3.35	5.36	8.49	10.95	>10.95				
					10	3.80	105	f	0.11	12.63	30.01	34.85	17.37	3.91	1.12				
					49	5.43	239	f	0.09	5.49	14.59	29.63	35.35	9.83	5.00				
					67	6.30	345	f	0.07	3.00	11.36	21.66	38.28	16.68	8.92				

Size	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
Point Beach	WI	44.28	87.54	185	46	4.93	221	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
					f			0.91	6.45	16.21	31.76	28.73	10.92	5.02					
Prairie Island	MN	44.62	92.63	210	12	4.08	111	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
					f			0.00	7.85	29.60	33.57	22.04	5.93	1.01					
Puerto Rico	PR	18.49	66.62	14	10	2.79	32	u	0.34	1.34	3.13	5.36	8.05	10.73	>10.73				
					f			2.86	23.75	30.57	20.85	20.64	1.33	0.00					
Quad Cities	IL	41.72	90.32	184	11	3.61	71	u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.34	>20.34	
					f			0.04	9.22	38.86	34.00	14.72	2.67	0.48	0.01	0.00			
					38			4.49	181	f	0.03	4.38	29.03	39.07	21.35	5.13	0.94	0.07	0.00
					91			5.90	287	f	0.03	2.90	16.71	24.79	31.34	17.07	5.78	1.10	0.25
Quanicassee	MI	43.59	83.77	180	10	4.08	113	u	0.22	1.56	3.35	5.59	8.27	10.95	13.63	>13.63			
					f			0.12	7.41	32.32	34.20	18.01	5.47	2.11	0.36				
Rancho Seco	CA	38.30	121.14	61	15	2.56	55	u	0.50	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
					f			4.30	7.52	25.69	24.72	16.98	8.71	4.90	2.24	1.40	0.99	2.55	
River Bend	MS	30.76	91.33	29	9	1.64	10	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
					46			2.96	36	f	5.48	40.72	42.03	11.12	0.65	0.01	0.00		
										f	0.61	12.77	48.86	31.34	5.90	0.41	0.10		
H.B. Robinson	SC	34.40	80.16	83	11	2.04	17	u	0.34	1.56	3.35	5.59	8.27	11.18	>11.18				
					61			3.80	82	f	3.41	29.25	48.52	17.17	1.59	0.06	0.01		
										f	0.55	7.66	31.30	40.10	16.79	3.01	0.58		
St. Lucie	FL	27.33	80.25	5	10*	3.03	38	u	0.45	1.79	3.80	5.81	8.49	11.18	13.86	>13.86			
										f	1.78	17.78	46.87	30.03	3.41	0.13	0.00	0.00	
					15			3.31	52	u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08	
			f	3.22	7.58	39.82	38.59	9.64	1.10	0.05	0.00								
San Onofre	CA	32.37	117.56	45	10	3.17	53	u	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
					40			3.03	59	f	0.07	4.53	21.50	25.34	21.92	13.32	6.51	3.41	1.50
								f	0.72	7.71	22.68	23.70	19.65	11.78	6.12	3.13	1.68	1.08	1.73
Seabrook	NH	42.90	70.85	3	9	2.25	44	u		1.50	4.00	6.00	8.00	>8.00					
					f				31.60	48.30	13.40	4.60	2.10						
Sequoyah	TN	35.23	85.09	230	10	1.82	13	u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95		
					f			2.25	10.16	34.81	25.13	14.86	11.97	0.77	0.03	0.02			

Site	ST	Lat	Long	El. Ht.	$\bar{u}$	P/A	Frequency Distribution									
Shoreham	NY	40.96	72.87	39	2.96	38	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	0.19	12.84	48.16	30.45	7.88	0.48	0.00		
Skagit	WA	48.53	122.09	128	2.50	25	u	0.22	1.56	3.35	5.59	8.29	10.50	>10.50		
							f	0.26	29.89	36.30	28.31	5.16	0.07	0.01		
South Texas	TX	28.80	96.05	7	3.80	118	u	0.05	14.78	26.65	32.13	18.56	5.87	1.97		
							f	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
Sterling	NY	43.39	76.98	105	4.41	146	u	1.04	5.92	27.43	31.54	23.79	8.04	2.22		
							f	0.08	1.68	7.94	23.08	37.69	20.16	9.38		
Virgil C. Summer	SC	34.30	81.32	100	3.39	60	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	0.04	11.91	37.48	35.27	13.69	1.46	0.16	0.00	
Summit	DE	39.52	75.69	6	2.82	48	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
							f	3.00	16.10	39.60	31.30	8.60	1.20	0.20	0.00	
Surry	VA	37.17	76.70	1	2.72	46	u	1.50	3.00	5.00	7.50	10.00	>10.00			
							f	21.35	37.80	26.60	11.51	2.46	0.27			
Susquehanna	PA	41.10	76.14	199	2.53	39	u	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50 >10.50
							f	3.52	14.25	19.54	19.78	19.13	14.36	5.91	2.42	0.64 0.44
Three Mile Island	PA	40.13	76.73	91	3.31	61	u	0.35	1.50	3.00	5.00	7.50	10.00	>10.00		
							f	0.99	48.69	30.77	14.92	4.46	0.20	0.01	0.00	
Trojan	OR	46.04	122.87	7	3.24	49	u	1.68	18.97	27.83	27.68	19.74	3.55	0.55	0.00	
							f	0.22	1.56	3.35	5.59	8.27	10.95	>10.95		
Turkey Point	FL	25.43	80.33	1	2.31	53	u	1.27	35.26	35.11	16.80	8.07	2.89	0.56	0.03	
							f	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50 >10.50
					3.65	123	u	0.03	11.31	13.52	13.56	13.15	17.84	13.27	9.95	6.68 0.69
							f	0.45	1.79	3.58	5.81	8.49	11.18	13.86	>13.86	
					4.00	82	u	0.04	6.23	31.59	41.66	17.82	2.55	0.13	0.00	
							f									

Site	St.	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution							
Tyrone	WI	44.70	91.83	253	10	2.92	68	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
								f	0.47	19.92	37.16	29.30	11.72	1.37	0.06
Vermont Yankee	VT	42.78	72.52	84	43	2.66	89	u	0.22	1.56	3.35	5.59	8.27	>8.27	
								f	4.98	26.75	28.09	20.88	13.52	5.28	
Alvin W. Vogtle	GA	33.14	81.76	67	10	2.62	30	u	0.22	1.56	3.35	5.59	8.27	10.95	14.53
								f	0.48	18.76	51.96	22.77	5.56	0.46	0.01
Waterford	LA	30.00	90.47	4	9	2.53	35	u	0.22	1.56	3.35	5.59	8.27	10.95	14.08
								f	1.26	25.78	39.70	26.49	6.32	0.41	0.03
Watts Bar	TN	35.63	84.79	220	10	1.37	8	u	0.22	1.56	3.35	5.59	8.27	>8.27	
								f	11.64	49.72	29.65	8.17	0.81	0.00	
					40	1.78	27	f	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
				217	10	1.69	22	u	0.22	0.67	1.56	2.46	3.48	0.62	0.08
								f	0.38	14.72	32.59	19.33	13.41	15.81	3.33
					91	3.28	77	f	0.04	1.66	15.31	19.94	16.39	28.51	13.85
Wolf Creek	KS	38.24	95.69	338	10	4.28	133	u	0.50	1.50	3.00	5.00	7.50	10.00	>10.00
								f	0.04	4.55	25.73	32.88	23.19	9.58	4.03
					60	7.08	403	f	0.05	1.29	4.70	14.48	32.39	28.63	18.46
WPPSS - Hanford	WA	46.47	119.32	134	2	1.99	37	u	0.22	1.56	3.35	5.59	8.27	10.95	>10.95
								f	0.00	38.70	36.09	17.30	6.30	1.48	0.13
					10	2.89	83	f	0.01	22.49	39.37	23.11	10.29	3.43	1.31
					75	4.28	197	u	0.00	11.15	30.68	26.04	18.07	8.59	5.47
								f	0.22	1.56	3.35	5.59	8.27	10.95	14.08
HMS				223	15	2.92	80	f	2.20	23.20	33.40	23.80	11.50	4.20	1.20
								f	1.50	17.60	25.30	22.90	19.10	8.50	3.90
					61	3.88	198	f	2.20	16.10	22.90	20.80	19.10	10.30	5.80
								122	4.24	301					
WPPSS - Satsop		46.96	123.47	90	10	1.77	14	u	0.31	1.34	3.13	5.36	8.05	10.73	>14.30
								f	9.88	25.49	46.77	16.26	1.46	0.15	0.00
					60	3.17	59	f	3.38	12.16	31.76	37.18	13.48	1.68	0.36
Yankee Rowe	MA	42.73	72.93	350	9	1.54	36	u	1.56	3.35	5.59	8.27	10.95	>10.95	
								f	50.28	30.77	12.51	4.59	1.34	0.51	

Site	ST	Lat	Long	El.	Ht.	$\bar{u}$	P/A	Frequency Distribution											
Yellow Creek	MS	34.96	88.22	154				u	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95		
					10	1.99	18	f	1.14	10.06	27.95	24.66	17.28	16.07	2.77	0.07	0.00		
					46	3.35	61	f	0.27	1.03	10.03	19.73	22.15	33.48	11.14	1.94	0.22		
Wm. H. Zimmer	OH	38.87	84.23	155				u	0.50	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	>9.00
					9	1.51	16	f	15.57	20.35	28.65	17.42	9.24	4.87	2.34	0.85	0.36	0.21	0.14
Zion	IL	42.45	87.80	180				u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	>17.21		
					11	3.35	84	f	1.96	11.01	37.27	30.69	14.40	3.83	0.77	0.07	0.00		
								u	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79	
					76	6.40	371	f	0.86	1.66	10.71	25.49	32.85	18.68	7.11	2.07	0.47	0.10	

APPENDIX C

Alphabetical Compilation of Site Descriptions and Data

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ALLENS CREEK

SITE LOCATION:

The site of the Allens Creek Nuclear Generating Station (29.68°N/96.10°W) is located in southern Austin County, Texas, 6 km NW of Wallis, 11 km SSE of Sealy, and 72 km W of the center of Houston.

TOPOGRAPHY:

The site is located on uplands immediately W of the Brazos River, between State Highway 36 and the Brazos River floodplain. Elevation on the 11,000-acre site is 37-45 m above Mean Sea Level (MSL). The topography of the region rises gradually from sea level in the SE to 150-250 m (MSL) in the NW.

ON-SITE WIND MEASUREMENTS:

Wind data are collected from a 60-m tower instrumented with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors at the 10 m and 60 m levels.

NRC Docket No. 50-466

JOINT FREQUENCY DISTRIBUTION

ALLENS CREEK

SITE

S-CENTRAL TEXAS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1.5	3.0	5.0	7.5	10.0	> 10.0				
	0.5	1.5	3.0	5.0	7.5	10.0	> 10.0					
N		1.09	2.54	3.31	2.90	0.68	0.02					
NNE		0.87	2.67	2.28	1.35	0.18						
NE		1.37	2.34	1.97	0.45	0.03						
ENE		1.10	2.18	1.33	0.37							
E		1.12	1.79	1.41	0.20	0.02						
ESE		1.10	2.08	1.66	0.64	0.05						
SE		1.17	4.60	3.26	0.92	0.03						
SSE		1.10	3.68	3.93	1.62	0.02	0.01					
S		1.06	3.43	3.78	3.18	0.45	0.02					
SSW		0.84	2.38	2.26	1.45	0.29						
SW		0.59	2.00	1.18	0.44	0.09						
WSW		0.54	1.26	0.53	0.06							
W		0.34	1.07	0.53	0.14	0.08						
WNW		0.53	0.83	0.46	0.22	0.01						
NW		0.48	0.92	0.79	0.32	0.15	0.01					
NNW		0.59	1.37	1.73	2.20	0.67	0.24					
TOT	1.24	13.70	35.13	30.41	16.45	2.75	0.31					
SUM	1.24	14.94	50.07	80.49	96.93	99.68	99.99					

8713

OBSERVATIONS

1 AUG 72 - 31 JUL 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

ALLENS CREEK

SITE

S-CENTRAL TEXAS

LOCATION

SPEED (m/s)

DIRECTION	CALM 0.5	1.5	3.0	5.0	7.5	10.0	>10.0				
N		0.16	0.57	1.43	3.75	1.93	0.74				
NNE		0.19	0.64	1.98	3.00	1.25	0.25				
NE		0.26	0.76	2.17	1.62	0.42	0.15				
ENE		0.13	0.76	2.75	1.70	0.42	0.05				
E		0.12	0.96	2.67	1.23	0.20	0.02				
ESE		0.21	0.82	2.73	2.21	0.55	0.12				
SE		0.12	0.66	2.90	3.87	1.03	0.11				
SSE		0.13	0.81	2.89	5.28	1.86	0.28				
S		0.21	0.75	3.22	5.27	2.99	0.74				
SSW		0.08	0.78	2.20	3.38	1.97	0.39				
SW		0.08	0.87	1.71	1.71	0.54	0.08				
WSW		0.11	0.49	1.02	0.57	0.16	0.02				
W		0.13	0.60	0.78	0.56	0.18	0.08				
WNW		0.21	0.45	0.59	0.45	0.16	0.28				
NW		0.11	0.43	0.43	0.49	0.35	0.11				
NNW		0.12	0.41	0.82	1.62	1.34	0.88				
TOT	0.23	2.35	10.75	30.30	36.71	15.35	4.29				
SUM	0.23	2.58	13.33	43.63	80.34	95.69	99.98				

8538

OBSERVATIONS

1 AUG 72 - 31 JUL 73

PERIOD

VELOCITY-DURATION CURVE

ARKANSAS

SITE LOCATION:

The Arkansas Nuclear site (35.31°N/93.22°W) is located in southwestern Pope County, Arkansas, about 92 km NW of Little Rock and 110 km E of Fort Smith, on a peninsula formed by the Dardanelle Reservoir. The town of Russellville is about 10 km ESE of the site and the village of London is about 3 km NW of the site.

TOPOGRAPHY:

The site is on a peninsula in the Dardanelle Reservoir, an impoundment on that portion of the Arkansas River lying between the Boston Mountains to the north and the Ouachita Mountains to the south. These mountains generally reach to 600 m and occasionally to 900 m (MSL). The regional topography within an 8 km radius can be best described as gently rolling. Site elevation is approximately 103 m (MSL).

ON-SITE WIND MEASUREMENTS:

In June 1969, a 58-m tower was installed and instrumented at the 12 m- and 58-m levels using Litton 511S-4 sensors for wind speed and Litton 510D-2 sensors for direction.

NRC Docket Nos. 50-313, 50-368

JOINT FREQUENCY DISTRIBUTION

ARKANSAS

SITE

ARKANSAS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.3	0.9	1.8	2.7	3.6	4.5	>4.5				
	0.3	0.7	0.8	0.6	0.2	0.2						
N		0.7	0.8	0.6	0.2	0.2						
NNE		1.4	1.3	1.0	0.6	0.1						
NE		2.8	3.4	1.4	0.7	0.3						
ENE		2.6	4.5	3.3	1.6	0.9	0.7					
E		1.9	4.2	3.8	2.1	2.0	1.9					
ESE		0.8	2.2	2.7	1.7	0.6	1.1					
SE		0.5	1.6	2.2	1.2	0.5	1.1					
SSE		0.3	0.9	1.5	0.9	0.4						
S		0.4	0.7	1.0	0.5	0.2	0.4					
SSW		0.4	0.6	0.5	0.5	0.4	0.4					
SW		0.3	0.6	0.6	0.4	0.2	0.4					
WSW		0.8	0.9	0.9	0.8	0.4	1.1					
W		1.2	1.1	1.4	1.7	1.5	2.2					
WNW		1.0	1.1	1.2	0.8	0.8	2.5					
NW		0.5	0.5	0.4	0.4	0.4	0.5					
NNW		0.6	0.4	0.3	0.2	0.1	0.3					
TOT	1.6	15.9	24.6	22.7	14.4	9.2	11.6					
SUM	1.6	17.5	42.1	64.8	79.2	88.4	100.0					

8294

OBSERVATIONS

7 FEB 72 - 7 FEB 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

ARKANSAS

SITE

ARKANSAS

SPEED (m/s)

LOCATION

	CALM 0.26	1.80	3.34	5.40	8.49	>8.49				
DIRECTION										
N		0.9	0.6	0.7	0.3					
NNE		0.5	0.4	0.3	0.3					
NE		0.8	1.1	1.1	0.4	0.3				
ENE		1.0	2.1	1.6	0.7	0.2				
E		1.8	4.1	2.8	1.0	0.1				
ESE		0.9	3.4	2.3	1.0	0.1				
SE		1.0	1.5	1.8	1.2	0.2				
SSE		0.9	1.2	1.5	0.5	0.1				
S		1.1	3.0	4.0	2.1	0.1				
SSW		0.9	2.5	2.6	1.3	0.1				
SW		0.8	1.6	1.5	1.2	0.1				
WSW		1.4	2.6	2.5	0.7	0.2				
W		2.0	6.4	3.1	0.8	0.2				
WNW		1.1	3.2	2.3	1.0	1.1				
NW		1.0	1.8	1.1	1.1	0.3				
NNW		0.4	0.8	0.5	0.3	0.1				
TOT	0.4	16.5	36.3	29.7	13.9	3.2				
SUM	0.4	16.9	53.2	82.9	96.8	100.0				

4263

OBSERVATIONS

JUN 69 - MAY 70

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The Duane Arnold site (42.03°N/91.76°W) is located on the western side of the N-S reach of the Cedar River, about 4 km NNE of the village of Palo, Linn County, in east-central Iowa. The closest city is Cedar Rapids, with its outer boundary being 13 km to the SE.

TOPOGRAPHY:

A relatively flat plain at about 230 m (MSL) extends from the site towards Palo to the SW. Across the river from the site, the land rises from an elevation of 230 m to 275 m within approximately 0.6 km. These slopes are rather heavily wooded with only an occasional field or pasture dotting the landscape. Beyond the rise, the land is gently rolling farmland. To the NW, the land rises to an elevation of 260 m. Immediately adjacent to the E is another heavily wooded low area that constitutes the current floodplain. This area is very flat and extends some 0.5 km to the W bank of the river. General topographical features in this portion of the Cedar River consist of broad valleys with relatively narrow floodplains. In many places, these broad valleys merge almost imperceptibly into the adjacent uplands. Away from the vicinity of the river, the land is gently rolling farmland.

ON-SITE WIND MEASUREMENTS:

A 50-m tower has been in operation since 10 January 1971. Wind data are collected at the 11- and 50-m levels using Climet WS-011-1 instruments for wind speed and Climet WD-012-10 instruments for direction at the 11-m level and a Bendix-Friez Aerovane 120 at 50 m. Tower base is about 230 m (MSL).

JOINT FREQUENCY DISTRIBUTION

DUANE ARNOLD

SITE

E-CENTRAL IOWA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.12	1.56	3.35	5.59	8.27	>8.27			
	0.22	0.09	0.20	0.28	1.58	1.74	0.94	0.16			
N		0.09	0.20	0.28	1.58	1.74	0.94	0.16			
NNE		0.22	0.33	0.40	1.97	1.28	0.56	0.04			
NE		0.42	0.55	0.66	2.42	1.35	0.20	0.01			
ENE		0.68	0.54	0.42	1.68	0.95	0.13	0.01			
E		0.52	0.40	0.43	2.23	1.05	0.23	0.03			
ESE		0.43	0.36	0.40	2.38	1.87	0.63	0.05			
SE		0.41	0.49	0.57	3.06	1.65	0.28	0.01			
SSE		0.52	0.72	1.02	4.50	2.20	0.39				
S		0.60	0.97	1.00	4.84	4.43	1.04	0.07			
SSW		0.50	0.76	0.59	2.18	2.11	1.04	0.26			
SW		0.35	0.62	0.41	1.48	1.27	0.68	0.22			
WSW		0.23	0.35	0.29	1.19	0.92	0.41	0.16			
W		0.19	0.26	0.27	1.24	1.19	0.83	0.41			
WNW		0.11	0.13	0.18	1.28	1.52	1.23	0.73			
NW		0.11	0.16	0.20	1.83	2.36	1.94	0.55			
NNW		0.09	0.13	0.17	1.57	2.97	2.13	0.37			
TOT	0.23	5.48	6.97	7.27	35.43	28.86	12.67	3.09			
SUM	0.23	5.71	12.68	19.95	55.38	84.24	96.91	100.00			

24,465

OBSERVATIONS

1 FEB 71 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

DUANE ARNOLD

SITE

E-CENTRAL IOWA

LOCATION

SPEED (m/s)

DIRECTION	CALM										
	0.22	0.67	1.56	3.35	5.59	8.27	10.95	> 10.95			
N		0.07	0.21	0.96	1.62	1.77	0.72	0.38			
NNE		0.10	0.15	0.72	1.34	1.08	0.51	0.12			
NE		0.07	0.15	0.75	1.46	0.98	0.23	0.02			
ENE		0.06	0.15	0.83	1.27	0.83	0.22	0.07			
E		0.03	0.12	0.74	1.34	1.30	0.49	0.13			
ESE		0.07	0.08	0.76	1.76	2.00	0.83	0.41			
SE		0.06	0.13	0.97	2.41	2.41	0.66	0.13			
SSE		0.10	0.14	1.03	2.78	2.96	0.82	0.21			
S		0.12	0.21	1.38	3.39	4.97	2.51	0.51			
SSW		0.11	0.22	1.13	2.18	2.51	1.36	0.54			
SW		0.08	0.19	1.03	1.63	1.24	0.67	0.39			
WSW		0.10	0.19	0.80	1.03	0.74	0.43	0.26			
W		0.08	0.14	0.92	1.26	1.20	0.66	0.86			
WNW		0.12	0.18	0.63	1.22	1.33	1.06	1.34			
NW		0.12	0.19	0.76	1.44	2.26	1.60	1.36			
NNW		0.14	0.21	1.12	1.98	3.29	1.61	0.82			
TOT	0.45	1.43	2.68	14.55	28.11	30.88	14.36	7.55			
SUM	0.45	1.88	4.56	19.11	47.22	78.10	92.46	100.01			

24,855

OBSERVATIONS

1 FEB 71 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

ATLANTIC

SITE LOCATION:

The proposed site of the Atlantic Generating Station (39.47°N/74.26°W) is located in the Atlantic Ocean about 4.5 km offshore from the SE coast of New Jersey. It is situated opposite Ocean and Atlantic counties on shore. Further, it is some 18 km NE of Atlantic City, New Jersey, and opposite the Mullica River, which flows into the Atlantic Ocean via Great Bay and Little Egg Inlet.

TOPOGRAPHY:

The nearest land feature is the New Jersey coastline, some 5 km W of the site. The coastal area is basically a series of elongated sandbars beyond which lies a maze of inland waterways and salt marshes. In general, the land is very flat.

ON-SITE WIND MEASUREMENTS:

A 10-m tower is instrumented at the top with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors.

NRC Docket No. STN50-477

JOINT FREQUENCY DISTRIBUTION

ATLANTIC

SITE

NEW JERSEY (ON SHORE)

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.40	1.56	3.35	5.59	8.27	10.73	> 10.73				
N		0.1	1.0	1.4	1.0	0.2	0.4					
NNE		0.1	0.7	1.5	1.2	1.0	0.6					
NE		0.1	0.9	2.4	2.5	0.8	0.6					
ENE		0.1	0.6	1.3	1.0	0.2	0.2					
E		0.1	0.9	1.9	0.7							
ESE			0.6	0.8	0.3	0.1						
SE		0.1	0.7	1.5	0.7	0.3	0.3					
SSE		0.1	0.5	1.2	0.8	0.5	0.3					
S		0.2	1.3	3.3	2.4	0.9	0.4					
SSW		0.1	1.1	3.3	5.0	2.5	0.8					
SW		0.1	1.4	4.0	3.1	0.8	0.1					
WSW		0.1	0.8	1.7	1.3	0.5	0.3					
W		0.2	1.2	2.6	2.8	1.1	1.1					
WNW		0.1	0.9	2.6	2.7	1.6	1.6					
NW		0.1	1.2	2.9	2.8	1.5	0.3					
NNW		0.1	0.8	1.4	1.1	0.5	0.4					
TOT	0.1	1.9	14.6	34.3	29.3	12.5	7.3					
SUM	0.1	2.0	16.6	50.9	80.2	92.7	100.0					

6519

OBSERVATIONS

JAN-DEC 73

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site of the Bailly Generating Station (41.63°N/81.18°W) is located in Porter County, 19 km NE of Gary, IN, at the S end of Lake Michigan, between the villages of Ogden Dunes to the W and Dune Acres to the E.

TOPOGRAPHY:

The site is bordered by Lake Michigan from the W through NE, by sand dunes to the E, and by various industrial and/or residential areas throughout the remaining directions. Lake Michigan, whose elevation is 177 m (MSL), is 12 m below the site situation. Sand dunes paralleling the Lake Michigan shoreline to the NE vary considerably in slope, elevation and vegetative cover. At 230 m (MSL), Mt. Holden, 6.5 km NNE, is the highest feature of the region.

ON-SITE WIND MEASUREMENTS:

A 46-m tower based at 189 m (MSL) has been instrumented at the 18-m and 46-m levels. Wind speed and direction are measured with Bendix Aerovane Model 120 (6-bladed propeller) wind transmitters.

NRC Docket No. 50-367

JOINT FREQUENCY DISTRIBUTION

BAILLY

SITE

INDIANA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.40	1.56	3.35	5.59	8.27	10.73	> 10.73				
N			1.1	2.7	2.0	1.0	0.2	*				
NNE			1.0	3.7	2.8	0.7	0.1	*				
NE			1.0	2.8	1.8	0.3	*	*				
ENE			1.2	1.5	0.4	0.1	*	*				
E			1.4	2.1	0.4	*		*				
ESE			0.5	1.9	1.3	0.5	*	*				
SE			0.4	2.6	4.3	1.4	0.1	*				
SSE			0.4	2.2	1.3	0.3	*	*				
S			0.5	2.6	2.5	0.9	0.1	*				
SSW			0.6	4.8	6.7	2.1	0.5	*				
SW			0.4	2.1	4.5	1.7	0.2	*				
WSW			0.2	0.5	1.9	1.8	0.6	0.1				
W			0.1	0.6	1.7	1.5	0.5	0.1				
WNW			0.3	1.1	1.6	0.6	0.1					
NW			0.5	1.6	1.6	1.0	0.1					
NNW			0.5	1.6	1.5	0.8	0.2	*				
TOT		1.4	10.0	34.2	36.4	14.7	2.9	0.4				
SUM		1.4	11.4	45.6	82.0	96.7	99.6	100.0				

15,567

OBSERVATIONS

16 SEP 71 - 15 SEP 73

PERIOD

*INDICATES <0.5%

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BAILLY

SITE

INDIANA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.63	8.27	10.73	>10.73				
	0.40										
N		0.3	1.4	1.8	1.4	0.8	0.4				
NNE		0.3	1.8	2.3	1.8	0.7	0.4				
NE		0.2	1.6	2.5	1.3	0.3	0.1				
ENE		0.3	1.3	1.6	0.7	0.1	*				
E		0.3	1.2	1.6	0.2	*					
ESE		0.1	0.9	1.7	0.7	0.3	0.1				
SE		0.2	1.0	2.2	1.9	0.5	0.1				
SSE		0.2	1.3	3.2	2.2	0.3	*				
S		0.3	2.6	3.3	1.5	0.4	0.1				
SSW		0.3	1.4	5.6	3.3	1.2	0.2				
SW		0.3	1.3	4.9	2.9	0.7	0.1				
WSW		0.1	0.5	1.7	2.6	1.1	0.4				
W		0.1	0.3	1.1	1.7	1.3	0.5				
WNW		0.1	0.4	1.1	1.8	0.7	0.3				
NW		0.2	0.7	1.5	1.3	0.6	0.3				
NNW		0.2	0.8	1.3	1.4	0.8	0.4				
TOT	0.5	3.4	18.7	37.3	27.0	9.7	3.5				
SUM	0.5	3.9	22.6	59.9	86.9	96.6	100.1				

15,567

OBSERVATIONS

16 SEP 71 - 15 SEP 73

PERIOD

* INDICATES <0.5%

VELOCITY-DURATION CURVE

Alan R. BARTON

SITE LOCATION:

The Barton Nuclear Power Plant site (32.75°N/86.40°W) is located about 40 km NW of Montgomery, Alabama, and about 24 km ESE of Clanton.

TOPOGRAPHY:

The site is located in gently rolling, generally wooded country. Finished grade elevation at the site is approximately 135 m (MSL). The site is adjacent to the relatively narrow valley of the Coosa River, which has a water level of about 74 m near the site. The main topographical relief in the immediate area is attributable to the river valley and its tributary ravines.

ON-SITE WIND MEASUREMENTS:

A 61-m tower was installed in September 1973 at about 138 m (MSL). Wind speed and direction are measured by Climet WS-011-1 (speed) and Climet WD-012-10 (direction) instruments at 11 m, 30 m and 59 m elevation above ground level (AGL).

NRC Docket No. 50-254

JOINT FREQUENCY DISTRIBUTION

BARTON

SITE

ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.73	>10.73				
N			2.52	2.24	0.85	0.02						
NNE			1.75	1.59	0.22							
NE			1.27	1.12	0.10							
ENE			1.40	1.86	0.46	0.02						
E			2.37	2.98	0.74	0.01						
ESE			2.68	4.96	1.50	0.19						
SE			3.08	5.94	2.45	0.35						
SSE			1.78	3.38	1.81	0.59	0.04					
S			1.32	2.04	1.32	0.51	0.02					
SSW			0.98	1.87	1.10	0.29						
SW			0.82	1.67	0.80	0.21	0.04					
WSW			1.00	1.59	0.82	0.29	0.01					
W			1.33	1.65	0.87	0.43	0.08					
WNW			2.55	2.88	1.68	0.54	0.11					
NW			3.54	3.81	1.88	0.65	0.01					
NNW			3.50	3.43	1.82	0.22						
TOT		1.80	32.10	43.04	18.41	4.34	0.31	0.0				
SUM		1.8	33.9	76.9	95.4	99.7	100.0					

8278

OBSERVATIONS

11 SEP 73 - 11 SEP 74

PERIOD

VELOCITY-DURATION CURVE

BEAVER VALLEY/SHIPPINGPORT

SITE LOCATION:

The Beaver Valley site (40.62°N/80.43°W) is located on the south bank of the Ohio River, about 50 km NW of Pittsburgh, Pennsylvania, and about 6.5 km E of the Ohio-West Virginia state line, 7.5 km ESE of East Liverpool, Ohio. This is also the site of the Shippingport nuclear unit.

TOPOGRAPHY:

The west portion of Pennsylvania in the vicinity of the Beaver Valley Power Station site lies on the west slope of the Allegheny Mountains, 145 km SE of Lake Erie and some 550 km across several mountain ranges to the Atlantic Ocean. The major topographical influence is the deep, enclosed Ohio River Valley. The valley is sharply defined by the hills and bluffs extending to an average height of 120 m to 155 m within short distance of the river banks. The average width of the Ohio River Valley in the vicinity of the site is approximately 1.6 km.

ON-SITE WIND MEASUREMENTS:

A 46-m tower was instrumented on 19 April 1969 with Bendix Friez Aerovanes (6-bladed propeller and vane) at the 15-m and 46-m levels. Tower base is at approximately 205 m (MSL).

NRC Docket Nos. 50-334, 50-412

JOINT FREQUENCY DISTRIBUTION

BEAVER VALLEY

SITE

PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.79	2.68	3.58	4.92	6.26	8.05	10.28	>10.28		
N		2.41	1.53	1.41	1.04	0.44	0.05				
NNE		1.26	0.45	0.36	0.18	0.04					
NE		1.19	0.39	0.15	0.04						
ENE		1.58	0.50	0.16	0.01						
E		2.45	0.69	0.18	0.03						
ESE		4.21	1.28	0.41	0.08	0.03					
SE		5.37	0.99	0.43	0.10	0.03					
SSE		5.04	0.31	0.26	0.18	0.04					
S		8.39	0.51	0.09	0.05						
SSW		8.51	0.23	0.09							
SW		5.08	0.46	0.19	0.04						
WSW		3.18	0.49	0.14	0.01						
W		3.53	1.41	0.53	0.30	0.06	0.04				
WNW		3.54	2.99	2.45	1.56	0.55	0.21	0.11	0.04		
NW		2.59	2.17	2.47	3.19	1.68	0.79	0.19	0.13		
NNW		1.80	0.69	0.89	1.45	1.26	0.53	0.11	0.01		
TOT		60.13	15.09	10.21	8.26	4.13	1.62	0.41	0.18		
SUM		60.13	75.22	85.43	93.69	97.82	99.44	99.85	100.0		

8185

OBSERVATIONS

5 SEP 70 - 5 SEP 71

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BEAVER VALLEY

SITE

W - PENNSYLVANIA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.89	1.79	2.68	3.58	4.92	6.26	8.05	10.28	> 10.28		
N		1.80	0.90	1.11	1.33	0.60	0.46	0.10	0.01			
NNE		1.11	0.55	0.61	0.42	0.30	0.10					
NE		0.79	0.58	0.32	0.22							
ENE		1.27	0.60	0.18	0.21	0.08						
E		3.59	2.00	0.90	0.33							
ESE		4.22	1.58	0.79	0.36	0.06	0.03					
SE		3.99	0.55	0.28	0.22	0.01						
SSE		4.00	0.39	0.19	0.10	0.04	0.03					
S		3.66	0.42	0.24	0.17	0.08						
SSW		2.28	0.47	0.18	0.29	0.03						
SW		2.31	0.79	0.36	0.26	0.03						
WSW		2.31	1.12	0.60	0.39	0.03	0.03					
W		5.06	1.77	1.75	1.12	0.18	0.07	0.01				
WNW		3.49	2.36	2.45	2.81	1.88	1.23	0.43	0.03			
NW		2.90	1.28	1.54	2.43	1.84	1.61	1.05	0.15			
NNW		1.76	0.64	0.61	1.04	0.97	0.75	0.49	0.12			
TOT	2.80	44.54	16.00	12.11	11.70	6.13	4.31	2.08	0.31			
SUM	2.80	47.34	63.34	75.45	87.15	93.28	97.59	99.67	99.98			

7215

OBSERVATIONS

5 SEPT 70 - 5 SEPT 71

PERIOD

VELOCITY-DURATION CURVE

BELLEFONTE

SITE LOCATION:

The Bellefonte Nuclear Power Plant site (34.71°N/85.93°W) is located in NE Alabama, 89 km E of Huntsville, 72 km WSW of Chattanooga, and 11 km ENE of Scottsboro, in Jackson County. The site is also 93 km SW of the Sequoyah Nuclear Plant.

TOPOGRAPHY:

The Bellefonte site lies in the SW end of the Appalachian Mountains, along the upper reaches of Gunter'sville Lake on the Tennessee River. The general terrain consists of wooded, rather rugged hills. The Tennessee River flows south-southwestward, forming a relatively narrow valley some 245 m deep. The plant is located on the flat to gently rolling floor at 192 m (MSL) in close proximity to the river.

ON-SITE WIND MEASUREMENTS:

Data from Bellefonte's 91-m on-site tower were not yet available; however, a 40-m tower, located 3.5 km NNW of the site at about 186 m (MSL), approximately 6 m below plant grade, was established on 12 May 1972. Data are collected at 10 m and 40 m with Climet WS-011-11 (speed) and Climet WD-012-11 (direction) instruments.

NRC Docket No. 50-438

JOINT FREQUENCY DISTRIBUTION

BELLEFONTE

SITE

NE - ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N			2.33	2.52	1.35	0.16						
NNE			3.96	3.19	1.14	0.19						
NE			7.99	4.08	1.21	0.12						
ENE			3.56	0.60	0.05							
E			1.80	0.32	0.04							
ESE			0.82	0.35	0.09							
SE			1.33	0.75	0.32	0.04		0.02				
SSE			1.42	1.24	0.75	0.47	0.11	0.02				
S			4.05	2.31	2.14	0.53	0.04					
SSW			4.01	4.24	2.68	0.56						
SW			4.24	3.85	2.05	0.19	0.02					
WSW			2.82	2.31	1.35	0.32	0.18					
W			2.24	1.37	1.40	0.63						
WNW			1.19	0.86	0.67	0.09						
NW			0.95	1.07	0.65							
NNW			0.70	0.84	0.67	0.02						
TOT		6.50	43.40	29.89	16.53	3.31	0.33	0.04				
SUM		6.50	49.79	79.79	96.32	99.63	99.96	100.0				

5710

OBSERVATIONS

1 NOV 72 - 31 JUL 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BELLEFONTE

SITE

NE - ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.50	2.17	1.98	0.92	0.04						
NNE		1.50	7.13	3.82	0.61	0.07	0.04					
NE		1.17	8.47	4.14	0.67	0.07						
ENE		0.92	3.39	1.55	0.37	0.02	0.01					
E		0.74	1.19	0.61	0.12							
ESE		0.50	0.89	0.45	0.08	0.02						
SE		0.26	1.12	1.06	0.67	0.18	0.22					
SSE		0.34	1.43	1.42	0.87	0.57	0.26					
S		0.84	2.12	1.55	0.81	0.32	0.01					
SSW		0.73	3.28	2.96	1.50	0.31	0.02					
SW		1.04	3.73	5.18	1.33	0.26	0.08					
WSW		0.68	2.20	1.81	0.91	0.17	0.02					
W		0.34	1.39	1.26	0.74	0.14						
WNW		0.33	0.87	0.84	0.53	0.17	0.06					
NW		0.30	0.78	0.92	0.24	0.02	0.01					
NNW		0.66	1.48	1.85	1.12	0.08						
TOT		1.43	10.84	41.64	31.41	11.51	2.43	0.74				
SUM		1.43	12.26	53.91	85.32	96.82	99.26	100.0				

8472

OBSERVATIONS

1 AUG 72 - 31 JUL 73

PERIOD

VELOCITY-DURATION CURVE

BIG ROCK POINT

SITE LOCATION:

The Big Rock Point Nuclear Power Plant site (45.35°N/85.18°W) is located in Charlevoix County, Michigan, 6.5 km NE of Charlevoix and 19.3 km W of Petoskey, on the north shore of Michigan's lower peninsula. The site consists of 600 acres on the W extremity of the south shore of Little Traverse Bay. The site is 367 km NNW of Detroit and 422 km NNE of Chicago.

TOPOGRAPHY:

The region for several kilometers around the site consists of gently sloping, partly wooded land. Lake Charlevoix, a significant inland extension of Lake Michigan, lies 5 km to the south, and Little Traverse Bay, which opens to Lake Michigan, lies immediately north.

ON-SITE WIND MEASUREMENTS:

Wind data were collected using a 3-cup Electric Speed Indicator Company instrument of unknown accuracy and a locally fabricated vane. Data were taken at the 78 m level. Base elevation was approximately 190 m (MSL).

NRC Docket No. 50-155

JOINT FREQUENCY DISTRIBUTION

BIG ROCK POINT

SITE

NW - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.80	1.39	1.40	0.89	0.71	5.19				
NNE		0.83	1.10	1.02	0.42	0.11	3.48				
NE		0.64	1.00	0.85	0.39	0.16	3.04				
ENE		0.77	1.27	1.22	0.60	0.35	4.20				
E		1.74	3.14	2.11	0.84	0.19	8.00				
ESE		0.96	1.55	0.69	0.06		3.26				
SE		0.62	1.60	0.88	0.25	0.01	3.36				
SSE		0.54	1.40	1.63	0.54	0.09	4.21				
S		0.77	2.49	4.18	2.98	0.41	10.83				
SSW		0.45	1.51	3.04	1.96	0.37	7.33				
SW		0.49	1.77	2.28	1.34	1.02	6.89				
WSW		0.64	1.83	2.43	1.39	1.50	7.78				
W		1.18	2.31	1.79	2.09	1.95	9.33				
WNW		0.76	1.10	1.20	1.16	1.20	5.42				
NW		0.70	0.99	1.36	1.16	1.10	5.32				
NNW		0.73	1.23	1.83	1.36	0.99	6.14				
TOT		6.24	12.60	25.69	27.89	17.43	10.15				
SUM		6.24	18.84	44.53	72.42	89.85	100.0				

14957

OBSERVATIONS

9 FEB 61 - 8 FEB 63

PERIOD

VELOCITY-DURATION CURVE

BLACK FOX

SITE LOCATION:

The plant site is located in Inola township of Rogers County, Oklahoma (36.12°N/95.55°W) within the expanded city limits of Inola. Tiawah, a small unincorporated community, is 16 km N; Fort Gibson Reservoir is about 19 km ESE; and Tulsa is 37 km W. The Tulsa NWS station is 31 km WNW of Black Fox Station.

TOPOGRAPHY:

The 2006-acre site and its environs consist primarily of pastures and woodlands along the Verdigris River. The surrounding terrain is generally gently rolling hills. Black Fox station is about 187 m (MSL) in elevation, and the maximum variations are a rise of 40 m, 8 km to the north and a drop of 15 m to the Verdigris River and Adams Creek on the west boundary.

ON-SITE WIND MEASUREMENTS:

A 100 m tower was erected in November 1973 at 174 m (MSL). The tower was instrumented at 10 m, 40 m and 98 m with MRI 1074-2 wind measurement systems.

NRC Docket No. STN50-556

JOINT FREQUENCY DISTRIBUTION

BLACK FOX

SITE

NE - OKLAHOMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N			0.48	2.34	2.32	1.30	0.23					
NNE			1.17	2.46	1.77	0.76	0.12	0.01				
NE			1.42	2.53	1.32	0.34	0.01					
ENE			1.97	1.78	0.55	0.16	0.01					
E			1.89	1.13	0.31	0.07	0.02					
ESE			1.17	2.01	0.61	0.20	0.05					
SE			1.64	4.37	1.44	0.60	0.05					
SSE			1.17	5.91	6.07	2.34	0.31	0.06				
S			0.94	3.80	6.39	4.75	1.65	0.25				
SSW			0.65	1.44	1.55	1.44	0.45	0.04				
SW			0.57	0.97	0.46	0.40	0.12	0.07				
WSW			0.64	0.97	0.51	0.37	0.12	0.04				
W			0.61	0.85	0.37	0.19	0.12	0.06				
WNW			0.42	1.02	0.91	0.55	0.11	0.01				
NW			0.04	1.32	1.73	1.28	0.34	0.05				
NNW			0.46	1.31	1.93	1.77	0.42	0.01				
TOT		0.08	16.15	34.23	28.26	16.53	4.13	0.61				
SUM		0.08	16.23	50.46	78.72	95.25	99.38	99.99				

8308
OBSERVATIONS

1 DEC 73 - 30 NOV 74
PERIOD

VELOCITY-DURATION CURVE

BLUE HILLS

SITE LOCATION:

Blue Hills station (31.14°N/93.69°W) is located in the NE corner of Newton County, Texas, 3.2 km SW of Toledo Bend Reservoir and 27 km E of Sam Rayburn Reservoir. The site is about 40 km ENE of Jasper and 16 km N of Wiergate and Burkeville. The Texas-Louisiana border is 14.5 km E of the site. The Gulf of Mexico is 153 km to the S.

TOPOGRAPHY:

The site is composed of about 3016 acres at an elevation of about 82 m (MSL). The terrain is generally rolling or slightly hilly. The site and surrounding area are heavily wooded, primarily with long-needled pines rising 12 to 22 m in height. The rolling terrain characteristic of the site gives way near Newton, Texas, 43 km S, and becomes almost flat the remaining 110 km to the gulf. Terrain in other directions is mostly rolling with no pronounced features.

ON-SITE WIND MEASUREMENTS:

A 55-m tower was completed in October 1973. Wind speed and direction were measured at 10 m and 55 m with Teledyne-Geotech 50.1 and 50.2 systems for speed and direction, respectively. Wind speed is also measured at 20 m and 30 m, but not wind direction. Tower base is at approximately 82 m (MSL).

NRC Docket No. STN50-510

JOINT FREQUENCY DISTRIBUTION

BLUE HILLS

SITE

E-CENTRAL TEXAS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	3.0	5.0	8.0	10.0	> 10.0				
	0.25										
N		1.34	2.39	1.89	0.19						
NNE		1.72	3.83	1.38	0.05						
NE		1.68	2.53	0.41							
ENE		1.61	1.45	0.06							
E		1.74	1.22	0.17	0.01						
ESE		1.74	1.22	0.24							
SE		2.14	2.56	1.26	0.26						
SSE		2.55	6.29	3.88	0.71						
S		1.60	6.52	5.48	1.12						
SSW		1.20	2.51	1.92	0.40						
SW		2.03	1.78	0.76	0.04						
WSW		3.29	2.07	1.09	0.22						
W		5.20	1.80	0.62	0.08	0.04					
WNW		3.69	1.46	0.46	0.04						
NW		1.91	1.54	0.89	0.10						
NNW		1.01	1.42	1.01	0.04						
TOT	0.19	34.43	40.60	21.51	3.25	0.04	0				
SUM	0.19	34.62	75.22	96.73	99.98	100.02					

8328
OBSERVATIONS15 OCT 73 - 14 OCT 74
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BLUE HILLS

SITE

E-CENTRAL TEXAS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.25	1.5	3.0	5.0	8.0	10.0	>10.0				
N			0.27	1.34	2.09	1.08	0.07	0.19				
NNE			0.63	2.61	3.09	0.92	0.07	0.01				
NE			1.14	3.49	2.45	0.37		0.01				
ENE			0.56	2.61	1.41	0.07		0.01				
E			0.43	2.19	1.44	0.15						
ESE			0.32	1.69	1.16	0.28	0.01	0.01				
SE			0.31	1.90	3.44	1.29	0.19	0.02				
SSE			0.28	2.23	6.57	4.82	0.55	0.12				
S			0.33	1.70	6.73	6.57	0.61	0.10				
SSW			0.12	1.36	3.42	3.17	0.28	0.04				
SW			0.16	1.02	1.85	0.99	0.04					
WSW			0.20	1.09	1.80	0.41	0.02	0.01				
W			0.22	1.08	1.52	0.31	0.02	0.04				
WNW			0.14	0.76	1.45	0.68	0.07	0.01				
NW			0.31	0.78	1.34	1.10	0.06	0.05				
NNW			0.28	0.82	1.23	1.64	0.07	0.05				
TOT	0.01	5.72	26.66	40.99	23.85	2.08	0.68					
SUM	0.01	5.73	32.39	73.38	97.23	99.31	99.99					

8071

OBSERVATIONS

15 OCT 73 - 14 OCT 74

PERIOD

VELOCITY-DURATION CURVE

BRAIDWOOD

SITE LOCATION:

The Braidwood site (41.24°N/88.23°W) is in north central Illinois, in the SW corner of Will County, approximately 80 km SW of Chicago, and 32 km SSW of Joliet. The NW corner of the site is adjacent to the community of Godley and its south border lies along the Will-Kankakee County line.

TOPOGRAPHY:

The terrain in northern Illinois is generally flat. The site is located on the Kankakee plain in an area where farmlands have been displaced by strip coal mining. This specific area has already been mined to a great extent by Peabody Coal Company. The 98-m meteorological tower, at an elevation of 183 m, is at one of the highest points within an 8-km radius. The lowest points within 8 km are at about 168 m and the slope from the higher terrain to the lower points is generally gradual. The Kankakee River lies 5 km E of the NE site boundary. The meteorological tower is located in the center of a large open field with no other tall structures or trees in the vicinity.

ON-SITE WIND MEASUREMENTS:

The tower was completed in October, 1973. The 98-m tower is at an elevation of 183 m (MSL) and is some 670 m NE of the nearest building. Wind speed and direction are measured at 9 m and 61 m with MRI 1074-1 combined cup and vane sensors.

NRC Docket No. 50-456

JOINT FREQUENCY DISTRIBUTION

BRAIDWOOD

SITE

NORTH CENTRAL - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	10.95	>10.95					
	0.22										
N		0.78	1.77	1.96	0.62						
NNE		0.78	1.44	1.86	0.73						
NE		0.68	1.95	1.37	0.69						
ENE		1.08	2.35	0.99	0.01						
E		1.48	2.10	0.50	0.16						
ESE		1.31	1.87	1.00	0.19						
SE		0.94	2.16	1.79	0.59						
SSE		0.75	2.27	2.00	1.24						
S		0.65	2.85	3.56	3.27	0.13					
SSW		0.82	2.56	3.82	3.83	0.25					
SW		0.53	2.65	2.38	2.12	0.01					
WSW		0.43	2.77	2.17	1.05	0.05					
W		0.83	2.27	2.13	0.83	0.04					
WNW		0.93	2.27	2.37	1.25	0.11					
NW		0.83	1.82	2.60	1.15	0.05					
NNW		0.56	1.31	1.52	1.03	0.04					
TOT	0.75	13.38	34.41	32.02	18.77	0.68					
SUM	0.75	14.13	48.54	80.56	99.33	100.01					

7952

OBSERVATIONS

1 NOV 73 - 31 OCT 74

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site is located on the north shore of Wheeler Lake in Limestone County in northern Alabama (34.72°N/87.10°W). The site is approximately 16 km SW of Athens, Alabama, and 16 km NW of Decatur, Alabama.

TOPOGRAPHY:

The Browns Ferry site is adjacent to the Tennessee River, which flows NW at this location. There are no significant physiographic features at the site as the immediate terrain is flat or slightly undulating with scattered 120 to 190 m foothills and ridges located 30 to 40 km to the E through S and SW. Wheeler Lake adjoins the site and averages 1.5 to 2.5 km in width; however, there is little valley feature relief. Wheeler Lake is at 169 m (MSL).

ON-SITE WIND MEASUREMENTS:

A 91-m tower was erected in February 1967, then relocated twice. In March 1973, the tower was moved to its present location at about 9 m above plant grade, 172 (MSL). The tower is instrumented with Climet WS-011-1 (speed) and Climet WD-012-11 (direction) sensors at both the 10-m and the 91-m levels.

NRC Docket Nos. 50-259, 50-296

JOINT FREQUENCY DISTRIBUTION

BROWNS FERRY

SITE

N-CENTRAL ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.52	2.41	3.31	5.54	8.22	10.91	>10.91			
N		0.22	2.79	1.84	1.45	1.87	0.22					
NNE			3.86	1.79	1.08	1.03	1.10					
NE			2.26	1.15	0.41	0.14	0.01					
ENE			2.38	0.57	0.08	0.04						
E			2.75	1.29	0.18	0.04						
ESE			2.87	2.45	1.09	0.51						
SE			7.26	6.05	2.32	1.09	0.03					
SSE			4.49	2.64	0.65	0.28						
S			3.87	3.09	1.34	0.48						
SSW			1.50	0.74	0.30	0.10	0.01					
SW			1.29	0.65	0.08	0.04						
WSW			1.46	1.44	0.61	0.50	0.14					
W			1.12	1.88	1.14	0.91	0.26	0.01				
WNW			0.75	0.91	1.02	1.39	0.66	0.13	0.01			
NW			0.64	0.80	0.86	2.00	0.80	0.05	0.01			
NNW			1.84	1.48	1.16	2.37	0.90	0.02				
TOT		0.22	41.13	28.77	13.77	12.79	3.13	0.21	0.02			
SUM		0.22	41.35	70.12	83.89	96.68	99.81	100.02	100.04			

16,724

OBSERVATIONS

JAN 74 - DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BROWNS FERRY

SITE

NW - ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.52	2.41	3.31	5.54	8.22	10.91	> 10.91			
N		0.25	0.29	0.46	1.71	1.96	0.51	0.02				
NNE		0.27	0.38	0.56	2.06	2.36	0.60	0.07				
NE		0.16	0.40	0.49	1.80	1.83	0.50	0.03				
ENE		0.18	0.36	0.46	1.25	0.85	0.21	0.01				
E		0.24	0.49	0.51	1.02	0.37	0.04					
ESE		0.37	0.53	0.58	1.62	1.12	0.29	0.05				
SE		0.60	1.19	1.33	3.63	2.74	1.39	0.56				
SSE		0.72	0.99	1.22	3.11	2.66	1.24	0.67				
S		0.51	0.83	1.04	2.74	2.65	1.08	0.74				
SSW		0.43	0.63	0.56	2.17	2.71	1.42	0.50				
SW		0.53	0.63	0.67	1.77	1.88	0.67	0.20				
WSW		0.39	0.90	0.66	1.20	0.87	0.27	0.23				
W		0.30	0.77	0.74	1.36	0.84	0.43	0.28				
WNW		0.21	0.42	0.89	1.39	0.90	0.42	0.26				
NW		0.33	0.70	0.84	2.08	1.50	0.85	0.27				
NNW		0.26	0.47	0.53	1.54	2.27	0.71	0.09				
TOT		0.11	5.75	9.98	11.54	30.45	27.55	10.63	3.98			
SUM		0.11	5.86	15.84	27.38	57.83	85.38	96.01	99.99			

16,950

OBSERVATIONS

JAN 74 - DEC 75

PERIOD

VELOCITY-DURATION CURVE

BRUNSWICK

SITE LOCATION:

The 1200-acre Brunswick site (33.96°N/78.01°W) is located in the SE portion of North Carolina in Brunswick County, 5 km N of Southport and 2.4 km W of Cape Fear River. Wilmington is 32 km NNE.

TOPOGRAPHY:

The site is located on the coastal plain, just inland from the island of Cape Fear. The area is generally flat with swamps to the N and W for some 65 km. The swamps and marshes are laced with numerous small streams. The Cape Fear River lies 2.4 km E, beyond which is a low peninsula that separates the river from the Atlantic Ocean. Southward beyond Southport lies a small bay and then the Atlantic. There is very little relief in the vicinity of the site.

ON-SITE WIND MEASUREMENTS:

Since September 1970, data have been recorded continuously from instruments mounted on a 111-m microwave tower. It is away from all structures and trees have been cleared to a radius of 183 m. Wind speed and direction are recorded at two levels, at 13 m using a Climet WS-011-1/WD-012-11 system and at 107 m using a Bendix aerovane.

NRC Docket No. 50-324

JOINT FREQUENCY DISTRIBUTION

BRUNSWICK

SITE

SE - NORTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.04	1.34	3.13	5.36	8.05	10.73	14.30	>14.30			
N			1.54	2.77	1.52	0.25	0.01					
NNE			1.42	2.09	1.37	0.21	0.06					
NE			0.75	1.94	2.24	0.58	0.07	0.01				
ENE			0.59	1.30	2.23	0.46						
E			0.40	1.03	2.50	0.38	0.01					
ESE			0.35	1.28	1.79	0.28	0.03					
SE			0.62	1.85	1.67	0.32	0.06					
SSE			0.66	0.97	1.04	0.85	0.01					
S			1.07	1.55	1.85	0.89	0.16					
SSW			0.99	2.13	3.52	3.16	0.62	0.08	0.04			
SW			1.34	3.38	5.91	3.72	0.16	0.06	0.01			
WSW			1.40	2.98	2.86	1.28	0.08					
W			1.07	2.34	1.18	0.73	0.27					
WNW			1.10	1.77	1.37	0.54	0.08					
NW			1.86	1.87	1.61	0.72						
NNW			1.66	2.20	1.26	0.20						
TOT		1.90	16.82	31.45	33.92	14.57	1.62	0.15	0.05			
SUM		1.90	18.72	50.17	84.09	98.66	100.28	100.43	100.48			

8760
OBSERVATIONS24 SEP 70 - 23 SEP 71
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

BRUNSWICK

SITE

SE - NORTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.04	1.34	3.13	5.36	8.05	10.73	14.30	> 14.30			
N		0.15	0.91	1.29	1.80	1.00	0.06	0.06				
NNE		0.08	0.52	1.32	2.06	0.94	0.06					
NE		0.15	0.64	1.80	2.77	0.66	0.18	0.03				
ENE		0.02	0.58	2.25	3.76	0.55	0.03					
E		0.06	0.70	2.50	1.70	0.35	0.06					
ESE		0.21	0.91	2.13	0.87	0.40	0.35	0.11				
SE		0.15	1.55	2.66	0.79	0.30	0.32	0.03				
SSE		0.05	1.53	1.22	0.88	0.38	0.24	0.05				
S		0.11	0.67	1.98	1.61	0.56	0.56	0.24				
SSW		0.58	0.58	2.37	3.53	1.87	0.72	0.06				
SW		0.08	0.67	2.83	6.75	3.85	1.16	0.20				
WSW		0.06	0.59	2.48	4.05	1.19	0.17	0.03				
W		0.11	0.70	1.37	2.22	1.29	0.11					
WNW		0.09	0.52	1.05	1.60	0.91	0.29					
NW		0.11	0.37	1.22	1.37	0.73	0.02					
NNW		0.12	0.50	0.93	1.58	1.11	0.11					
TOT	0.36	1.64	11.94	29.40	37.34	16.09	4.44	0.77				
SUM	0.36	2.00	13.94	43.34	80.68	96.77	101.21	101.98				

8760

OBSERVATIONS

24 SEP 70 - 23 SEP 71

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The Byron site (42.08°N/89.28°W) is about 3 km E of the Rock River and 5 km SW of Byron, Ogle County, north central Illinois. The site is also 27 km SW of Rockford and some 140 km WNW of Chicago.

TOPOGRAPHY:

Terrain in northern Illinois is relatively flat with only slight undulations. The site consists of 1000 acres. The northern half is dissected and slopes to the NE. In the southern half, the land slopes to the S and is slightly dissected and rolling. Elevations range from 276 m (MSL) in the SE portion to about 223 m (MSL) in the NW corner nearest the river. Plant grade is at 265 m (MSL), as is the meteorological tower. This is one of the highest points within 8 km and terrain generally falls off gradually in all directions except S and SE. The Rock River runs NE-SW at an elevation of 213 m (MSL) about 3 km W and NW of the site.

ON-SITE WIND MEASUREMENTS:

A 76-m meteorological tower was completed in May 1973 at an elevation of 265 m (MSL). Wind speed and direction are measured at 9 m and 76 m (AGL) with MRI model 1074-1 combined cup and vane sensor.

NRC Docket No. 50-454

JOINT FREQUENCY DISTRIBUTION

BYRON

SITE

SE - NORTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	10.95	> 10.95					
N			0.59	1.88	1.56	1.20	0.06					
NNE			0.53	1.25	1.32	0.60	0.03					
NE			0.26	1.29	1.44	1.75	0.10					
ENE			0.30	1.65	2.12	1.75	0.04					
E			0.29	1.44	2.08	1.13						
ESE			0.21	1.16	1.76	1.27	0.03					
SE			0.31	1.18	1.55	0.91	0.01					
SSE			0.50	2.48	2.44	1.46	0.03					
S			0.53	3.77	3.62	1.76	0.08					
SSW			0.89	3.00	2.87	2.16	0.14					
SW			0.93	2.51	2.52	1.99	0.18					
WSW			0.69	1.95	2.23	1.63	0.03					
W			1.12	1.99	1.99	1.31	0.06					
WNW			1.13	2.22	1.54	1.22	0.18					
NW			1.46	2.12	2.23	1.80	0.03					
NNW			0.94	1.86	1.86	1.02	0.03					
TOT	0.43	10.72	31.74	33.13	22.98	1.00						
SUM	0.43	11.15	42.89	76.02	99.00	100.0						

7937

OBSERVATIONS

1 JUN 73 - 31 MAY 74

PERIOD

VELOCITY-DURATION CURVE

CALLAWAY

SITE LOCATION:

The Callaway site (38.76°N/91.78°W) is located in east central Missouri, 13 km SE of Fulton and 49 km ESE of Columbia.

TOPOGRAPHY:

The 3,177-acre site is located on a plateau, N of the Missouri River. It is about 100 m above the river's floodplain and the area between the plateau and the river is highly dissected. The southern flank of the plateau is deeply incised with steep stream gradients. Relief varies from 45 m to 100 m or more. The more gently rolling terrain of the plateaus and the floodplains of the streams and rivers are usually cultivated, while the predominant fraction of the land lies in slopes unsuitable for farming and consequently is occupied by forest growth.

ON-SITE WIND MEASUREMENTS:

A permanent tower, 93 m high, was completed in May 1973, at a base elevation of 251 m (MSL). The tower is in an open field 2.25 km ENE of the site, on a plateau that has a flat to undulating terrain. Wind speed and direction were measured at 10 m, 60 m and 90 m using Climet WS-011-1 and Climet WD-012-10, respectively.

NRC Docket Nos. 50-483, 50-486

JOINT FREQUENCY DISTRIBUTION

CALLAWAY

SITE

E-CENTRAL MISSOURI

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.34	2.24	3.35	4.47	>4.47				
		0.06	0.18	0.63	1.42	1.05	1.42				
N		0.05	0.48	1.09	1.88	1.39	1.43				
NNE		0.05	0.39	0.82	1.26	0.72	0.90				
NE		0.04	0.40	0.97	1.31	0.79	1.24				
ENE		0.06	0.19	0.66	0.60	0.98	1.42				
E		0.04	0.40	0.97	1.31	0.79	1.24				
ESE		0.02	0.33	1.33	2.46	1.69	2.33				
SE		0.04	0.31	1.61	2.34	1.98	1.78				
SSE		0.01	0.45	1.32	3.06	1.96	2.08				
S		0.01	0.45	1.93	2.48	2.02	1.97				
SSW		0.02	0.20	1.26	1.57	1.24	1.67				
SW		0.02	0.34	1.04	1.16	1.03	1.43				
WSW		0.02	0.24	0.74	1.61	1.25	2.29				
W		0.04	0.24	0.89	1.43	1.09	2.46				
WNW		0.02	0.34	0.74	1.33	1.16	2.14				
NW		0.07	0.32	1.13	1.46	1.31	1.38				
NNW		0.58	5.19	17.34	26.90	21.19	28.80				
TOT		0.58	5.77	23.11	50.01	71.20	100.0				
SUM		0.58	5.77	23.11	50.01	71.20	100.0				

8465

OBSERVATIONS

1 APR 72 - 31 MAR 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

CALLAWAY

SITE

E-CENTRAL - MISSOURI

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	3.0	5.0	7.5	10.0	>10.0				
N		0.37	0.75	1.56	1.76	0.42	0.13				
NNE		0.23	1.00	1.42	0.77	0.16	0.02				
NE		0.20	0.77	1.30	0.47	0.12					
ENE		0.28	0.71	1.17	0.70	0.12					
E		0.42	0.87	1.20	0.85	0.08	0.01				
ESE		0.28	0.60	1.76	1.64	0.14	0.01				
SE		0.29	1.36	2.83	2.89	0.64	0.17				
SSE		0.43	1.30	3.34	3.37	0.69	0.17				
S		0.32	1.97	3.47	3.89	1.59	0.57				
SSW		0.14	1.17	2.70	4.39	1.48	0.36				
SW		0.19	0.91	2.49	3.21	1.89	0.54				
WSW		0.30	0.85	1.20	1.13	0.55	0.26				
W		0.24	1.03	1.94	1.90	0.97	0.26				
WNW		0.25	0.72	1.61	2.60	0.99	0.58				
NW		0.13	0.63	1.73	2.51	0.89	0.34				
NNW		0.16	0.72	1.70	1.86	0.58	0.06				
TOT		4.27	15.37	31.62	33.94	11.31	3.49				
SUM		4.27	19.64	51.26	85.20	96.51	100.0				

8311

OBSERVATIONS

4 MAY 73 - 4 MAY 74

PERIOD

VELOCITY-DURATION CURVE

CALVERT CLIFFS

SITE LOCATION:

The Calvert Cliffs Nuclear Power Plant (38.41°N/76.43°W) is located in an excavated section of the Calvert Cliffs in Calvert County, Maryland, on the western shore of Chesapeake Bay. It is about halfway between the mouth of the bay and its headwaters at the Susquehanna River. It is located 17 km SE of Prince Frederick and 7 km NW of Cove Point, Maryland.

TOPOGRAPHY:

The 1.135-acre site is located on rolling land which is forested primarily with deciduous trees and an understory of various grasses, herbs and shrubs. There is some cultivation of tobacco and a little hay and corn. The site varies in elevation from sea level to 42 m (MSL). The bay frontage and several of the small interior streams are characterized by near-perpendicular walls caused by water, wind and frost action.

ON-SITE WIND MEASUREMENTS:

While several towers have been used at various times, the attached data were taken from a tower established in early 1969, known as the Inner South (IS) station. The tower was erected at 15 m (MSL) and records winds at 3.7 m and 10 m with an MRI Mechanical Weather Station, Model 1071, an MRI Vector Vane Sigma Meter Model 1053-Mark II and an MRI Model 2040 Wind Diffusion System.

NRC Docket No. 50-317

JOINT FREQUENCY DISTRIBUTION

CALVERT CLIFFS

SITE

E-CENTRAL MARYLAND

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.14	>5.14							
N		0.51	3.33	2.59	1.49								
NNE		0.56	2.26	1.43	0.57								
NE		0.32	1.83	0.98	0.06								
ENE		0.31	1.39	0.19									
E		0.60	2.24	0.32									
ESE		0.53	1.49	0.64									
SE		0.44	1.39	0.67	0.04								
SSE		2.18	3.92	1.83	0.38								
S		6.01	5.44	0.47	0.07								
SSW		5.99	2.56	0.31									
SW		5.49	1.83	0.35	0.07								
WSW		2.62	1.93	0.28	0.13								
W		3.01	3.26	0.44	0.19								
WNW		1.24	3.96	1.34	0.39								
NW		0.50	3.86	3.77	2.38								
NNW		0.41	1.56	3.46	2.19								
TOT	0.03	30.70	42.23	19.07	7.98								
SUM	0.02	30.73	72.96	92.03	100.01								

6844

OBSERVATIONS

CY 1970

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site is located in York County, South Carolina, on Lake Wylie (35.05°N/81.07°W). South of the site is Big Allison Creek and north is Beaver Dam Creek, which are arms of Lake Wylie. About 7 km SE of the site is Wylie Dam and hydroelectric station. The site is also 35 km E of Cherokee Nuclear Station, 59 km N of Columbia, 40 km ENE of Spartansburg and about 6 km NNW of Rock Hill.

TOPOGRAPHY:

The site is located in the rolling plains of the Appalachian piedmont. Within an 8 km radius, the terrain is generally rolling to rough with elevations ranging from 170 m to 220 m (MSL) with a knob of 290 m (MSL) at 4 km to the NW. Wylie Lake, at 174 m (MSL), extends somewhat N-S just E of the site. The shoreline is very irregular with dendritic arms, such as Big Allison Creek to the south of the site and Beaver Dam Creek to the north. The width of main lake is generally 600-1000 m. The site itself varies in elevation from 170 m to 195 m (MSL) while the base of the meteorological tower is at 196 m (MSL), 450 m SE of the site.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at 10 m (AGL) by a Packard-Bell Model W/S-101B Series Wind Direction-Speed System. The tower has limited exposure being in a 107 x 107 m clearing in the surrounding pine forest.

NRC Docket No. 50-413

JOINT FREQUENCY DISTRIBUTION

CATAWBA

SITE

SOUTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	>7.49		
N		3.41	2.34	1.01	0.27	0.06						
NNE		2.86	2.75	1.35	0.38	0.09	0.01					
NE		3.00	5.77	4.95	2.53	0.62	0.05					
ENE		1.88	2.31	1.25	0.22	0.01						
E		1.87	1.39	0.28	0.12	0.01						
ESE		1.24	1.01	0.10	0.01			0.01				
SE		2.27	1.06	0.07								
SSE		1.19	0.36	0.01								
S		1.20	0.81	0.13	0.04							
SSW		2.55	2.25	0.35	0.13							
SW		4.61	6.99	4.34	2.62	0.86	0.11	0.01				
WSW		2.26	2.49	2.03	0.95	0.39	0.05					
W		1.73	1.39	0.50	0.32	0.11						
W'NW		1.08	0.50	0.34	0.21	0.13	0.02					
NW		1.43	0.60	0.23	0.15	0.04	0.01					
NNW		1.37	0.61	0.29	0.15	0.04						
TOT	5.44	33.98	32.62	17.23	8.08	2.36	0.28	0.01	0			
SUM	5.44	39.42	72.04	89.27	97.35	99.71	99.99	100.0				

8229

OBSERVATIONS

30 JUN 71 - 30 JUN 72

PERIOD

VELOCITY-DURATION CURVE

CHEROKEE

SITE LOCATION:

Cherokee Nuclear Station (35.09°N/81.51°W) is located in the E portion of Cherokee County, South Carolina, on the Broad River. The nearest towns are Gaffney, 13 km NW, and Blacksburg, 10 km N. The site is also 27 km ENE of Greenville and 37 km NNW of Columbia.

TOPOGRAPHY:

The site is located in the rolling plans of the Appalachian piedmont. Terrain is generally rolling to rough with a small ridge rising to 245 m (MSL) SW of the plant and the Broad River at 155 m (MSL) on the N and E borders of the site.

ON-SITE WIND MEASUREMENTS:

On-site meteorological equipment became operational on 11 Sep 73. Wind measurements are made at 9 m and 40 m with Packard-Bell Model W/S 101B Series Wind Direction-Speed Systems. Wind direction and speed are averaged over 30-minute intervals preceding each hour and logged on the hour.

NRC Docket No. 50-491

JOINT FREQUENCY DISTRIBUTION

CHEROKEE

SITE

CENTRAL - NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	>8.5	
	0.44										
N		2.91	1.99	0.68	0.10		0.01				
NNE		1.83	2.47	0.87	0.11	0.01		0.01			
NE		1.82	3.05	1.65	0.43	0.05					
ENE		1.63	1.88	1.27	0.10	0.02					
E		1.43	1.63	0.42	0.05						
ESE		1.03	0.88	0.09	0.01						
SE		1.71	1.20	0.29		0.01					
SSE		1.09	0.45	0.09	0.05						
S		1.75	1.17	0.28	0.02						
SSW		2.19	1.63	0.53	0.01	0.01					
SW		4.46	4.39	2.32	0.55	0.20		0.01			
WSW		3.42	2.90	2.22	0.72	0.28	0.10	0.04	0.04		
W		4.88	1.89	1.01	0.22	0.13	0.04	0.01			
WNW		5.38	1.26	0.62	0.11	0.13	0.02				
NW		7.00	2.24	1.03	0.49	0.24	0.02				
NNW		3.01	1.60	0.46	0.13	0.01					
TOT	5.49	45.54	30.62	13.83	3.10	1.11	0.20	0.07	0.04	0	
SUM	5.49	51.03	81.65	95.48	98.58	99.69	99.89	99.96	100.0		

8184

OBSERVATIONS

11 SEP 73 - 11 SEP 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

CHEROKEE

SITE

CENTRAL - NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.45	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	>9.5
N			1.03	2.13	2.38	1.10	0.47	0.04	0.01		0.01	
NNE			0.98	1.89	2.16	1.42	0.49	0.12			0.01	
NE			1.29	2.60	2.28	1.48	0.62	0.13	0.01	0.01	0.01	
ENE			0.85	1.63	1.00	0.69	0.35	0.14	0.01			
E			0.93	1.77	0.75	0.30	0.16	0.02	0.01			
ESE			0.96	1.26	0.48	0.17	0.04					
SE			1.14	1.61	0.61	0.52	0.15	0.02	0.02	0.01		
SSE			1.08	1.53	0.64	0.33	0.22	0.14	0.02	0.01		
S			0.99	1.95	1.60	0.66	0.31	0.11		0.04		
SSW			0.84	2.39	2.29	1.48	1.04	0.31	0.02	0.01		
SW			1.01	2.31	3.43	2.96	1.89	0.99	0.40	0.20	0.20	0.04
WSW			0.62	1.29	1.45	1.39	0.92	0.43	0.25	0.10	0.05	0.04
W			0.74	1.45	1.04	0.61	0.48	0.11	0.10	0.04	0.02	
WNW			0.77	1.30	0.90	0.79	0.57	0.22	0.15	0.10	0.02	0.01
NW			0.96	2.51	2.34	1.13	0.66	0.24	0.28	0.06	0.02	
NNW			0.84	2.16	1.73	0.78	0.38	0.10				
TOT		0.21	15.03	29.79	25.07	15.81	8.75	3.15	1.30	0.57	0.24	0.09
SUM		0.21	15.24	45.03	70.10	85.91	94.66	97.81	99.11	99.68	99.92	100.0

8084

OBSERVATIONS

11 SEP 73 - 11 SEP 74

PERIOD

VELOCITY-DURATION CURVE

CLINCH RIVER

SITE LOCATION:

The Clinch River site (35.89°N/84.38°W) is in east central Tennessee in the eastern part of Roane County and within the city limits of Oak Ridge, about 40 km W of Knoxville.

TOPOGRAPHY:

The site is on a peninsula on the N bank of Watts Bar Lake on the Clinch River. The area is a broad valley between the Cumberland Mountains, which lies to the NW, and the Great Smokey Mountains to the SE, both of which are a part of the southern Appalachian mountains. General terrain of the region is heavily wooded rolling hills with intervening valleys. Elevations of the ridge crests range between 275 m and 375 m (MSL), compared to a site elevation of 248 m and normal reservoir pool elevation of 225 m. The highest point within 8 km of the site is Melton Hill, 413 m (MSL), about 7.6 km ENE. The broad valley in which the site lies is set off by a series of parallel ridges extending on a NE-SW direction. The site lies along a flank of one of these ridges. Terrain south of the site just beyond Watts Bar Lake (1.1 km S) rises abruptly to 325 m (MSL). Hills or ridges similar in elevation are found within 3 km of the site in every direction except NE.

ON-SITE WIND MEASUREMENTS:

An on-site meteorological program was initiated on 11 Apr 73. Wind measurements are made at 23 and 61 m using Climet 011-11 instruments for wind speed and Climet 012-11 instruments for wind direction.

NRC Docket No. 50-537

JOINT FREQUENCY DISTRIBUTION

CLINCH RIVER

SITE

E-CENTRAL TENNESSEE

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.49	3.29	5.14	8.23	10.80	>10.80				
N		2.64	0.48	0.08	0.01						
NNE		4.11	0.73	0.05							
NE		3.56	1.17	0.04							
ENE		5.10	2.26	0.19							
E		5.63	2.96	0.09							
ESE		4.55	1.45	0.05							
SE		3.87	0.97	0.17	0.01						
SSE		3.04	0.58	0.04							
S		3.96	1.06	0.19	0.14						
SSW		4.50	2.87	1.22	0.58	0.01					
SW		4.80	5.19	2.56	1.00	0.07	0.01				
WSW		3.56	3.04	0.93	0.39	0.10					
W		2.17	1.42	0.63	0.13	0.03					
WNW		2.57	2.86	2.21	0.34						
NW		2.16	1.37	1.05	0.14						
NNW		2.57	0.84	0.16							
TOT		58.13	29.25	9.66	2.74	0.21	0.01				
SUM		58.13	87.38	97.04	99.78	99.99	100.0				

8760

OBSERVATIONS

1 JUL 73 - 30 JUN 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

CLINCH RIVER

SITE

E-CENTRAL TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.49	3.29	5.14	8.23	10.80	> 10.80				
N		1.06	0.59	0.20	0.04	0.01					
NNE		1.80	0.68	0.84	0.09						
NE		2.40	1.98	0.72	0.18						
ENE		4.72	5.23	1.38	0.17						
E		3.80	1.67	0.58	0.07						
ESE		3.23	0.94	0.26	0.03						
SE		1.65	0.83	0.29	0.09	0.01					
SSE		0.96	0.72	0.16	0.13	0.03					
S		1.43	1.14	0.26	0.08						
SSW		2.68	2.25	1.26	0.92	0.12	0.05				
SW		4.51	5.27	3.71	2.95	0.56	0.20				
WSW		2.93	3.96	1.99	0.97	0.22	0.05				
W		1.27	1.47	0.81	0.43	0.03	0.01				
WNW		1.38	2.15	1.80	0.94	0.10	0.01				
NW		1.88	2.06	2.57	1.06	0.04					
NNW		3.33	1.40	0.84	0.40	0.01					
TOT		39.03	32.32	17.65	8.54	1.14	0.33				
SUM		39.03	71.35	89.00	97.54	98.68	99.01				

8760
OBSERVATIONS1 JUL 73 - 30 JUN 74
PERIOD

VELOCITY-DURATION CURVE

CLINTON

SITE LOCATION:

The Clinton Power Station site (40.17°N/88.83°W) is at the confluence of the North Fork of Salt Creek and Salt Creek, about 10 km E of Clinton in DeWitt County, east central Illinois. Chicago is 215 km NE and Springfield is 75 km WSW.

TOPOGRAPHY:

The topography surrounding the site is exceptionally level. The nearest large body of water (28 acres) is 16 km away. Plant elevation is 225 m (MSL) and within 8 km, elevations range from 195 m to 232 m (MSL). Most of this relief is due to the shallow valleys surrounding the North Fork Salt Creek and Salt Creek. A large portion of this relief will be filled by the cooling lake formed in these valleys at 210 m (MSL).

ON-SITE WIND MEASUREMENTS:

An instrumented meteorological tower was completed in April 1972. The tower is 61 m high with a base at 224 m (MSL). Beyond the 113-by-87 m plot that contains the tower, the land is used to raise soybeans, and, therefore, is quite unsheltered. Wind measurements are made at the 10-m and 60-m levels. At 10 m, the speed is taken by a Teledyne Geotech staggered six-cup anemometer and the wind direction by the Quick One vane. The 60 m winds are measured by a six-bladed Bendix Aerovane. For hourly data values, the average value for the 30 minutes preceding the hour is determined directly from strip charts.

NRC Docket No. 50-461

JOINT FREQUENCY DISTRIBUTION

CLINTON

SITE

E-CENTRAL ILLINOIS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	5.59	>5.59							
		0.61	3.80	1.45							
N		0.46	3.69	1.66							
NNE		0.51	4.66	1.75							
NE		0.81	3.30	0.65							
ENE		0.58	3.89	0.70							
E		0.31	3.97	0.88							
ESE		0.47	3.83	1.24							
SE		0.79	4.93	1.24							
SSE		0.82	6.29	2.15							
S		0.60	5.86	2.15							
SSW		0.64	4.57	2.14							
SW		0.52	3.00	2.00							
WSW		0.41	3.82	2.00							
W		0.58	3.83	1.90							
WNW		0.36	3.80	1.02							
NW		0.41	3.37	1.56							
NNW											
TOT		8.89	66.61	24.51							
SUM		8.89	75.50	100.0							

7810

OBSERVATIONS

1 MAY 72 - 30 APR 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

CLINTON

SITE

E-CENTRAL ILLINOIS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	5.59	>5.59									
		0.24	2.85	2.37									
N		0.19	2.51	3.11									
NNE		0.14	2.46	3.84									
NE		0.19	2.60	2.10									
ENE		0.19	1.98	2.16									
E		0.26	2.24	3.07									
ESE		0.24	2.03	3.48									
SE		0.25	2.09	3.49									
SSE		0.25	2.85	6.48									
S		0.21	3.36	5.76									
SSW		0.26	3.27	4.44									
SW		0.15	2.04	3.10									
WSW		0.17	2.41	3.01									
W		0.22	2.55	3.06									
WNW		0.21	3.23	2.68									
NW		0.22	3.08	2.95									
NNW		3.38	41.53	55.09									
TOT		3.38	44.91	100.0									
SUM													

8045

OBSERVATIONS

1 MAY 72 - 30 APR 73

PERIOD

VELOCITY-DURATION CURVE

COMANCHE PEAK

SITE LOCATION:

The Comanche Peak site (32.30°N/97.79°W) is located approximately equidistant between Cleburne and Stephenville, Texas, W of the Brazos River. Fort Worth is 62 km to the NNE and Dallas is 101 km to the NE.

TOPOGRAPHY:

The site is located on the gently rolling plains of north central Texas. Terrain in the region slopes gradually from about 100 to 200 m (MSL) in the SE to about 350 to 550 m (MSL) in the NW. Site elevation is about 250 m (MSL), and the terrain within 8 km varies from 175 to 300 m (MSL). Though locally variable, the terrain is generally sloping upward from SE to NW. The terrain surrounding the meteorological tower is relatively hilly and is covered by widely scattered scrub brush, small mesquite and cedar.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at 9 and 60 m on a 61-m tower. Both levels are instrumented with Weathermeasure W 103/6L/A 6-cup anemometers and Weathermeasure W-104-2 vanes.

NRC Docket No. 50-445

JOINT FREQUENCY DISTRIBUTION

COMANCHE PEAK

SITE
TEXAS

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.5	1.5	3.0	5.0	7.5	10.0	>10.0				
	0.5	1.5	3.0	5.0	7.5	10.0	>10.0					
N		0.46	1.37	2.05	1.48	0.55	0.09					
NNE		0.51	1.37	1.29	0.29	0.04						
NE		0.68	1.25	0.74	0.17							
ENE		0.77	0.79	0.50	0.01							
E		0.83	1.64	0.56		0.01						
ESE		1.50	3.19	1.80	0.24							
SE		1.88	5.95	3.68	0.96	0.02						
SSE		1.49	4.96	6.07	2.58	0.10						
S		0.85	3.32	5.79	3.48	0.66	0.05					
SSW		0.53	1.26	2.03	1.34	0.31	0.15					
SW		0.62	1.07	1.03	0.79	0.27	0.07					
WSW		0.62	0.88	0.73	0.37	0.21	0.23					
W		0.44	0.73	0.38	0.37	0.22	0.02					
WNW		0.42	1.17	0.81	0.33	0.16						
NW		0.66	1.94	1.62	1.03	0.39	0.06					
NNW		0.43	1.64	2.75	2.25	0.94	0.27					
TOT	2.81	12.70	32.52	31.82	15.69	3.87	0.59					
SUM	2.81	15.51	48.03	79.85	95.54	99.41	100.0					

8189

OBSERVATIONS

15 MAY 72 - 15 MAY 73

PERIOD

VELOCITY-DURATION CURVE

CONNECTICUT YANKEE

SITE LOCATION:

The site is located in the town of Haddam, Middlesex County, Connecticut (41.48°N/72.50°W) on the east bank of the Connecticut River. Hartford is 35 km to the NNW and New Haven is 40 km SW.

TOPOGRAPHY:

The 525-acre site is located on a peninsula land form on the east bank of the Connecticut River. This is the rather hilly region of the southern New England coast. The river flows in a NW-SE direction just W of the site and also forms the southern boundary of the site at the end of the peninsula, about 2 km from the plant. North of the plant, there are hills rising to 175 m (MSL) within 6 km and to the east, wooded hillsides rise steeply above a perpendicular rock cut to a 90 to 125 m ridge. Plant elevation is 6.5 m (MSL).

ON-SITE WIND MEASUREMENTS:

The meteorological program was initiated in 1962 and includes a 31-m tower on-site. Wind measurements are taken at 2 and 31 m with Bendix Aerovanes.

NRC Docket No. 50-213

JOINT FREQUENCY DISTRIBUTION

CONNECTICUT YANKEE

SITE

S-CENTRAL CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	5.59	10.95	> 10.95							
N			3.61	0.06	0.05								
NNE			3.82	0.21		0.03							
NE			3.25	3.26									
ENE			4.02	0.41									
E			4.47	0.41									
ESE			5.91	2.84									
SE			4.47	3.54	0.15								
SSE			1.68	2.87	0.36								
S			1.17	2.58	0.10								
SSW			0.98	2.40	0.19								
SW			1.06	2.17	0.31								
WSW			1.75	4.49	0.80								
W			2.27	6.06	0.96	0.03							
WNW			3.61	4.95	0.86	0.03							
NW			4.10	5.67	1.27								
NNW			3.56	1.86	0.26								
TOT		2.09	49.69	42.83	5.29	0.09							
SUM		2.09	51.78	94.61	99.90	100.0							

8518
OBSERVATIONS1 MAR 63 - 29 FEB 64
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

CONNECTICUT YANKEE

SITE

S-CENTRAL CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	5.59	10.95	> 10.95						
N			0.79	0.25								
NNE			0.39	0.10								
NE			0.46	0.20								
ENE			0.76	0.25								
E			1.50	1.22								
ESE			3.38	3.58	0.13							
SE			2.84	3.58	0.18							
SSE			1.27	2.64	0.39							
S			0.81	2.54	0.36							
SSW			0.59	2.79	0.15							
SW			0.56	2.57	0.20							
WSW			0.46	2.21	0.30							
W			1.15	2.79	1.47	0.03						
WNW			2.72	8.81	3.79	0.15						
NW			4.67	12.97	2.84							
NNW			1.88	2.06	0.08							
TOT		17.21	24.19	48.56	9.88	0.18						
SUM		17.21	41.40	89.96	98.84	100.0						

8652

OBSERVATIONS

1 MAR 63 - 29 FEB 64

PERIOD

VELOCITY-DURATION CURVE

Donald C. COOK

SITE LOCATION:

The site is located in Berrien County (42.03°N/86.49°W), in the SW corner of Michigan, about 18 km SSW of Benton Harbor, on the eastern shore of Lake Michigan.

TOPOGRAPHY:

The 650-acre site along the eastern shore of Lake Michigan consists primarily of heavily wooded, rugged sand dunes. A sandy beach slopes gently upwards for about 60 m from the lake before rising sharply into the dunes. The peaks of the highest dunes reach elevations of about 55 m above the lake surface, while depressions between dunes are as low as 3 m. The site is open to the lake from SSW through NNE. Lake elevation is 177 m (MSL); plant grade is 185 m (MSL).

ON-SITE WIND MEASUREMENTS:

A 61-m tower was installed in the summer of 1966 and equipped with Bendix-Friez "Aerovane" systems at 15 m and 61 m. The base of the tower is at about 210 m (MSL).

NRC Docket No. 50-315

JOINT FREQUENCY DISTRIBUTION

COOK

SITE

SW - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	>8.27					
	0.22										
N		1.1	1.8	2.1	1.7	0.8					
NNE		0.7	1.0	0.8	0.2						
NE		1.0	1.0	0.9	0.2						
ENE		1.2	1.3	1.0	0.4						
E		1.4	1.5	1.2	0.3						
ESE		0.8	1.2	0.9	0.5						
SE		1.6	1.9	1.7	0.9						
SSE		2.0	2.7	1.8	1.4	0.2					
S		2.9	5.0	5.5	2.7	1.5					
SSW		0.6	1.2	2.2	1.2	0.5					
SW		0.4	0.9	1.3	0.9	0.6					
WSW		0.6	1.4	1.5	1.1	0.4					
W		0.8	1.9	2.3	2.1	0.9					
WNW		0.5	1.1	1.8	1.9	0.7					
NW		0.8	1.4	1.7	1.3	0.8					
NNW		0.6	1.7	2.4	1.5	0.6					
TOT	1.5	17.0	27.0	29.1	18.3	7.0					
SUM	1.5	18.5	45.5	74.6	92.9	99.9					

26,280
OBSERVATIONS

1 OCT 66 - 30 SEP 69
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

COOK

SITE

SW - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	>8.27						
N		0.5	2.3	2.7	2.9	2.2							
NNE		0.3	0.8	1.1	0.8								
NE		0.3	1.0	1.4	0.3	0.1							
ENE		0.4	1.3	1.6	0.5								
E		0.1	1.4	1.6	1.7	0.4							
ESE			1.1	1.2	1.7	0.9							
SE			1.2	1.3	2.0	1.4							
SSE		0.1	1.2	1.4	2.2	1.3							
S		0.2	2.2	2.8	4.1	3.4							
SSW		0.1	1.6	2.0	2.1	2.6							
SW		0.2	1.1	1.5	1.1	1.7							
WSW		0.3	0.9	0.8	0.8	1.7							
W		0.5	1.1	1.0	1.5	3.9							
WNW		0.4	0.8	0.8	1.2	3.3							
NW		0.4	0.9	0.7	1.0	2.3							
NNW		0.3	1.0	1.1	0.9	1.7							
TOT	1.1	4.1	19.9	23.0	24.8	26.9							
SUM	1.1	5.2	25.1	48.1	72.9	99.8							

26,280

OBSERVATIONS

10 OCT 66 - 30 SEP 69

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site is located 3 km N of Brownville, Nemaha County, Nebraska (40.33°N/95.63°W), on the west bank of the Missouri River. Lincoln is 96 km NW and Omaha is 94 km NNW.

TOPOGRAPHY:

The site is in a region of rolling hills in SE Nebraska. To the west, the land begins a gradual rise to the large plains of western Nebraska. Locally, the rolling terrain is cut by the broad, generally N-S valley of the Missouri River some 30 to 50 m deep. The site is at about 270 m (MSL) on the west bank of the river.

ON-SITE WIND MEASUREMENTS:

A 97-m tower was erected at plant grade (270 m (MSL)) and data collection initiated on 8 Jan 1970. Wind speed and direction measurements are made at the 97-m level using a Bendix Aerovane.

NRC Docket No. 50-298

JOINT FREQUENCY DISTRIBUTION

COOPER

SITE

SE - NEBRASKA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	> 10.95				
	0.22										
N		0.11	1.03	2.50	3.67	1.56	0.81				
NNE		0.06	0.82	1.75	2.60	0.64	0.24				
NE		0.07	0.56	1.10	0.81	0.05	0.05				
ENE		0.04	0.67	1.36	0.59	0.07					
E		0.03	0.69	1.15	0.65	0.19	0.05				
ESE		0.08	0.74	1.37	0.90	0.34	0.12				
SE		0.10	0.86	1.70	2.29	0.93	0.31				
SSE		0.08	1.04	2.30	3.37	1.30	0.34				
S		0.12	0.90	2.78	4.67	3.26	2.54				
SSW		0.11	0.76	2.15	3.26	2.39	2.03				
SW		0.08	0.70	1.52	2.54	1.30	0.90				
WSW		0.10	0.89	1.38	1.22	0.35	0.14				
W		0.17	0.87	1.24	0.91	0.21	0.04				
WNW		0.11	0.55	1.25	1.31	0.79	0.30				
NW		0.08	0.41	1.67	2.62	1.34	0.88				
NNW		0.08	0.74	2.45	3.46	1.62	1.42				
TOT	0.03	1.42	12.23	27.67	34.87	15.18	8.56				
SUM	0.03	1.45	13.68	41.35	76.22	91.40	99.96				

13,998

OBSERVATIONS

1 MAR 70 - 29 FEB 72

PERIOD

VELOCITY-DURATION CURVE

CRYSTAL RIVER

SITE LOCATION:

The site is located 12 km NW of Crystal River and 113 km N of Tampa, Florida (28.96°N/82.70°W).

TOPOGRAPHY:

The 4,738-acre site is on the west coast of Florida, a region characterized by the Gulf of Mexico on the west with gradually rising terrain from the mangrove swamps and marshlands in the coastal areas to gently rolling hills about 25 km to the east. The area around the site is extremely flat and featureless. There is a maximum of 6 m difference in relief within 8-km radius. The Gulf of Mexico on the west extends from the NNW counterclockwise through the SE.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at the 10 m and 46 m levels of a 46-m tower using model 120 Bendix Aerovanes. Data are manually reduced for 15-minute average values on an hourly basis.

NRC Docket No. 50-302

JOINT FREQUENCY DISTRIBUTION

CRYSTAL RIVER

SITE

W-CENTRAL FLORIDA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	>14.08			
		0.57	3.15	2.32	0.18	0.01					
N		0.60	2.02	1.99	0.07						
NNE		0.88	2.88	5.58	0.48	0.01					
NE		0.97	5.90	4.73	0.49						
ENE		1.75	6.74	2.46	0.16						
E		1.05	3.42	1.81	0.15						
ESE		0.43	3.86	1.55	0.23						
SE		0.17	1.43	1.27	0.51	0.05					
SSE		0.13	1.26	1.63	1.08	0.21	0.01				
S		0.46	0.95	2.11	1.34	0.20	0.02				
SSW		0.26	1.30	2.36	1.12	0.04					
SW		0.21	1.64	2.60	0.31						
WSW		0.23	3.31	4.28	0.33	0.01					
W		0.24	1.52	3.40	0.46	0.12					
WNW		0.26	1.21	1.75	0.72	0.33	0.02				
NW		0.43	1.38	0.86	0.32	0.01					
NNW		8.34	41.97	40.70	7.95	0.99	0.05	0			
TOT		8.34	50.31	91.01	98.96	99.95	100.0				
SUM											

8184

OBSERVATIONS

1 JAN 75 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The Davis-Besse site (41.60°N/83.09°W) is on the southwest shore of Lake Erie and the north bank of the mouth of the Toussaint River in Ottawa County in northwest Ohio. Toledo is 40 km W and Cleveland is 115 km ESE.

TOPOGRAPHY:

The region around the SW shore of Lake Erie is very flat uplands. Bordering the lake in the vicinity of the site and on the site itself are marshlands, including some 600 acres on the 954-acre site. Site elevation is 178 m (MSL). The site is on the southwest shore of Lake Erie and the north bank of the Toussaint River, and has been built up almost 2.5 m to its present elevation. Elevations within 8 km are between 175 m and 180 m (MSL).

ON-SITE WIND MEASUREMENTS:

From October 1968 to November 1970, wind measurements were made at 6 m, 30 m, and 91 m on a 91-m tower at 174 m (MSL), using Bendix-Friez Model 120 "Aerovane" six-bladed wind systems. With the addition of more than 4-m of fill, the tower did not conform to Safety Guide 23 and a new 104-m tower was installed at 178 m (MSL). Wind measurements on the new tower are made at 11 m, 76 m, and 104 m using Climet WS-011-1 speed instruments and Climet WD-012-10 wind direction instruments. The attached sample data reflect the change in instruments and elevation.

NRC Docket Nos. 50-346, 50-500

JOINT FREQUENCY DISTRIBUTION

DAVIS-BESSE

SITE

NW - OHIO

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.12	2.91	5.14	6.48	8.27	10.50	13.63	17.66	>17.66
N		0.13	0.86	0.91	0.64	0.32	0.06				
NNE		0.35	1.32	1.26	0.50	0.40	0.18	0.06			
NE		0.18	1.31	1.58	0.40	0.43	0.07				
ENE		0.49	1.90	2.01	0.67	0.25	0.04	0.01			
E		0.33	1.84	2.91	0.78	0.38	0.11	0.01			
ESE		0.49	2.34	1.65	0.24	0.08	0.01				
SE		0.52	1.55	0.63							
SSE		0.59	1.30	0.51	0.11	0.04					
S		0.61	3.50	1.96	0.45	0.18	0.10	0.01			
SSW		1.13	3.29	4.52	1.44	0.96	0.52	0.07			
SW		0.82	2.75	5.02	1.59	1.55	1.02	0.18			
WSW		0.64	2.52	4.47	2.01	1.50	1.16	0.35	0.04		
W		0.63	1.77	1.99	1.05	0.85	0.67	0.17			
WNW		0.39	0.96	1.94	0.93	0.47	0.22	0.07			
NW		0.24	0.95	1.44	0.92	0.67	0.11	0.01			
NNW		0.15	0.81	1.28	0.93	0.05	0.22	0.06			
TOT		2.54	7.68	28.96	34.05	12.65	8.60	4.49	1.00	0.04	0
SUM		2.54	10.22	39.18	73.23	85.88	94.48	98.97	99.97	100.01	

7177

OBSERVATIONS

1 DEC 69 - 30 NOV 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

DAVIS-BESSE

SITE

NW - OHIO

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.21	0.93	1.35	0.39	0.11						
NNE		0.13	1.23	1.70	0.64	0.21						
NE		0.26	1.74	2.72	0.99	0.06	0.02					
ENE		0.27	1.86	2.91	0.50	0.13	0.05					
E		0.47	2.44	3.53	1.10	0.47	0.06					
ESE		0.37	1.43	1.72	0.54	0.02						
SE		0.60	1.75	1.24	0.18		0.01					
SSE		0.82	1.90	0.77	0.26	0.12						
S		1.24	3.19	1.68	0.23	0.09	0.01					
SSW		0.77	4.56	4.54	1.36	0.34	0.01					
SW		0.97	3.46	4.59	3.02	0.63	0.28					
WSW		0.50	1.92	2.81	3.18	1.12	0.69					
W		0.43	1.52	2.38	2.57	0.91	0.25					
WNW		0.25	0.59	1.19	1.35	0.40	0.12					
NW		0.31	0.72	1.83	1.59	0.54	0.26					
NNW		0.21	0.64	1.31	1.36	0.16						
TOT	0.12	7.80	29.89	35.85	19.27	5.31	1.77					
SUM	0.12	7.92	37.81	73.66	92.93	98.24	100.01					

8157

OBSERVATIONS

4 AUG 74 - 3 AUG 75

PERIOD

VELOCITY-DURATION CURVE

DIABLO CANYON

SITE LOCATION:

The Diablo Canyon site (35.21°N/120.85°W) is located on the Pacific Ocean, in San Luis Obispo County, California about 16 km SW of the city of San Luis Obispo. Los Angeles is about 250 km SE and San Francisco is 325 km N.

TOPOGRAPHY:

The site is located in the rugged coastal region of California. The site occupies a coastal terrace that ranges in elevation from 15 m to 50 m (MSL) and is approximately 300 m wide. Plant grade is at 26 m. The seaward edge of the terrace is a near-vertical cliff. Back from the terrace and extending many kilometers inland are the rugged Irish Hills, an area of steep brush-covered hillsides and deep canyons, which are part of the San Luis Mountains and which attain an elevation of 450 m within a little over a kilometer of the site.

ON-SITE WIND MEASUREMENTS:

Wind data have been collected from a comprehensive network of six stations (A-F) at various times. Stations A and B are 900 m SE of the plant at 38 m (MSL) and 183 m (MSL), respectively. Stations C and D are in Diablo Canyon at 23 m (MSL) and 107 m (MSL). The wind instruments at each of these four stations consisted of Climet CI-26 cup and vane assemblies at a height of 11 m. Station E is an 80-m tower at 38-m (MSL) near the plant location with Bendix-Friez Model 120 Aerovanes at the 8-m and 76-m level. The 8-m sensor was later moved to 10 m. Data samples in this report are from station E at the 8-m and 10-m levels. Station F was 900 m E of the plant and consisted of a 30-m tower at 280-m (MSL), instrumented with a Bendix-Friez Model 120 Aerovane on the top of the tower.

JOINT FREQUENCY DISTRIBUTION

DIABLO CANYON

SITE

SW - CALIFORNIA

LOCATION

SPEED (m/s)

DIRECTION	CALM									
	0.22	1.56	3.35	5.59	8.27	10.95	>10.95			
N		1.02	2.17	1.57	0.42	0.09	0.03			
NNE		1.04	1.59	0.64	0.19	0.04	0.01			
NE		1.50	1.73	0.78	0.14	0.01				
ENE		1.04	0.79	0.64	0.20	0.01				
E		1.30	0.59	0.22	0.10	0.03	0.01			
ESE		1.65	0.39	0.39	0.24	0.07	0.01			
SE		3.38	2.59	1.62	0.86	0.28	0.09			
SSE		2.64	2.60	0.87	0.21	0.07	0.02			
S		1.93	0.74	0.10	0.04	0.01	0.01			
SSW		1.05	0.19	0.03	0.01					
SW		0.84	0.19	0.04	0.01					
WSW		0.99	0.21	0.05						
W		1.68	0.44	0.14	0.02	0.02	0.01			
WNW		1.92	2.27	1.73	1.21	0.74	0.17			
NW		1.84	4.99	7.42	8.50	7.00	3.35			
NNW		1.22	1.97	2.66	2.50	1.61	0.64			
TOT	3.66	25.04	23.46	18.89	14.64	9.97	4.34			
SUM	3.66	28.70	52.16	71.05	85.69	95.66	100.0			

15,514

OBSERVATIONS

OCT 69-MAR 71 AND APR 72-SEP 72

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

DIABLO CANYON

SITE

SW - CALIFORNIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.34	3.13	5.36	7.05	10.73	15.65	20.12	>20.12		
	0.40										
N		0.75	2.48	1.79	0.51	0.07	0.01				
NNE		0.72	2.29	0.95	0.20	0.01					
NE		1.03	1.77	0.80	0.24	0.04					
ENE		1.05	1.01	0.48	0.26	0.03	0.01				
E		1.20	1.25	0.32	0.11	0.02					
ESE		1.09	2.36	1.10	0.65	0.36	0.10				
SE		0.91	3.79	2.24	0.96	0.29	0.31	0.02			
SSE		0.77	2.54	0.62	0.24	0.14	0.15	0.02			
S		0.55	1.05	0.15	0.06	0.01	0.02				
SSW		0.49	0.48	0.08	0.03	0.01	0.01				
SW		0.62	0.45	0.11	0.15	0.04	0.01				
WSW		0.38	0.49	0.08	0.04	0.02					
W		0.69	0.73	0.21	0.05	0.02					
WNW		0.92	3.50	2.29	1.17	0.50	0.30				
NW		1.07	4.66	7.04	9.01	7.41	5.68	0.28			
NNW		0.66	2.74	2.93	2.65	1.46	0.63	0.02			
TOT	0.12	12.92	31.59	21.20	16.31	10.42	7.21	0.34	0		
SUM	0.12	13.04	44.63	65.83	82.14	92.56	99.77	100.01			

17,014
OBSERVATIONS

1 MAY 73 - 30 APR 75
PERIOD

VELOCITY-DURATION CURVE

DOUGLAS POINT

SITE LOCATION:

The site is located in Charles County, Maryland (38.45°N/77.26°W), on the east bank of the Potomac River, 55 km SSW of Washington, D.C. and 101 km SSW of Baltimore. The town of Quantico, Virginia is about 9 km NNW; Fredricksburg, VA, is 26 km SSW and Nanjemoy, MD, is 5 km E.

TOPOGRAPHY:

The terrain in this region is relatively flat. This region is near the western edge of the Middle Atlantic Coastal Plain, about 80 km E of the Blue Ridge Mountains and about 60 km W of the Chesapeake Bay. The topographical relief of the region is low, ranging from near sea level at the shore to about 30 m to the east. To the west, the rise is gradual at first, becoming more pronounced toward the foothills of the Appalachian Mountains. The river valley is over 5 km wide, generally heavily wooded.

ON-SITE WIND MEASUREMENTS:

The entire Douglas Point site is thickly wooded, and it was desirable to cut as few trees as possible, therefore the 104-m tower was placed in an area cleared to a radius of 75 m. Winds are measured at 10-m, 30-m, 60-m, and 104-m levels. Wind speed is measured by a Teledyne Model 50.1 with lexan cups. Anemometers have six staggered cups at 10 m and 30 m, and 3 cups at 60 m and 104 m. Wind direction is measured by Quick-2 Vanes at all levels. Only data at the 30-m level were available.

NRC Docket No. 50-448

JOINT FREQUENCY DISTRIBUTION

DOUGLAS POINT

SITE

MARYLAND

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.04	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
N			1.73	5.34	3.04	0.43	0.01	0.01				
NNE			1.42	4.49	1.24	0.14						
NE			1.32	4.80	1.13	0.08						
ENE			1.21	2.56	0.48	0.05						
E			0.86	2.22	0.29							
ESE			0.76	3.56	1.10	0.01						
SE			0.82	2.64	0.71	0.04						
SSE			0.91	1.83	0.25	0.05						
S			1.24	3.73	1.57	0.04	0.01					
SSW			1.70	6.36	2.88	0.15	0.03					
SW			1.90	4.22	1.79	0.28	0.01	0.03				
WSW			1.34	2.21	0.51	0.24	0.09					
W			1.29	1.50	0.41	0.43	0.08					
WNW			0.91	1.32	0.58	0.49	0.06	0.03				
NW			1.29	2.41	1.69	1.17	0.10					
NNW			1.51	3.91	2.98	1.50	0.08					
TOT		0.38	20.23	53.09	20.66	5.10	0.47	0.06	0			
SUM		0.38	20.61	73.70	94.36	99.46	99.93	99.99				

7883

OBSERVATIONS

17 MAY 72 - 17 MAY 73

PERIOD

VELOCITY-DURATION CURVE

DRESDEN

SITE LOCATION:

The site for Dresden Nuclear Power Station (41.33°N/88.25°W) consists of 953 acres located in Grundy County, in NE Illinois, about 22 km SW of Joliet and 74 km SW of the Chicago shoreline of Lake Michigan. The site is bounded on the north by the Illinois River and on the east by the Kankakee River.

TOPOGRAPHY:

The site is located in rolling prairie terrain typical of much of Illinois. The broad valley formed by the confluence of the Kankakee and Illinois Rivers affords little topographical relief. Elevations vary from 155 to 160 m (MSL).

ON-SITE WIND MEASUREMENTS:

A new 122-m tower became operational on 1 Jan 1974. The tower is instrumented at 11 m, 46 m, and 91 m with Teledyne-Geotech Series 50 wind sensors. Base elevation is 157 m (MSL).

NRC Docket Nos. 50-010, 50-237, 50-249

JOINT FREQUENCY DISTRIBUTION

DRESDEN

SITE

NE - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79	
N		0.22	1.72	1.72	0.43	0.02					
NNE		0.27	1.49	1.20	0.65	0.13					
NE		0.30	2.07	1.45	0.30	0.05					
ENE		0.25	1.95	1.75	0.35	0.01					
E		0.20	2.73	2.55	1.01	0.16					
ESE		0.33	3.25	1.98	0.67	0.19					
SE		0.29	2.27	1.89	0.80	0.25	0.01				
SSE		0.40	2.94	1.90	1.38	0.65	0.07	0.01			
S		0.46	3.19	2.85	2.00	1.00	0.19	0.06			
SSW		0.68	2.92	2.54	1.84	0.58	0.14	0.04			
SW		0.81	2.70	2.32	1.15	0.43	0.20	0.05			
WSW		0.44	1.84	1.48	1.15	0.36	0.09	0.01			
W		0.39	2.24	2.35	1.47	0.78	0.34	0.03			
WNW		0.34	1.84	2.40	1.44	0.47	0.04				
NW		0.40	2.02	2.30	1.66	0.14					
NNW		0.38	2.09	1.83	0.87	0.15					
TOT		6.38	37.26	32.51	17.17	5.37	1.11	0.20	0	0	
SUM		6.38	43.64	76.15	93.32	98.69	99.80	100.0			

13,582

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

DRESDEN

SITE

NE - ILLINOIS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79	
N		0.18	1.09	2.03	0.84	0.15	0.01				
NNE		0.09	0.84	1.33	0.84	0.36	0.11				
NE		0.13	1.07	1.73	0.75	0.19	0.08				
ENE		0.14	1.36	1.98	0.92	0.13	0.01				
E		0.13	1.29	2.46	1.31	0.40	0.07				
ESE		0.07	1.22	2.52	1.24	0.30	0.13	0.02			
SE		0.15	1.59	2.41	1.17	0.41	0.05				
SSE		0.16	1.36	2.51	1.47	0.89	0.26	0.03			
S		0.18	1.67	3.31	2.50	1.35	0.66	0.12	0.02		
SSW		0.16	1.51	3.23	2.81	1.26	0.38	0.10	0.02		
SW		0.20	1.47	2.98	2.42	0.81	0.20	0.07	0.03		
WSW		0.20	1.23	2.09	1.89	0.57	0.26	0.15	0.01		
W		0.10	1.50	2.43	2.28	0.92	0.67	0.20	0.03		
WNW		0.18	1.20	2.08	2.11	0.87	0.29	0.03			
NW		0.17	1.15	2.08	2.08	0.73	0.04				
NNW		0.14	1.23	1.85	1.52	0.48	0.05				
TOT		2.13	20.78	37.02	26.15	9.72	3.27	0.72	0.11	0	
SUM		2.13	22.91	59.93	86.08	95.90	99.17	99.89	100.0		

13.449

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

DRESDEN

SITE

NE - ILLINOIS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79
N		0.13	0.75	1.48	1.66	0.61	0.05	0.01		
NNE		0.06	0.72	1.38	1.52	0.77	0.14	0.01		
NE		0.07	0.85	1.88	1.21	0.35	0.19	0.02		
ENE		0.09	1.00	1.91	1.45	0.40	0.04	0.01		
E		0.14	0.81	1.60	1.81	0.67	0.16	0.03		
ESE		0.05	0.83	1.56	1.59	0.46	0.27	0.01		
SE		0.15	1.14	2.03	1.64	0.58	0.15	0.04		
SSE		0.13	1.02	1.71	2.02	0.92	0.57	0.10	0.01	
S		0.13	0.99	2.16	2.89	1.95	0.88	0.19	0.05	
SSW		0.13	0.87	1.91	3.59	2.07	0.76	0.14	0.03	
SW		0.16	0.83	1.89	3.03	1.64	0.51	0.10	0.03	
WSW		0.08	0.74	1.63	2.01	1.12	0.33	0.10	0.05	
W		0.10	1.14	2.07	2.33	1.16	0.50	0.25	0.08	0.01
WNW		0.10	0.96	1.96	2.47	1.07	0.44	0.08		
NW		0.15	0.88	1.78	2.17	1.07	0.12	0.02		
NNW		0.15	0.90	1.66	1.71	0.70	0.13			
TOT		1.71	14.43	28.61	33.10	15.54	5.24	1.11	0.25	0.01
SUM		1.71	16.14	44.75	77.85	93.39	98.63	99.74	99.99	100.0

15,155

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOSEPH M. FARLEY

SITE LOCATION:

The site (31.22°N/85.11°W) is located in southeast Alabama on the west side of the Chattahoochee River, in Houston County. Dothan is 26 km W; Blakely, 24 km NE; Montgomery, 160 km NW; and Atlanta, 290 km NNE.

TOPOGRAPHY:

The site is in the inland portion of the coastal plain on rolling terrain with variations of 15 to 30 m to the west. To the east, the terrain is flatter and lower with variations of 5 to 15 m. The river to the east of the site lies in a depression of 15 to 30 m, running N-S.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological measurement program began in March 1971. A 73-m tower is located in a relatively flat, cleared field which is surrounded by trees, about 12-15 m high at a distance greater than 180 m in all directions. Climet WS-011-1 (speed) and WD-012-10 (direction) sensors are installed at 15 m and 46 m. Base elevation is 55 m (MSL).

NRC Docket Nos. 50-348, 50-364

JOINT FREQUENCY DISTRIBUTION

FARLEY

SITE

SE - ALABAMA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	2.46	3.35	5.59	8.27	10.95	> 10.95			
N			4.24	3.38	1.55	1.11	0.04					
NNE			2.54	2.40	1.35	0.86	0.06					
NE			2.26	1.93	1.23	0.74	0.20					
ENE			2.15	2.44	1.28	1.24	0.05					
E			1.98	2.55	1.60	1.11	0.04					
ESE			1.49	1.80	1.09	0.82	0.03					
SE			1.29	1.20	0.77	0.82	0.05					
SSE			1.34	1.53	0.74	0.72	0.15					
S			1.90	1.67	0.92	0.73	0.10					
SSW			1.70	1.28	0.84	1.37	0.40					
SW			2.07	1.67	1.51	1.71	0.59	0.01				
WSW			1.52	1.09	0.74	0.73	0.06					
W			1.81	1.20	0.54	0.65	0.01					
WNW			1.19	1.19	0.70	0.83	0.11					
NW			1.76	1.75	1.52	1.62	0.43					
NNW			3.31	2.67	1.75	1.55	0.22					
TOT	0.43	32.55	29.75	18.11	16.59	2.55	0.01	0				
SUM	0.43	32.98	62.74	80.85	97.43	99.99	100.0					

7831

OBSERVATIONS

1 APR 72 - 31 MAR 73

PERIOD

VELOCITY-DURATION CURVE

ENRICO FERMI

SITE LOCATION:

The Enrico Fermi Atomic Power Plant site (41.96°N/83.26°W) is located on the western shore of Lake Erie at Lagoona Beach, Monroe County, Michigan. The site is 13 km ENE of Monroe; 48 km SW of downtown Detroit; and 40 km NE of Toledo, Ohio.

TOPOGRAPHY:

The 1,120-acre site is located in the relatively flat coastal plain of the southern and western shore of Lake Erie. The terrain is flat to gently sloping with maximum elevations to 30 m above the lake level, which is about 174 m (MSL). The immediate area is characterized by large lagoons and marshlands in the northern and southern sections. To the east is Lake Erie and the western section is dominated by several woodlots and Quarry Lake. The site elevation ranges from lake level in the east to 8 m above lake level on the western edge of the site.

ON-SITE WIND MEASUREMENTS:

Wind data have been collected from three towers on the site: a 150-m tower 365 m S of Fermi I (1 Sep 73-31 Aug 74); a 30-m tower located 150 m SSE of Fermi I (1 Dec 56-30 Mar 59); and from a 10-m tower located near Langton Rd (1 Jan 72-31 Dec 72). The data from the 150-m tower are the only data available. The 150-m tower was instrumented at 10 m, 57 m and 150 m using Climet WS-011-1 and Climet WD-012-30 sensor systems.

NRC Docket No. 50-341

JOINT FREQUENCY DISTRIBUTION

FERMI

SITE

SE - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM 0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.25	1.20	1.07	0.14	0.01					
NNE		0.11	0.86	1.10	0.32	0.13	0.02				
NE		0.12	0.52	1.74	2.31	0.87	0.40				
ENE		0.05	0.60	1.68	2.74	1.04	0.23				
E		0.21	0.87	2.12	2.04	1.35	0.31				
ESE		0.14	1.04	1.60	1.59	0.61	0.07				
SE		0.13	1.33	2.89	1.18	0.33	0.01				
SSE		0.19	1.89	2.40	0.50	0.05					
S		0.23	2.28	1.34	0.27	0.01	0.02				
SSW		0.19	2.39	4.10	1.86	0.25	0.08				
SW		0.15	1.24	3.16	3.00	1.13	0.31				
WSW		0.25	2.00	3.22	2.98	1.51	0.31				
W		0.22	1.99	3.60	2.02	0.44	0.08				
WNW		0.37	2.56	2.77	2.31	0.50	0.14				
NW		0.50	2.29	1.81	0.67	0.04	0.01				
NNW		0.79	2.75	1.13	0.05						
TOT	0.32	3.90	25.81	35.73	23.98	8.27	1.99				
SUM	0.32	4.22	30.03	65.76	89.74	98.01	100.0				

8312

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

JAMES A. FITZPATRICK/NINE MILE PT.

SITE LOCATION:

The Nine-Mile Point Nuclear Station (43.47°N/76.50°W) shares a common boundary with the James A. Fitzpatrick Nuclear Power Plant. The site, often referred to as NMP-JAF, is located on the south shore of Lake Ontario, in the SE corner of the lake. The site is in Oswego County, in central New York, in the town of Scriba. It is also 11 km NE of Oswego, 58 km NW of Syracuse and 220 km E of Buffalo.

TOPOGRAPHY:

The site is on the slightly elevated south shore of Lake Ontario. The region is characterized as a flat featureless plain, partially wooded. For many kilometers to the west, east and south, the terrain is gently rolling, rising gently up from the lake. Maximum elevation of the site is about 95 m (MSL) at the southern extremity. Plant grade is at 80 m (MSL).

ON-SITE WIND MEASUREMENTS:

Wind data were obtained from a 62-m tower instrumented at 9 m and 62 m, using Brookhaven-type aerovanes.

NRC Docket Nos. 50-333/50-241, 50-410

JOINT FREQUENCY DISTRIBUTION

NMP - JAF

SITE

CENTRAL - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
	0.22										
N		0.27	0.61	0.73	0.88	0.25	0.18				
NNE		0.33	0.61	0.98	1.30	0.70	0.51				
NE		0.42	0.95	0.80	0.68	0.24	0.25				
ENE		0.32	0.85	0.28	0.06	0.01					
E		0.78	0.90	0.15	0.01						
ESE		1.16	2.03	0.85	0.06						
SE		1.60	6.08	2.54	0.18	0.01					
SSE		1.90	3.72	0.86	0.04						
S		3.22	3.28	0.52	0.01						
SSW		2.23	3.88	0.40	0.03						
SW		0.79	2.52	2.11	1.50	0.44	0.23				
WSW		0.26	1.19	2.82	3.92	1.48	2.18				
W		0.30	1.59	3.20	2.27	2.05	2.33				
WNW		0.31	0.75	1.12	1.57	0.94	1.24				
NW		0.33	0.64	0.87	1.43	0.68	0.50				
NNW		0.17	0.50	0.96	1.02	0.36	0.20				
TOT	6.55	14.39	30.11	19.20	14.97	7.15	7.63				
SUM	6.55	20.94	51.05	70.25	85.22	92.37	100.0				

15825

OBSERVATIONS

1 JAN 63 - 31 DEC 64

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

NMP - JAF

SITE

CENTRAL - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.80	3.86	6.43	9.52	12.61	> 12.61				
	0.26										
N		0.26	0.66	0.70	1.09	0.56	0.41				
NNE		0.25	0.63	0.90	0.90	0.91	1.05				
NE		0.22	0.82	0.93	0.77	0.32	0.23				
ENE		0.18	0.66	0.45	0.12		0.01				
E		0.16	0.56	0.80	0.22	0.03					
ESE		0.43	0.57	1.04	1.45	0.35	0.08				
SE		0.13	0.80	2.11	4.13	2.01	0.66				
SSE		0.11	0.85	1.87	2.84	0.82	0.19				
S		0.30	2.02	3.64	2.42	0.20					
SSW		0.21	1.01	2.21	2.35	0.11					
SW		0.32	1.35	3.17	3.02	1.13	1.08				
WSW		0.16	0.82	2.81	3.54	1.89	3.80				
W		0.22	1.19	2.10	2.11	1.90	3.88				
WNW		0.22	0.67	0.80	1.30	0.98	1.63				
NW		0.49	0.74	0.98	1.47	0.97	0.94				
NNW		0.19	0.63	0.77	1.04	0.51	0.35				
TOT	1.73	3.25	13.99	25.27	28.76	12.67	14.33				
SUM	1.73	4.98	18.97	44.24	73.00	85.67	100.0				

17092

OBSERVATIONS

1 JAN 63 - 31 DEC 64

PERIOD

VELOCITY-DURATION CURVE

FORKED RIVER/OYSTER CREEK

SITE LOCATION:

The Forked River site (39.81°N/74.21°W) is located on the Atlantic coast, 3 km S of the community of Forked River, partly in Lacey County and partly in Ocean County, New Jersey. It is located about 2.5 km inland from the shore of Barnegat Bay and about 11 km WNW of Barnegat Light. The 1,425-acre site is also the location of the Oyster Creek Nuclear Plant (Oyster Creek I). The site is also 15 km S of Toms River; 56 km N of Atlantic City; 72 km E of Philadelphia, PA; and 97 km S of Newark, NJ.

TOPOGRAPHY:

The site is located in the low, relatively flat coastal plain typical of the New Jersey coast. To the west, the terrain rises gently to 62 m within 15 km.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological data collection program has been in operation since Feb. 1966. Wind speed and direction have been recorded at 23 m and 122 m above site grade, using Bendix-Friez Model 120 Aerovanes.

NRC Docket Nos. 50-363/50-219

JOINT FREQUENCY DISTRIBUTION

FORKED RIVER/OYSTER CREEK

SITE
SW - NEW JERSEY

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	11.40	14.53	18.10	>18.10		
N		1.08	1.24	0.64	0.28	0.06					
NNE		0.79	0.73	0.52	0.18	0.01					
NE		0.70	1.17	1.12	0.41	0.14	0.01	0.01	0.01		
ENE		0.51	1.37	1.95	0.71	0.34	0.03	0.01	0.01		
E		0.77	1.44	1.78	0.63	0.30	0.05				
ESE		0.47	1.67	1.57	0.36	0.08	0.01				
SE		0.68	1.67	1.82	0.27	0.03					
SSE		0.70	1.87	1.88	0.50	0.02					
S		0.82	2.32	2.45	1.09	0.14					
SSW		1.05	3.13	2.31	0.78	0.18	0.01				
SW		1.13	3.03	1.69	0.33	0.07					
WSW		0.75	3.50	3.07	0.68	0.19	0.03				
W		0.94	3.46	3.27	1.46	0.44	0.07	0.01			
WNW		0.95	3.31	3.34	2.71	1.10	0.18	0.01			
NW		1.22	3.38	3.18	2.29	0.83	0.05				
NNW		0.99	2.59	1.80	0.84	0.16	0.04				
TOT		13.54	35.89	32.40	13.52	4.09	0.49	0.04	0.03		
SUM		13.54	49.43	81.83	95.35	99.44	99.93	99.97	100.0		

14811
OBSERVATIONS1 JAN 67 - 31 DEC 68
PERIOD

VELOCITY-DURATION CURVE

FORT CALHOUN

SITE LOCATION:

The Fort Calhoun site (41.52°N/96.08°W) is in Washington County, Nebraska, on the southwest bank of the Missouri River, about 4 km SE of Blair and about 31 km NNW of Omaha, NB.

TOPOGRAPHY:

The site location is in SE Nebraska. The land rises from 250 m (MSL) in the SE corner of the state, to about 375 m in the NE. The land elevation also increases westward to over 900 m in the SW and to more than 1500 m in the NW. The terrain changes from level to gently rolling prairie in the east, to rounded sandhills in the north central portion, and to high plains in the west. Fort Calhoun station is at an elevation of about 300 m (MSL). The topography of the site within 16 km is governed primarily by the floodplain of the Missouri River. There is little relief from north to south along the river, but to the east and west there are low lying benches (bluffs) with elevations of about 400 m (MSL), cut by ravines. These bluffs extend along the western bank of the river, which runs generally from the NW to the SE, and come within about one to two kilometers of the site in the S through WSW sectors. The Missouri River in this area has a depth of about 60 m to 90 m and a width of about 20 km.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological measurement program was initiated in May 1967 using an MRI Mechanical Weather Station on top of a 13-m tower, located next to the Missouri River. During 1970, a 49-m Rohn tower was installed at plant elevation, 300 m (MSL), with MRI 1074 Wind Systems at 11 m and 36 m (AGL).

JOINT FREQUENCY DISTRIBUTION

FORT CALHOUN

SITE

E - CENTRAL - NEBRASKA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.4	2.9	4.4	5.9	8.9	>8.9				
N		0.49	2.02	2.23	2.04	0.84	0.17				
NNE		0.50	1.29	0.53	0.30	0.03					
NE		0.80	1.12	0.18	0.10	0.03					
ENE		0.54	0.82	0.30	0.17	0.10					
E		0.78	1.39	0.68	0.59	0.27	0.02				
ESE		0.92	1.73	1.05	0.76	1.15	0.56				
SE		1.59	1.96	1.63	1.57	1.68	0.70				
SSE		0.95	1.03	0.85	1.65	2.90	1.01				
S		0.94	1.09	1.02	2.46	3.71	2.01				
SSW		0.67	0.78	0.68	1.34	2.19	1.03				
SW		0.67	0.93	0.76	0.82	0.94	0.81				
WSW		0.58	0.57	0.36	0.29	0.29	0.32				
W		1.04	0.96	0.77	0.84	0.74	0.43				
WNW		0.92	2.44	1.21	0.92	1.16	0.74				
NW		1.00	2.85	2.19	2.24	1.81	0.74				
NNW		0.49	1.60	2.27	2.95	1.88	0.54				
TOT		12.88	22.58	16.71	19.04	19.72	9.07				
SUM		12.88	35.46	52.17	71.21	90.93	100.0				

10001

OBSERVATIONS

1 JAN 74 - 30 APR 75

PERIOD

VELOCITY-DURATION CURVE

FORT ST. VRAIN

SITE LOCATION:

The site (40.22°N/104.89°W) is located in Weld County, northeast Colorado, about 6 km NW of the town of Platteville, and about 55 km N of Denver.

TOPOGRAPHY:

The Fort St. Vrain Generating Station lies in a shallow valley formed by the St. Vrain Creek and the South Platte River. This is an agricultural area with gently rolling hills. Site elevation is 1,460 m. The foothills of the Rocky Mountains start to rise about 30 km W of the site, and the Continental Divide is prominently identified by Long's Peak at 4,345 m, which is 65 km W of the site.

ON-SITE WIND MEASUREMENTS:

The meteorological tower is 300 m south of the plant and is equipped with a Gill u-v-w anemometer mounted at 64 m. Measurements began on 22 Nov 1966.

NRC Docket No. 50-267

JOINT FREQUENCY DISTRIBUTION

FORT SAINT VRAIN

SITE

NE - COLORADO

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.79	3.58	5.36	7.15	8.94	11.18	> 11.18			
		6.96	3.83	2.04	1.65	1.11	0.83	0.71			
N		3.08	2.38	1.36	0.83	0.36	0.21	0.14			
NNE		3.03	2.15	1.20	0.61	0.26	0.13	0.02			
NE		3.11	1.97	0.81	0.33	0.17	0.07	0.01			
ENE		2.52	1.74	1.05	0.27	0.13	0.08	0.01			
E		1.77	1.27	0.64	0.27	0.06	0.02	0.01			
ESE		2.11	1.75	0.87	0.14	0.05	0.03				
SE		2.40	1.41	0.78	0.20	0.11	0.02	0.01			
SSE		3.12	2.15	0.61	0.18	0.06	0.03	0.01			
S		3.55	2.45	0.70	0.17	0.11	0.03	0.02			
SSW		3.87	2.56	0.86	0.30	0.09	0.06	0.04			
SW		2.34	1.55	0.74	0.30	0.20	0.14	0.08			
WSW		1.73	0.84	0.49	0.34	0.21	0.19	0.18			
W		1.08	0.52	0.39	0.31	0.24	0.19	0.21			
WNW		1.37	0.80	0.56	0.24	0.24	0.16	0.13			
NW		1.81	1.11	0.54	0.26	0.17	0.18	0.11			
NNW		43.85	28.48	13.64	6.40	3.57	2.37	1.69			
TOT		43.85	72.33	85.97	92.37	95.94	98.31	100.0			
SUM											

13191

OBSERVATIONS

22 NOV 66 - 13 JAN 68

PERIOD

VELOCITY-DURATION CURVE

FULTON/PEACH BOTTOM

SITE LOCATION:

The Fulton Generating Station and the Peach Bottom Atomic Power Station (39.76°N/76.24°W) are located in Lancaster County, in SE Pennsylvania. The Fulton site is on the bank NE of Conowingo Pond on the Susquehanna River, and just opposite Peach Bottom 2.75 km W. Delta, PA and Cardiff, MD are 6 km SW; Lancaster is 27 km N; Baltimore is 60 km SW; and Philadelphia is 98 km ENE.

TOPOGRAPHY:

The area is characterized by the well defined Susquehanna River valley. Conowingo Pond is at 35 m (MSL) and lies NW-SE. The Fulton site is on high ground at 118 m (MSL) NE of the river; Peach Bottom (at 36 m (MSL)) is located between the river and the foot of a low hill near the point where Rock Run Creek discharges into the pond. On both sides of the pond, steep sloping hills rise directly up to about 90 m above the water with outcroppings of rock apparent at many locations. Because of the relatively rough terrain, much of the land has scattered woods with the more gently sloping areas cleared and cultivated. The terrain rises to 160 m (MSL) within 3 km and 210 m within 8 km. From 8 to 16 km, there are some hills about 270 m (MSL) to the W-NW-N sectors. This rather hilly relief persists for 20-25 km, thereafter becoming low rolling hills.

ON-SITE WIND MEASUREMENTS:

Data from Fulton have not been published yet, but the Peach Bottom facility has been functioning since the summer of 1967 and data are available. Peach Bottom has two towers and two satellite locations, all instrumented with Bendix-Friez "Aerovanes".

Tower 1, at 36 m (MSL), is instrumented at 9 m and 30 m; Hill Pole, at 80 m (MSL), is instrumented at 12 m; the Microwave Tower, at 112 m (MSL), is instrumented at 23 m and 98 m; and River Pole, at 33 m (MSL), is instrumented at 15 m.

NRC Docket Nos. 50-463/50-277

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	3.35	5.59	8.27	>8.27						
N			1.37	2.52	1.60	0.16							
NNE			0.47	0.65	0.24	0.01							
NE			0.26	0.31	0.07	0.02							
ENE			0.26	0.35	0.09	0.06							
E			0.68	0.57	0.15	0.02	0.03						
ESE			0.89	0.90	0.26	0.03							
SE			2.34	1.16	0.10	0.03							
SSE			3.30	0.86	0.04								
S			0.51	0.13									
SSW			0.05	0.01									
SW			0.08	0.01									
WSW			0.17	0.03									
W			6.43	1.70	0.10								
WNW			6.18	6.68	2.32	0.05	0.01						
NW			1.26	3.76	3.84	1.03	0.03						
NNW			0.72	1.81	1.42	0.31							
TOT	41.10	24.98	21.45	10.24	2.16	0.08							
SUM	41.10	66.08	87.53	97.77	99.93	100.0							

22918

OBSERVATIONS

1 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	>8.27					
	0.67										
N		0.75	1.96	1.83	0.97	0.02					
NNE		0.47	0.64	0.73	0.32	0.05					
NE		0.37	0.49	0.36	0.12	0.03					
ENE		0.36	0.49	0.25	0.08						
E		0.71	0.68	0.44	0.17	0.08					
ESE		1.16	1.50	0.76	0.24	0.06					
SE		2.23	2.43	1.06	0.16	0.01					
SSE		2.02	1.54	0.49	0.06						
S		1.43	1.33	0.52	0.13	0.01					
SSW		0.43	0.35	0.06	0.01						
SW		0.72	0.37	0.05							
WSW		1.62	2.21	0.24	0.01						
W		3.01	4.88	2.30	0.82	0.01					
WNW		1.36	3.16	2.92	1.13	0.21					
NW		1.01	2.44	2.62	0.99	0.10					
NNW		0.72	2.02	2.56	1.25	0.20					
TOT	30.72	18.37	26.47	17.21	6.46	0.78					
SUM	30.72	49.09	75.56	92.77	99.23	100.0					

20444

OBSERVATIONS

10 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	3.35	5.59	8.27	>8.27						
N		0.91	2.21	1.54	0.37	0.06							
NNE		0.65	1.54	0.44	0.10	0.04							
NE		0.82	1.10	0.56	0.25	0.04							
ENE		0.89	1.01	0.63	0.26	0.06							
E		1.83	2.11	1.15	0.57	0.07							
ESE		1.47	2.10	0.77	0.17	0.03							
SE		1.00	1.32	0.71	0.09								
SSE		1.18	1.36	0.90	0.37	0.01							
S		1.74	2.80	1.12	0.37	0.03							
SSW		1.10	1.72	0.59	0.27	0.01							
SW		1.27	1.67	0.95	0.62	0.13							
WSW		2.35	2.80	1.16	0.51	0.05							
W		2.44	3.51	2.05	0.56	0.04							
WNW		1.14	2.45	1.46	0.39	0.03							
NW		0.72	1.27	0.70	0.12	0.01							
NNW		0.89	1.76	0.96	0.14	0.01							
TOT	27.41	20.40	30.72	15.71	5.16	0.60							
SUM	27.41	47.81	78.54	94.24	99.40	100.0							

19444

OBSERVATIONS

1 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM									
	0.67	1.56	3.35	5.59	8.27	>8.27				
N		1.13	2.41	2.34	0.82	0.08				
NNE		0.89	1.95	0.93	0.25	0.03				
NE		0.80	0.91	0.30	0.02					
ENE		1.18	0.77	0.16	0.07					
E		1.71	1.05	0.13	0.02					
ESE		1.60	1.88	0.53	0.04					
SE		1.18	2.53	1.21	0.16					
SSE		1.21	2.84	1.07	0.18					
S		1.48	3.17	2.61	1.11	0.17				
SSW		0.50	1.69	1.15	0.37	0.03				
SW		0.47	0.98	0.53	0.11	0.01				
WSW		0.52	1.27	1.35	0.30	0.06				
W		0.93	2.78	3.50	1.51	0.19				
WNW		0.98	2.55	3.45	1.75	0.30				
NW		0.92	2.30	2.63	1.39	0.35				
NNW		1.18	3.15	3.74	2.26	0.44				
TOT	13.40	16.70	32.23	25.62	10.37	1.68				
SUM	13.40	30.10	62.33	87.95	98.32	100.0				

23211

OBSERVATIONS

1 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	>8.27					
	0.67										
N		0.44	2.07	2.80	2.08	0.69					
NNE		0.30	1.05	1.33	0.62	0.13					
NE		0.35	0.86	0.83	0.38	0.12					
ENE		0.46	0.90	0.78	0.27	0.11					
E		0.75	1.51	1.15	0.36	0.11					
ESE		0.48	1.33	1.41	0.58	0.06					
SE		0.31	1.31	2.04	0.89	0.14					
SSE		0.37	1.50	2.56	0.81	0.13					
S		0.54	1.97	4.12	3.02	0.61					
SSW		0.25	1.16	2.20	1.19	0.29					
SW		0.33	1.07	1.65	0.96	0.20					
WSW		0.33	1.14	1.52	1.46	0.27					
W		0.42	1.25	2.14	3.46	1.65					
WNW		0.22	0.67	1.77	3.51	2.50					
NW		0.21	0.78	2.14	3.99	2.64					
NNW		0.27	1.58	3.28	3.80	1.84					
TOT	3.25	6.03	20.13	31.71	27.36	11.51					
SUM	3.25	9.28	29.41	61.12	88.48	99.99					

22971

OBSERVATIONS

1 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

FULTON / PEACH BOTTOM

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	3.35	5.59	8.27	>8.27					
N			1.03	2.02	1.70	1.15	0.24					
NNE			0.27	1.01	0.67	0.20	0.01					
NE			0.23	0.49	0.22	0.04	0.01					
ENE			0.46	0.52	0.18	0.10	0.03					
E			0.75	0.87	0.28	0.13	0.02					
ESE			0.96	1.44	0.56	0.06						
SE			1.22	2.41	1.47	0.26	0.02					
SSE			1.41	3.45	2.76	0.78	0.02					
S			2.14	2.98	3.51	1.62	0.26					
SSW			0.90	1.09	0.55	0.19	0.02					
SW			0.72	0.76	0.53	0.07	0.01					
WSW			0.93	1.17	0.54	0.04	0.01					
W			2.79	2.03	0.98	0.27	0.03					
WNW			1.83	2.03	1.78	1.05	0.15					
NW			1.45	2.91	2.60	2.21	1.05					
NNW			1.61	3.10	2.56	2.19	1.02					
TOT	18.89	18.71	28.27	20.86	10.37	2.90						
SUM	18.89	37.60	65.87	86.73	97.10	100.0						

10070

OBSERVATIONS

1 AUG 67 - 30 JUL 70

PERIOD

VELOCITY-DURATION CURVE

R. E. GINNA

SITE LOCATION:

The site (43.28°N/77.31°W) is in the NW corner of Wayne County, New York, on the south shore of Lake Ontario about 32 km ENE of Rochester and 64 km WSW of Oswego.

TOPOGRAPHY:

The site is on the slightly (2.5 m) elevated south shore of Lake Ontario. The terrain around the site is gently rolling.

ON-SITE WIND MEASUREMENTS:

A 56-m tower was used to collect wind data using a Bendix-Friez Model 120 Aerovane at 15 m elevation. The instrument was moved to 10 m in late 1974. Tower base elevation is 84 m (MSL).

NRC Docket No. 50-244

JOINT FREQUENCY DISTRIBUTION

GINNA

SITE

E - CENTRAL - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	>5.59							
N			0.64	0.88	0.86	0.35							
NNE			0.66	0.95	0.72	0.81							
NE			0.38	0.74	0.86	1.03							
ENE			0.60	0.98	1.17	0.98							
E			0.75	1.69	1.44	0.50							
ESE			0.58	1.74	0.81	0.25							
SE			0.57	1.60	0.61	0.12							
SSE			0.65	1.85	1.77	0.83							
S			0.75	3.10	3.40	1.68							
SSW			0.95	4.58	2.13	0.25							
SW			1.09	5.37	3.12	0.47							
WSW			0.58	3.58	3.71	1.72							
W			0.48	2.95	4.09	4.51							
WNW			0.44	1.77	3.68	4.16							
NW			0.40	1.62	1.89	3.88							
NNW			0.60	1.12	1.17	1.44							
TOT		1.87	10.13	33.61	31.41	22.98							
SUM		1.87	12.00	45.61	77.02	100.0							

16079

OBSERVATIONS

1 JAN 66 - 31 DEC 67

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

GINNA

SITE

E - CENTRAL - NEW YORK

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.67	0.89	1.56	3.35	5.59	8.27	10.95	>10.95			
N		0.11	0.40	0.87	0.77	0.81	0.29	0.03				
NNE		0.10	0.44	0.69	0.66	0.41	0.21	0.03				
NE		0.12	0.58	1.23	1.20	0.52	0.68	0.03				
ENE		0.08	0.29	0.95	1.13	0.79	0.37	0.19				
E		0.07	0.28	1.67	1.45	0.48	0.15	0.22				
ESE		0.08	0.15	1.13	1.28	0.22	0.01					
SE		0.17	0.32	1.38	2.22	0.10	0.11					
SSE		0.12	0.43	2.17	4.01	1.85	0.70	0.30				
S		0.08	0.72	5.31	3.24	1.48	0.30	0.17				
SSW		0.10	0.77	5.05	2.84	0.94	0.17					
SW		0.10	0.28	2.43	2.98	1.59	0.29	0.10				
WSW		0.10	0.17	1.15	3.41	3.44	0.86	0.59				
W		0.10	0.22	0.99	2.80	2.95	1.42	0.58				
WNW		0.04	0.28	1.28	1.01	1.68	1.17	0.77				
NW		0.08	0.32	0.88	1.38	1.42	1.55	1.03				
NNW		0.06	0.34	0.80	1.01	1.29	0.17	0.03				
TOT	0.12	1.50	5.97	27.98	31.39	20.52	8.44	4.07				
SUM	0.12	1.62	7.59	35.57	66.96	87.48	95.92	99.99				

7248

OBSERVATIONS

1 JAN 75 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

GRAND GULF

SITE LOCATION:

The site (32.01°N/91.05°W) is in Clairborne County, SW Mississippi. It is on the east bank of the Mississippi River, 2.5 km S of the community of Grand Gulf, 40 km S of Vicksburg and 60 km NNE of Natchez. The town of Port Gibson is about 10 km SE of the site.

TOPOGRAPHY:

The site lies about 2.5 km E of the Mississippi River, at about 40 m (MSL). The site region consists primarily of woodlands and farms, and is about equally divided between two physiographic sections. To the south and east, the terrain is generally hilly and wooded with several hilltops peaking over 100 m (MSL) to the S. To the north and west lies the alluvial plain of the Mississippi River where the terrain is generally flat and wooded, ranging between 20 and 30 m (MSL). Numerous lakes formed by the meandering river and isolated marshes dot the landscape. There is a rather abrupt (irregular) 30-m to 60-m rise in terrain about 2 km east of the riverbank.

ON-SITE WIND MEASUREMENTS:

A permanent tower, located in an open field at about 49 m (MSL), became operational in Aug. 1972. It is equipped with an MRI 1074-2 wind system at its top (10 m).

NRC Docket No. 50-416

JOINT FREQUENCY DISTRIBUTION

GRAND GULF

SITE

SW - MISSISSIPPI

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	7.82	10.50	>10.50				
N		2.95	4.25	1.02	0.03						
NNE		2.80	2.20	0.14							
NE		4.15	2.17	0.12							
ENE		5.20	2.84	0.18							
E		4.66	3.82	0.51							
ESE		3.19	2.95	0.86	0.03						
SE		2.39	3.60	1.50	0.09						
SSE		1.64	3.51	2.44	0.58	0.02					
S		1.54	2.59	1.38	0.08						
SSW		1.12	2.28	0.81	0.09						
SW		1.05	3.35	1.48	0.03						
WSW		0.95	2.27	0.82							
W		0.92	2.29	0.91							
WNW		0.87	1.99	0.52							
NW		0.92	3.19	1.34	0.01						
NNW		1.24	3.54	2.49	0.07						
TOT		35.60	46.84	16.51	1.03	0.02	0				
SUM		35.60	82.44	98.95	99.98	100.0					

8649

OBSERVATIONS

1 AUG 72 - 30 JUL 73

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The Greene County Nuclear Power Plant site (42.15°N/73.91°W) is located on the west bank of the Hudson River, 21 km N of Kingston, in Greene County, SE New York. It is about 2 km N of the hamlet of Cementon, about 25 km SSW of Albany and about 65 km N of New York City.

TOPOGRAPHY:

The site is located in the Hudson River Valley between the Catskill Mountains to the west and the Berkshire Mountains to the east. The topography in the vicinity of the site (9 m (MSL)) is characterized by the Hudson River Valley, which is oriented NNE-SSW. To the west of the site, two ridges parallel the river. The nearest ridge, about 1 km W rises from 60 m to 90 m (MSL). The second ridge lies about 5 km to 7 km W and rises to heights of 120 m to 150 m (MSL). Three kilometers to the east, across the river, a series of rolling hills rise to the heights of 60 to 90 m (MSL). To the north and south in the vicinity of the river, the terrain is relatively flat.

ON-SITE WIND MEASUREMENTS:

The meteorological monitoring program was initiated on 1 Jun 1973. Wind direction and speed are measured at the 10 m, 60 m, and 122 m levels using Climatronics Corporation, F-460 wind sets (3-cup anemometers and direction vanes).

NRC Docket No. STN 50-549

JOINT FREQUENCY DISTRIBUTION

GREENE

SITE

SE - NEW YORK

LOCATION

DIRECTION	SPEED (m/s)										
	CALM 0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		3.28	4.72	3.04	0.71	0.01					
NNE		2.13	5.48	3.57	0.65	0.13					
NE		1.02	2.42	1.75	0.22						
ENE		0.69	1.20	0.10							
E		0.59	0.37								
ESE		0.52	0.29	0.01							
SE		0.68	0.46		0.01						
SSE		1.35	2.47	0.82	0.09						
S		1.77	8.29	6.24	1.27	0.04					
SSW		1.73	5.86	4.41	0.85	0.01					
SW		1.64	1.98	0.60	0.12	0.01					
WSW		1.35	0.93	0.31	0.14						
W		1.28	1.03	0.44	0.21						
WNW		1.47	1.65	1.77	0.55	0.03					
NW		1.64	2.00	1.99	0.31	0.04					
NNW		2.05	2.21	2.64	0.98	0.12					
TOT	1.20	23.18	41.37	27.71	6.15	0.39	0				
SUM	1.20	24.38	65.75	93.46	99.61	100.0					

7644

OBSERVATIONS

1 JUN 73 - 31 MAY 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

GREENE

SITE

SE - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N			0.86	2.41	3.17	3.33	1.16	0.21				
NNE			1.26	3.60	4.07	2.82	0.62	0.17				
NE			1.11	2.55	1.14	0.60	0.16					
ENE			0.73	1.14	0.13	0.03	0.03					
E			0.62	0.59	0.09							
ESE			0.53	0.52	0.03	0.01						
SE			0.70	0.70	0.16	0.01	0.01					
SSE			1.42	2.18	0.86	0.48	0.18					
S			1.35	5.69	6.53	6.03	2.73	1.13				
SSW			0.87	3.19	3.85	2.29	0.49	0.12				
SW			0.56	1.24	0.77	0.34	0.08					
WSW			0.52	0.60	0.31	0.16	0.03					
W			0.40	0.70	0.46	0.31	0.01					
WNW			0.35	0.75	1.50	1.22	0.20	0.01				
NW			0.43	1.14	2.63	1.59	0.29	0.07				
NNW			0.51	1.17	2.08	2.95	1.35	0.18				
TOT		0.47	12.22	28.17	27.76	22.17	7.33	1.89				
SUM		0.47	12.69	40.86	68.62	90.79	98.12	100.0				

7692

OBSERVATIONS

1 JAN 73 - 31 MAY 74

PERIOD

VELOCITY-DURATION CURVE

GREENWOOD

SITE LOCATION:

The Greenwood Energy Center (43.09°N/82.68°W) is situated in the "thumb" region of SE Michigan. The site is in St. Clair County, 80 Km NNE of Detroit, 18 KM inland from Lake Huron and 26 Km WNW of Port Huron.

TOPOGRAPHY:

The terrain in the region is characterized by smooth gently rolling plains with relief varying from 30 m to 90 m. Site elevation is between 230 and 235 m (MSL).

ON-SITE WIND MEASUREMENTS:

The on-site meteorological program began on 25 Sept 1972. The system includes a 61-m tower instrumented with Climet WS-011-10 and Climet WD-012-11 sensor systems at 11 m and 61 m. Tower base elevation is 233 m (MSL).

NRC Docket No. 50-452

JOINT FREQUENCY DISTRIBUTION

GREENWOOD

SITE

SE - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.12	2.91	3.80	5.14	6.48	8.27	10.50	>10.50		
N		0.65	1.93	0.80	1.17	0.84	0.62	0.49	0.05			
NNE		0.34	1.27	0.69	1.19	0.62	0.52	0.17	0.04			
NE		0.57	1.70	0.91	1.09	0.50	0.14	0.09				
ENE		0.48	1.71	0.91	0.47	0.07	0.01					
E		0.71	1.87	1.17	0.52	0.23	0.06	0.07				
ESE		0.21	1.21	0.46	0.62	0.26	0.17	0.01				
SE		0.64	1.98	0.84	0.76	0.55	0.32	0.10				
SSE		0.48	2.73	1.06	1.25	0.96	0.46	0.07				
S		0.89	4.17	1.64	2.14	1.45	0.79	0.33	0.07			
SSW		0.65	2.76	1.94	1.93	1.16	0.65	0.28	0.05			
SW		0.57	2.46	1.38	1.72	1.33	0.59	0.21	0.05			
WSW		0.52	2.17	1.14	1.46	1.01	0.90	0.18	0.10			
W		0.75	2.37	1.05	1.09	0.95	0.79	0.22	0.06			
WNW		0.60	1.56	0.60	0.85	0.48	0.37	0.16				
NW		0.50	1.98	0.80	0.90	0.57	1.00	0.62	0.09			
NNW		0.34	1.57	0.71	0.86	0.73	0.66	0.11	0.04			
TOT	0.22	8.87	33.44	16.10	18.02	11.71	8.05	3.11	0.55			
SUM	0.22	9.02	42.46	58.56	76.58	88.29	96.34	99.45	100.0			

8129

OBSERVATIONS

3 SEP 72 - 3 SEP 73

PERIOD

VELOCITY-DURATION CURVE

SHEARON HARRIS

SITE LOCATION:

The site (35.63°N/78.95°W) is in the extreme SW corner of Wake County, and the SE corner of Chatham County, North Carolina. Raleigh is 32 Km NE and Sanford is 16 Km SW.

TOPOGRAPHY:

The site is in the leading edge of the Appalachian Piedmont region. The land is rolling and heavily wooded. Plant grade is at 70 m (MSL).

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at 11 m and 61 m (AGL) using MRI 1074-22 sensors.

NRC Docket No. 50-400

JOINT FREQUENCY DISTRIBUTION

HARRIS

SITE

CENTRAL - NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	11.18	>11.18				
	0.34										
N		2.68	2.10	0.27							
NNE		3.17	2.62	0.19							
NE		3.09	3.62	0.22							
ENE		2.38	1.66	0.16							
E		1.85	1.03	0.07	0.01						
ESE		1.49	0.70	0.03							
SE		1.71	0.94	0.08							
SSE		2.09	1.40	0.25	0.02						
S		2.55	1.63	0.29	0.01						
SSW		3.50	3.29	1.17	0.12						
SW		3.05	3.43	1.85	0.32	0.03					
WSW		1.58	2.91	1.34	0.40	0.01	0.01				
W		1.22	1.81	0.80	0.16	0.01					
WNW		1.22	1.30	1.01	0.20						
NW		1.39	1.66	0.86	0.06						
NNW		1.98	2.02	0.38	0.02						
TOT	22.64	34.94	32.11	8.95	1.31	0.04	0.01				
SUM	22.64	57.58	89.69	98.64	99.95	99.99	100.0				

17,042

OBSERVATIONS

1 APR 73 - 31 MAR 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

HARRIS

SITE

CENTRAL - NORTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.34	1.56	3.35	5.59	8.27	11.18	> 11.18				
N			0.70	2.73	3.33	1.27	0.08					
NNE			0.64	2.58	3.88	0.97	0.04	0.01				
NE			0.66	2.36	2.91	0.42	0.01					
ENE			0.57	2.16	2.48	0.38	0.05					
E			0.56	1.67	1.34	0.19	0.01					
ESE			0.61	1.47	1.14	0.12	0.02					
SE			0.45	1.79	1.55	0.18	0.05					
SSE			0.47	2.27	2.35	0.70	0.06	0.01				
S			0.56	2.09	2.36	0.61	0.08					
SSW			0.58	2.57	4.72	2.03	0.41	0.04				
SW			0.63	2.80	4.38	1.97	0.66					
WSW			0.53	2.47	3.37	1.64	0.28	0.06				
W			0.50	1.65	1.65	0.83	0.12	0.02				
WNW			0.47	1.29	1.47	0.85	0.24	0.02				
NW			0.59	1.43	1.70	1.20	0.15	0.01				
NNW			0.60	1.50	1.21	0.89	0.04					
TOT		0.45	9.12	32.92	40.68	14.25	2.30	0.28				
SUM		0.45	9.57	42.49	83.17	97.42	99.72	100.0				

16928

OBSERVATIONS

1 APR 73 - 31 MAR 75

PERIOD

VELOCITY-DURATION CURVE

HARTSVILLE

SITE LOCATION:

The Hartsville site (36.35°N/86.09°W) consists of 1,940 acres, and straddles the Trousdale and Smith County line. It is about 8 km SE of Hartsville, Tennessee, and about 40 km ENE of Nashville.

TOPOGRAPHY:

The regional topography is one of irregular rolling hills, with mixed woods and cultivation. The highest close-in terrain features are a ridge about 3 km NNW and N and a small ridge about 3 km to the NW which rise to about 150 m above plant grade of 165 m (MSL). The highest sector-wide ridges are located to the WNW through ESE and have elevations ranging from 60 m to 150 m above plant grade. This higher terrain has a shallow ridge-valley configuration. There is a narrow valley extending SE for about 16 km, otherwise the terrain is mostly low, irregular rolling hills.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological facility began collecting data on 1 Feb 1973. A 46-m tower is located at 165 m (MSL) and is instrumented at 10 m and 46 m, with a Climet WS-012-11 and Climet WD-011-10 for wind direction and speed, respectively, at each level

NRC Docket No. 50-518

JOINT FREQUENCY DISTRIBUTION

HARTSVILLE

SITE

E - TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.52	3.31	5.54	8.22	10.91	> 10.91				
N		0.32	1.14	0.98	0.02	0.01						
NNE		0.95	2.24	1.12	0.09							
NE		6.57	3.47	1.00	0.01							
ENE		10.78	5.84	0.46	0.05							
E		3.84	2.24	0.12								
ESE		2.14	2.16	0.49	0.07							
SE		2.46	2.81	1.34	0.50	0.12						
SSE		2.05	2.21	1.33	0.97	0.23						
S		1.75	1.42	0.95	0.81	0.12						
SSW		0.93	1.36	1.36	0.60	0.20	0.01					
SW		1.14	1.86	1.41	1.15	0.10	0.02					
WSW		0.84	1.86	1.28	0.59	0.12	0.01					
W		1.00	2.04	1.65	0.59	0.17						
WNW		1.53	1.45	1.50	0.37	0.11						
NW		0.79	1.36	1.04	0.17							
NNW		0.62	1.87	1.60	0.22							
TOT	1.88	37.71	35.36	17.63	6.21	1.18	0.04					
SUM	1.88	39.59	74.95	92.58	98.79	99.97	100.01					

7802

OBSERVATIONS

1 FEB 73 - 31 JAN 74

PERIOD

VELOCITY-DURATION CURVE

EDWIN I. HATCH

SITE LOCATION:

The site (31.93°N/82.34°W) is located in Appling County, Georgia; 18 km N of Baxley, 77 km N of Waycross, and about 125 km WSW of Savannah. The location is also 117 km NW of Brunswick and 158 km SE of Macon.

TOPOGRAPHY:

The site is within the Atlantic Coastal plain, which has a slight rise from the SE to the NW. The local terrain is gently rolling with the natural grade varying between 22 m (MSL) at the Altamaha River floodplain to 45 m at the southern border.

ON-SITE WIND MEASUREMENTS:

Wind speed and direction are measured on a 46-m tower based at about 37 m (MSL). Measurements are made at 23 m and 46 m heights, using Climet Model WS-011-1 (speed) and Climet Model WD-012-10 (direction) instruments at each level.

NRC Docket Nos. 50-321, 50-366

JOINT FREQUENCY DISTRIBUTION

HAICH

SITE
GEORGIA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
N		1.18	1.93	0.87	0.11	0.03					
NNE		1.06	1.96	0.88	0.15	0.03	0.01				
NE		1.12	2.52	1.55	0.33	0.06	0.01				
ENE		1.12	3.47	2.02	0.42	0.06	0.02				
E		1.40	3.79	1.88	0.38	0.03					
ESE		1.10	2.95	1.91	0.45	0.04	0.01				
SE		0.87	2.61	1.67	0.47	0.10	0.04	0.01			
SSE		0.76	2.14	1.07	0.30	0.09	0.03	0.04			
S		0.67	2.53	1.66	0.46	0.09	0.01				
SSW		0.79	3.32	2.75	0.83	0.16	0.01				
SW		0.83	3.70	3.29	0.93	0.13	0.01				
WSW		0.77	2.64	2.35	0.66	0.10	0.03				
W		0.83	2.93	2.32	0.15	0.17	0.05				
WNW		0.82	2.99	2.36	1.13	0.35	0.06				
NW		1.02	2.60	2.08	0.99	0.14	0.02				
NNW		0.92	1.91	1.29	0.36	0.03	0.01				
TOT		15.26	43.99	29.97	8.82	1.61	0.32	0.03			
SUM		15.26	59.25	89.22	98.04	99.65	99.97	100.0			

33,109
OBSERVATIONS

1 JUN 70 - 31 AUG 74
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

HATCH

SITE

GEORGIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.53	> 14.53			
		0.63	1.64	1.29	0.31	0.10	0.04				
N		0.63	1.64	1.29	0.31	0.10	0.04				
NNE		0.51	1.66	1.25	0.23	0.07	0.03				
NE		0.60	2.00	1.95	0.52	0.07	0.01				
ENE		0.56	2.60	2.68	0.73	0.08	0.01				
E		0.66	2.80	3.45	0.90	0.25	0.05	0.01			
ESE		0.49	2.34	2.72	0.82	0.26	0.15	0.06			
SE		0.59	2.08	2.17	0.66	0.19	0.05	0.01			
SSE		0.39	1.55	1.80	0.56	0.12	0.02				
S		0.43	1.64	2.35	3.03	1.43	0.32	0.07			
SSW		0.40	1.67	3.03	1.43	0.32	0.07	0.01			
SW		0.45	2.02	3.62	1.75	0.30	0.06	0.01			
WSW		0.39	1.81	3.30	1.43	0.26	0.10				
W		0.45	1.91	3.16	0.40	0.15	0.01				
WNW		0.45	1.85	3.02	1.56	0.55	0.22	0.05			
NW		0.52	2.04	2.46	1.50	0.53	0.14	0.04			
NNW		0.52	1.71	1.58	0.85	0.25	0.04				
TOT		8.06	31.34	39.83	15.42	3.98	1.16	0.22			
SUM		8.06	39.40	79.23	94.65	98.63	99.79	100.01			

32969

OBSERVATIONS

1 JUN 70 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

HOPE CREEK/SALEM

SITE LOCATION:

Hope Creek and Salem (39.46°N/75.53°W) are co-located on the southern part of Artificial Island on the E bank of the Delaware River in Salem County, SW New Jersey. The site is 24 km S of the Delaware Memorial Bridges; 29 km S of Wilmington, DE; 48 km SW of Philadelphia; and 12 km SW of Salem, NJ.

TOPOGRAPHY:

The area is part of the Coastal Plain region of New Jersey, a low lying, gently rolling plain area. Maximum elevation in the Coastal Plain region is about 60 m (MSL), sloping gently toward the Delaware River and the Atlantic Ocean. Much of the area is lower and there are large areas of tidal marshes adjacent to the rivers and larger streams. Artificial Island was once a natural bar in the Delaware River, adjacent to the western shore of NJ. The island is very flat, with a mean elevation of about 3 m (MSL) and a maximum elevation of 6 m (MSL) at the southern extremity. A 3-m high levee has been constructed around most of the island. The river is more than 3 km wide at the site and the area immediately surrounding the site consists almost entirely of the tidal marshes and grasslands with a maximum rise of 5 m in the first 5 km inland from the river.

ON-SITE WIND MEASUREMENTS:

A 95-m tower at 3 m (MSL) is instrumented with Bendix-Friez Aerovanes at 9 m, 46 m, and 91 m (AGL). The 46-m level is used only intermittently.

NRC Docket Nos. 50-354/50-272, 50-311

JOINT FREQUENCY DISTRIBUTION

HOPE CREEK / SALEM

SITE

SW - NEW JERSEY

LOCATION

SPEED (m/s)

	CALM 0.22	1.56	3.35	5.59	8.27	>8.27					
DIRECTION											
N		0.77	2.81	1.78	0.24	0.03					
NNE		0.87	2.96	1.62	0.22	0.13					
NE		0.91	2.54	0.96	0.17	0.07					
ENE		1.09	1.54	0.25	0.05						
E		1.04	1.33	0.45	0.02						
ESE		0.37	1.87	1.57	0.64	0.17					
SE		0.54	2.35	3.27	1.83	0.22					
SSE		0.67	2.54	2.72	0.83	0.04					
S		0.99	2.72	2.68	0.45	0.06					
SSW		0.94	2.35	2.04	0.56	0.09					
SW		0.84	2.29	1.53	0.36	0.05					
WSW		0.82	2.50	1.68	0.78	0.16					
W		1.06	3.23	2.72	1.49	0.80					
WNW		1.28	4.07	3.33	1.69	0.69					
NW		0.82	3.40	2.92	1.34	0.34					
NNW		0.57	1.99	1.87	0.56	0.12					
TOT	0.28	13.61	40.50	31.39	11.24	2.98					
SUM	0.28	13.89	54.39	85.78	97.02	100.0					

16632

OBSERVATIONS

1 JUN 69 - 30 SEP 71

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

HOPE CREEK / SALEM

SITE
SW - NEW JERSEY

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	>8.27						
N			0.35	1.25	2.39	2.16	1.30						
NNE			0.21	0.77	1.23	1.31	0.79						
NE			0.13	0.59	1.43	1.88	0.66						
ENE			0.23	0.63	1.08	0.95	0.38						
E			0.25	0.78	1.21	0.97	0.45						
ESE			0.07	0.43	0.75	0.58	0.28						
SE			0.21	0.57	0.97	1.26	1.23						
SSE			0.24	0.77	1.73	2.10	2.11						
S			0.38	1.37	2.61	2.79	1.55						
SSW			0.31	0.85	1.59	1.50	1.35						
SW			0.46	0.95	1.57	1.95	1.27						
WSW			0.30	0.83	1.65	1.59	0.94						
W			0.51	1.23	2.35	2.26	2.56						
WNW			0.38	0.92	1.55	2.45	3.03						
NW			0.37	1.15	2.53	3.97	4.04						
NNW			0.32	1.00	2.02	2.54	2.21						
TOT		0.12	4.71	14.08	26.67	30.26	24.17						
SUM		0.12	4.83	18.91	45.58	75.84	100.01						

15501

OBSERVATIONS

1 JUN 69 - 31 MAY 71

PERIOD

VELOCITY-DURATION CURVE

HUMBOLDT BAY

SITE LOCATION:

The Humboldt Bay site (40.73°N/124.22°W) is 6 km SW of Eureka, California, in Humboldt County. The location is about 140 km S of the Oregon-California border and 395 km NNW of San Francisco.

TOPOGRAPHY:

The terrain of Humboldt County is mostly mountainous with rather narrow coastal plains in the Eureka region and narrow river valleys extending inland. The mountains are quite rugged with several peaks just over 1800 m (MSL) and result in very limited access to the interior of the county, except along the major river valleys. The mountains are heavily forested with Douglas fir and redwood, as are some of the river valleys inland. The coastal plains are covered mostly with short grass. The topography in the immediate vicinity of the site is relatively flat but gives way quickly to low wooded rolling hills, 60 m to 120 m high. The terrain continues to slope upward until a ridge, 600 m to 900 m (MSL) is reached about 20 km E of the site. This ridge extends in a semicircle from a point 30 km N of Eureka to a point 40 km south.

ON-SITE WIND MEASUREMENTS:

The wind data collection system consists of Beckman and Whitley wind sensors installed at the top of a 76-m tower.

NRC Docket No. 50-133

JOINT FREQUENCY DISTRIBUTION

HUMBOLDT BAY

SITE

NW - CALIFORNIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.12	1.56	3.35	5.59	8.27	10.95	22.57	>22.57		
	0.67	1.12	1.56	3.35	5.59	8.27	10.95	22.57	>22.57			
N		0.20	0.45	3.70	6.51	4.69	2.17	1.12				
NNE		0.15	0.39	2.00	2.65	1.21	0.28	0.12				
NE		0.11	0.35	1.63	1.17	0.26	0.01					
ENE		0.12	0.25	1.33	0.51	0.07	0.01					
E		0.19	0.36	1.37	0.48	0.05						
ESE		0.05	0.28	1.31	0.73	0.08	0.02	0.01				
SE		0.05	0.19	1.04	0.79	0.86	0.45	0.43				
SSE		0.11	0.20	0.99	0.92	2.08	1.40	0.90				
S		0.18	0.35	1.50	2.04	1.86	0.60	0.19				
SSW		0.28	0.30	1.87	2.33	1.01	0.41	0.23				
SW		0.26	0.48	2.54	2.15	0.96	0.51	0.39				
WSW		0.43	0.62	2.02	1.34	0.48	0.21	0.11				
W		0.48	0.52	2.04	0.88	0.17	0.08	0.03				
WNW		0.35	0.51	1.49	0.68	0.08	0.06	0.03				
NW		0.32	0.57	2.16	1.55	0.30	0.07	0.07				
NNW		0.29	0.39	2.96	3.46	1.77	0.51	0.14				
TOT	5.88	3.58	6.27	29.96	27.83	15.93	6.78	3.77	0			
SUM	5.88	9.46	15.73	45.69	73.52	89.45	96.23	100.0				

16803

OBSERVATIONS

1 JAN 66 - 31 DEC 67

PERIOD

VELOCITY-DURATION CURVE

INDIAN POINT

SITE LOCATION:

The Indian Point site (41.25°N/73.95°W) is on the east bank of the Hudson River, in the town of Buchanan, Westchester County, New York. This location is 4 km SW of Peekskill and about 50 km upriver from New York City.

TOPOGRAPHY:

The site meteorology is influenced by its location in the Hudson River valley. The valley here is rather deep in the rolling hills along the river and ridges above, all running in a north-south direction paralleling the river valley.

ON-SITE WIND MEASUREMENTS:

Wind data have been collected at Indian Point since 1955 during varying intervals. The two years of data presented here were collected during 1974 and 1975, using Climet instruments on a 122-m tower, based at an elevation of approximately 37 m (MSL).

NRC Docket Nos. 50-003, -247, -286, -342

JOINT FREQUENCY DISTRIBUTION

INDIAN POINT

SITE

E CENTRAL - NEW YORK

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	> 10.95				
		0.98	3.66	1.30	0.20	0.01					
N		0.98	3.66	1.30	0.20	0.01					
NNE		4.37	5.85	2.15	0.16	0.01					
NE		6.49	6.61	1.02	0.04						
ENE		3.79	2.58	0.13	0.02						
E		2.26	0.53	0.02							
ESE		1.10	0.22	0.01							
SE		1.35	0.09	0.02							
SSE		1.91	0.32	0.07							
S		6.47	2.33	0.11	0.01						
SSW		6.27	3.24	0.40	0.01						
SW		4.45	2.38	0.48	0.07						
WSW		2.44	0.77	0.26	0.03						
W		1.99	1.33	0.44	0.07						
WNW		1.02	2.02	0.67	0.08						
NW		0.91	2.97	2.18	0.47	0.04	0.01				
NNW		0.98	2.64	2.44	0.63	0.01					
*TOT		48.79	37.66	11.70	1.78	0.06	0.01				
*SUM		48.79	86.45	98.14	99.93	99.99	100.0				

16,711

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

*CALMS AND VARIABLES INCLUDED IN TOTALS

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

INDIAN POINT

SITE

E - CENTRAL - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
		0.98	2.61	2.80	2.49	1.15	0.41				
N		0.75	2.56	3.86	3.23	0.98	0.24				
NNE		0.84	2.04	1.87	0.77	0.11					
NE		0.93	1.10	0.53	0.15	0.02	0.04				
ENE		0.77	0.86	0.38	0.12	0.03	0.01				
E		0.60	0.54	0.31	0.05	0.01					
ESE		0.61	0.81	0.57	0.10	0.01					
SE		0.85	1.32	0.77	0.13	0.02					
SSE		2.04	4.25	3.31	1.79	0.56	0.20				
S		1.48	3.14	2.68	1.05	0.27	0.11				
SSW		1.43	2.39	2.53	1.22	0.30	0.10				
SW		0.99	1.31	0.95	0.52	0.19	0.06				
WSW		0.94	1.20	1.09	0.80	0.38	0.24				
W		0.45	0.80	1.24	1.24	0.50	0.22				
WNW		0.50	0.96	2.19	3.21	1.69	0.66				
NW		0.45	1.22	2.10	3.19	1.73	0.76				
NNW		14.62	27.15	27.19	20.06	7.94	3.05				
*TOT		14.62	41.77	68.96	89.02	96.95	100.0				
*SUM											

16,496

1 JAN 74 - 31 DEC 75

OBSERVATIONS

PERIOD

* CALMS AND VARIABLES INCLUDED IN TOTALS

VELOCITY-DURATION CURVE

JAMESPORT

SITE LOCATION:

The 525-acre site (40.99°N/72.59°W) is located on the north shore of Long Island, in the town of Riverhead, Suffolk County, New York. The site is about 10 km NE of Riverhead and about 105 Km E of New York City.

TOPOGRAPHY:

The terrain in this section of Long Island is generally flat. At the northern site boundary, the elevation drops off abruptly from 25 m to 30 m (MSL) down to sea level at Long Island Sound.

ON-SITE WIND MEASUREMENTS:

The meteorological monitoring program began on 19 Sep 1973. A 122-m tower is instrumented with Climatronics F460 wind sets (3-cup anemometers and vanes) at 10 m, 61 m and 122 m.

NRC Docket No. 50-516

JOINT FREQUENCY DISTRIBUTION

JAMESPORT

SITE

SE - NEW YORK

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	> 10.95				
	0.22										
N		0.19	1.60	2.04	1.28	0.11					
NNE		0.19	0.97	1.63	1.26	0.20					
NE		0.43	1.33	1.44	1.17	0.09					
ENE		0.55	1.32	0.95	0.89	0.30	0.18				
E		0.44	1.21	1.19	0.65	0.18	0.04				
ESE		0.48	1.65	0.98	0.16	0.03					
SE		0.63	1.92	1.30	0.51	0.11					
SSE		0.52	1.43	0.95	0.39	0.15					
S		0.71	1.93	1.77	0.58	0.14	0.06				
SSW		0.76	2.51	4.03	2.77	0.54	0.05				
SW		0.78	2.65	3.58	1.70	0.31	0.03				
WSW		0.61	2.31	2.19	0.76	0.25	0.08				
W		0.42	1.61	2.82	2.19	0.88	0.49				
WNW		0.29	1.98	3.14	2.41	1.62	0.46				
NW		0.23	2.19	2.39	3.28	1.50	0.66				
NNW		0.23	1.53	2.42	2.38	0.66	0.06				
TOT	0.06	7.47	28.12	32.82	22.36	7.06	2.11				
SUM	0.06	7.53	35.65	68.47	90.83	97.89	100.0				

15969

OBSERVATIONS

20 SEP 73 - 19 SEP 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

JAMESPORT

SITE

SE - NEW YORK

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.07	0.77	1.68	1.82	0.92	0.14					
NNE		0.10	0.50	1.28	1.44	0.81	0.21					
NE		0.08	0.62	1.13	1.58	0.76	0.10					
ENE		0.07	0.65	1.12	1.01	0.58	0.35					
E		0.08	0.51	1.40	1.14	0.42	0.26					
ESE		0.08	0.92	1.53	0.56	0.11	0.06					
SE		0.06	0.72	1.90	0.89	0.43	0.28					
SSE		0.09	0.43	1.34	0.90	0.35	0.33					
S		0.08	0.62	1.51	1.52	0.50	0.33					
SSW		0.04	0.47	1.67	3.24	1.60	0.96					
SW		0.11	0.54	1.81	4.53	2.74	0.64					
WSW		0.11	0.42	1.72	2.94	1.14	0.35					
W		0.11	0.70	2.12	3.95	1.69	1.22					
WNW		0.13	1.01	2.53	2.72	1.75	2.17					
NW		0.11	1.29	1.82	2.52	2.57	2.25					
NNW		0.15	1.07	1.29	2.17	2.23	1.16					
TOT	0.01	1.46	11.23	25.84	32.03	18.62	10.81					
SUM	0.01	1.47	12.70	38.54	70.57	89.19	100.0					

15,900
OBSERVATIONS20 SEP 73 - 19 SEP 75
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

JAMESPORT

SITE

SE - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			0.02	0.67	1.00	1.81	1.00	0.12				
NNE			0.16	0.41	1.20	1.75	0.90	0.27				
NE			0.05	0.46	0.92	1.66	1.46	0.26				
ENE			0.06	0.59	0.81	1.32	1.04	0.57				
E			0.05	0.41	1.00	1.52	0.65	0.56				
ESE			0.10	0.70	1.28	1.14	0.25	0.07				
SE			0.05	0.65	1.72	1.09	0.46	0.49				
SSE			0.09	0.57	0.85	0.94	0.41	0.51				
S			0.05	0.55	0.99	1.21	0.65	0.46				
SSW			0.07	0.40	1.14	1.97	2.21	1.97				
SW			0.06	0.51	1.27	2.59	4.13	3.21				
WSW			0.09	0.52	1.10	1.76	1.82	1.36				
W			0.12	0.65	1.66	3.03	1.95	2.56				
WNW			0.14	0.90	1.73	2.02	1.17	3.33				
NW			0.10	0.92	1.32	1.87	2.30	2.74				
NNW			0.05	0.77	1.07	1.81	2.17	1.43				
TOT	0.01	1.27	9.69	19.06	27.48	22.55	19.93					
SUM	0.01	1.28	10.97	30.03	57.51	80.06	99.99					

8017
OBSERVATIONS20 SEP 75 - 19 SEP 74
PERIOD

VELOCITY-DURATION CURVE

KEWAUNEE

SITE LOCATION:

The site (44.34°N/87.54°W) is in the township of Carlton in the southeast corner of Kewaunee County, Wisconsin, on the west shore of Lake Michigan. The location is about 43 km ESE of Green Bay and about 145 km NNE of Milwaukee.

TOPOGRAPHY:

The terrain around the site is gently rolling to flat, with elevations varying from 3 m to 30 m above the level of Lake Michigan (176 m (MSL)). The land surface slopes gradually toward the lake from the higher glacial moraine areas west of the site. At the northern and southern edges of the site, bluffs face Lake Michigan; near the center of the site, the land slopes to a sandy beach.

ON-SITE WIND MEASUREMENTS:

Wind data are collected from a 46-m tower, using a Belfort Type "M" wind transmitter.

NRC Docket No. 50-305

JOINT FREQUENCY DISTRIBUTION

KEWAUNEE

SITE

E - CENTRAL - WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM									
	0.22	2.01	3.80	6.48	8.27	10.50	> 10.50			
N		0.41	1.49	2.51	1.19	0.37	0.14			
NNE		0.65	1.70	2.69	1.55	0.79	0.48			
NE		0.49	1.28	1.64	0.95	0.56	0.29			
ENE		0.45	1.00	1.36	0.43	0.27	0.07			
E		0.59	0.84	0.81	0.24	0.08	0.02			
ESE		0.63	0.78	0.54	0.29	0.02	0.01			
SE		0.56	0.92	0.92	0.29	0.24	0.33			
SSE		0.54	1.29	1.72	0.91	0.57	0.86			
S		0.63	1.33	2.81	1.71	1.15	0.58			
SSW		0.49	1.73	3.45	1.54	0.80	0.20			
SW		0.51	1.51	2.46	1.28	0.59	0.20			
WSW		0.43	1.41	2.72	1.47	0.88	0.24			
W		0.34	1.15	2.92	2.03	1.13	1.03			
WNW		0.43	1.18	3.38	2.39	1.43	0.85			
NW		0.27	0.97	2.74	1.95	0.58	0.23			
NNW		0.47	1.45	2.68	2.18	0.77	0.24			
TOT	0.86	7.85	20.02	35.32	20.42	10.25	5.28			
SUM	0.86	8.71	28.73	64.05	84.47	94.72	100.0			

26670

OBSERVATIONS

2 JAN 69 - 31 DEC 69

PERIOD

VELOCITY-DURATION CURVE

KOSHKONONG

SITE LOCATION:

The Koshkonong Nuclear Plant (42.86°N/88.89°W) is located in SW Jefferson County, Wisconsin, about 10 Km SSW of Fort Atkinson and 84 KM SW of Milwaukee.

TOPOGRAPHY:

The location of the site in SE Wisconsin can be characterized as relatively smooth with some small rolling hills. Terrain relief within 8 km of the site ranges from 240 m to 295 m (MSL). Plant grade is at about 260 m (MSL). Lake Koshkonong is located about 2 km E of the site and has an areal dimension of 10,893 acres and an average depth of 1.5 m.

ON-SITE WIND MEASUREMENTS:

On-site wind data have been collected since 19 July 1973. A 61-m tower is equipped with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors at the 10-m and 60-m levels.

NRC Docket 50-502

JOINT FREQUENCY DISTRIBUTION

KOSHKONONG

SITE

S - CENTRAL - WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM 0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.69	2.29	1.91	0.43	0.05	0.02				
NNE		0.44	1.80	1.23	0.19	0.07					
NE		0.37	1.42	2.01	0.91	0.10					
ENE		0.53	1.60	1.98	0.77	0.06	0.05				
E		0.41	1.64	2.47	1.24	0.18					
ESE		0.57	1.33	1.88	0.83	0.08	0.01				
SE		0.79	1.64	0.93	0.43	0.08					
SSE		0.66	1.53	1.38	0.55	0.07					
S		1.02	2.43	2.81	1.68	0.43	0.08				
SSW		1.17	3.16	3.72	2.19	0.25	0.12				
SW		0.83	2.92	3.44	2.27	0.49	0.06				
WSW		0.53	2.15	2.37	1.41	0.31	0.04				
W		0.47	1.71	2.47	1.47	0.30	0.05				
WNW		0.34	1.49	2.43	1.25	0.37					
NW		0.58	1.84	3.19	1.74	0.19					
NNW		0.77	2.04	2.01	0.90	0.04	0.01				
TOT	0.84	10.16	30.99	36.21	18.26	3.09	0.44				
SUM	0.84	11.0	42.0	78.21	96.46	99.56	100.0				

8315

OBSERVATIONS

19 JUL 73 - 18 JUL 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

KOSHKONONG

SITE

S - CENTRAL - WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.17	0.98	2.61	1.50	0.19	0.19					
NNE		0.10	0.66	1.72	1.01	0.06	0.05					
NE		0.14	0.54	2.11	1.57	0.71	0.08					
ENE		0.11	0.58	1.99	1.47	0.48	0.07					
E		0.07	0.58	1.74	2.05	0.83	0.10					
ESE		0.12	0.66	1.53	1.57	0.36	0.08					
SE		0.10	0.48	1.06	0.95	0.26	0.11					
SSE		0.12	0.58	1.59	1.89	0.64	0.12					
S		0.17	0.66	2.37	4.22	1.63	0.73					
SSW		0.13	0.80	3.28	4.12	1.53	0.31					
SW		0.14	0.89	2.87	3.38	1.72	0.37					
WSW		0.11	0.74	2.25	2.08	0.60	0.19					
W		0.25	1.08	2.64	2.38	1.03	0.41					
WNW		0.19	1.05	1.78	2.34	0.53	0.25					
NW		0.18	1.02	2.92	2.63	1.09	0.14					
NNW		0.18	0.92	2.47	1.96	0.38	0.08					
TOT	0.12	2.28	12.23	34.92	35.10	12.05	3.30					
SUM	0.12	2.40	14.63	49.55	84.65	96.70	100.0					

8325
OBSERVATIONS19 JUL 73 - 18 JUL 74
PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The La Crosse Boiling Water Reactor site (43.54°N/91.21°W) is located on the east bank of the Mississippi River in SE Wisconsin. The site is in Vernon County, about 1 km S of Genoa, 27 km S of La Crosse and 160 km NW of Madison.

TOPOGRAPHY:

The valley of the Mississippi River in this area is cut deeply into highly dissected upland. North and south of the site, from La Crosse to Lansing, IA, the valley is relatively straight, almost due N-S, and ranges in width from 4 km to 7 km. The valley walls rise sharply to the upland, 150 m to 180 m above the river (189 m (MSL)). The action of tributary streams has cut the walls into a series of distinct bluffs, looming above the highways on either side of the river. Beyond the bluffs, tributary streams have cut numerous short, steep-walled valleys, known as coulees, into the gently rolling upland surface. The upland areas, as well as the more level coulee floors are cultivated and grazed. A few kilometers north of the plant, the Mississippi River presents an almost unbroken expanse of water, some 4 km wide. At the plant site, however, the river's main channel is less than 200 m wide. The rest of the valley floor is mostly marshy islands and low-lying bottomland cut by a maze of side channels, sloughs, ponds and backwaters.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made from the top of a 30-m radio tower located on a bluff about 3 km ESE of the plant site. Grade elevation of the tower is 366 m (MSL), while the reactor site is at 195 m (MSL). Instrumentation was an MRI Model 1074-22 anemometer and vane.

JOINT FREQUENCY DISTRIBUTION

LA CROSSE

SITE

SE - WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.49	1.53	3.20	1.91	0.49	0.10					
NNE		0.35	1.13	1.57	0.68	0.17	0.06					
NE		0.31	1.07	1.57	0.47	0.02						
ENE		0.35	1.05	1.29	0.71	0.13	0.04					
E		0.33	1.06	1.42	1.00	0.21	0.10					
ESE		0.32	1.21	1.73	0.90	0.24	0.14					
SE		0.31	1.46	2.81	0.76	0.10	0.01					
SSE		0.59	1.73	3.24	1.43	0.29	0.08					
S		0.62	2.03	4.56	3.92	1.06	0.26					
SSW		0.49	2.23	4.65	3.97	1.10	0.16					
SW		0.46	1.55	2.14	1.05	0.33	0.11					
WSW		0.40	1.34	1.64	0.89	0.32	0.09					
W		0.30	1.80	1.71	1.14	0.51	0.12					
WNW		0.35	1.69	2.38	1.36	0.33	0.07					
NW		0.37	1.52	2.39	0.88	0.14	0.03					
NNW		0.49	1.94	3.18	1.37	0.29	0.14					
TOT	0.08	6.38	24.15	39.77	22.29	5.68	1.64					
SUM		6.46	30.62	70.39	42.68	98.36	100.0					

14,525
OBSERVATIONS1 AUG 74 - 31 JUL 76
PERIOD

VELOCITY-DURATION CURVE

LASALLE

SITE LOCATION:

The LaSalle site (41.23°N/88.65°W) is in the SE corner of LaSalle County, Illinois, about 18 km SE of Ottawa, 18 km NE of Streator, and 8 km from both Seneca and Marseilles. Peoria is 97 km SW, Joliet is 64 km NE and the Dresden site is 40 km NE.

TOPOGRAPHY:

The terrain is typical of northern Illinois, being flat to slightly rolling. Site elevation is 216 m (MSL).

ON-SITE WIND MEASUREMENTS:

A full year's data are not available yet.

NRC Docket No. 50-373

LIMERICK

SITE LOCATION:

The Limerick Station (41.08°N/76.12°W) is located in SE Pennsylvania on the Schuylkill River about 3 km SE of Pottstown and about 33 km NW of Philadelphia. The Schuylkill River runs through the site, separating the western portion which is in Chester County from the eastern portion, which is in Montgomery County.

TOPOGRAPHY:

The plant is located in gently rolling countryside, traversed by numerous valleys containing small creeks or streams which empty into the Schuylkill River. On the east bank of the Schuylkill River, the terrain rises from just under 34 m (MSL) at the river to about 85 m to the E, which is the highest point on the site. Two parallel streams, Possum Hollow Run and Brook Evans Creek, cut through the site in wooded valleys running SW into the Schuylkill River. Site grade is at 67 m (MSL) on the west bank of the Schuylkill; the terrain is relatively flat, rising only about 15 m from the river to the western boundary. Within 8 km of the site, elevations are generally below 122 m (MSL) with six isolated hills over 150 m (MSL) (four to the N, the highest about 171 m (MSL); one to the W at 157 m (MSL); and one to the SW at 155 m (MSL)). Higher ground (between 150 m and 300 m (MSL)) exists to the NW and the W between 8 km and 16 km to the W, one hill reaches 305 m (MSL) and to the NW, four hills exceed 300 m, the highest being 335 m (MSL).

ON-SITE WIND MEASUREMENTS:

There are three (3) on-site towers. The attached data are from the 86-m tower, based at 76 m (MSL). The tower is equipped with Bendix-Friez Aerovanes at 9 m, 46 m, 53, m and 82 m (AGL).

JOINT FREQUENCY DISTRIBUTION

LIMERICK

SITE

NE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.50	>10.50				
N		2.0	1.7	0.8	0.2						
NNE		1.8	1.4	0.5	0.2						
NE		1.9	1.4	0.5							
ENE		2.7	2.1	0.9	0.2						
E		3.5	2.9	1.3	0.3						
ESE		2.3	1.7	0.7	0.1						
SE		2.3	1.5	0.4	0.1						
SSE		2.3	1.8	0.5	0.1						
S		2.9	2.7	1.2	0.1						
SSW		2.3	2.0	1.3	0.4						
SW		2.0	1.4	0.8	0.2						
WSW		2.1	1.7	1.0	0.2						
W		2.7	2.5	1.7	0.9	0.3	0.1				
WNW		3.3	4.0	3.5	2.3	0.7	0.1				
NW		2.8	2.7	2.2	1.9	0.4					
NNW		2.1	1.4	1.4	0.6	0.1					
TOT		38.8	32.9	18.5	7.8	1.7	0.3				
SUM		38.8	71.7	90.2	98.90	99.7	100.0				

24,236

OBSERVATIONS

1 JAN 72 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

LIMERICK

SITE

NE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.50	> 10.50				
N		0.8	1.5	1.8	1.0	0.1					
NNE		0.7	1.3	1.4	0.4	0.1					
NE		0.5	1.1	1.1	0.3						
ENE		0.7	1.6	1.4	0.4	0.1	0.1				
E		1.0	2.7	2.1	0.7	0.1					
ESE		0.7	1.6	1.3	0.3						
SE		0.7	1.4	1.3	0.3	0.1					
SSE		0.8	1.6	1.5	0.4						
S		1.2	2.8	2.6	0.7	0.1					
SSW		1.1	2.3	2.2	1.1	0.3	0.1				
SW		0.9	1.9	1.4	0.4	0.1					
WSW		1.0	1.8	1.6	0.5	0.1	0.1				
W		1.4	2.4	2.1	1.2	0.4	0.3				
WNW		1.4	4.2	4.4	3.4	1.3	0.8				
NW		1.1	2.6	3.3	3.0	1.1	0.6				
NNW		0.7	1.4	1.6	1.4	0.4	0.1				
TOT		14.82	32.34	31.04	15.48	4.24	2.08				
SUM		14.82	47.16	78.20	93.68	97.92	100.0				

23,946
OBSERVATIONS

1 JAN 72 - 31 DEC 74
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

LIMERICK

SITE

NE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.50	> 10.50				
N		0.6	1.3	1.8	1.3	0.2					
NNE		0.5	1.0	1.6	0.6	0.1					
NE		0.4	0.9	1.4	0.6	0.1					
ENE		0.6	1.3	1.6	0.8	0.2	0.1				
E		0.7	1.7	2.3	1.1	0.1					
ESE		0.4	1.2	1.4	0.7	0.1					
SE		0.5	1.1	1.5	0.5	0.1					
SSE		0.4	1.2	1.7	0.6	0.1	0.1				
S		0.8	2.1	2.8	1.2	0.3	0.1				
SSW		0.8	1.8	2.4	1.4	0.4	0.1				
SW		0.7	1.9	1.8	0.8	0.1	0.1				
WSW		0.7	1.8	1.7	0.7	0.2	0.1				
W		0.9	2.6	3.0	1.7	0.4	0.5				
WNW		0.8	2.8	4.7	3.9	1.6	1.2				
NW		0.7	1.9	3.1	3.2	1.3	0.4				
NNW		0.5	1.2	1.8	1.6	0.5	0.1				
TOT		9.86	25.70	34.70	20.63	5.68	3.44				
SUM		9.86	35.56	70.26	90.88	96.56	100.00				

25, 265

OBSERVATIONS

1 JAN 72 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

MAINE YANKEE

SITE LOCATION:

The Maine Yankee Atomic Power Station site (43.95°N/69.70°W) is located in the mid-coastal region of Maine, 16 km ENE of Bath and 9 km SSE of Wiscasset, in Lincoln County.

TOPOGRAPHY:

The mid-coastal region of Maine is characterized by many inlets, bays, channels, harbors, rocky islands, and promontories. The area adjacent to the site also has many small forested hills.

ON-SITE WIND MEASUREMENTS:

A 45-m tower was installed at approximately 14 m (MSL) elevation. Instrumentation consists of a recording Bendix-Friez "Aerovane" system at the top of the tower.

NRC Docket No. 50-309

JOINT FREQUENCY DISTRIBUTION

MAINE YANKEE

SITE

E - CENTRAL - MAINE

LOCATION

SPEED (m/s)

DIRECTION	CALM									
	0.22	1.56	3.35	5.59	8.27	> 8.27				
N		0.40	2.00	3.01	1.57	0.47				
NNE		0.25	2.42	2.43	1.21	0.52				
NE		0.80	3.01	1.61	0.56	0.28				
ENE		0.71	1.52	0.54	0.16	0.02				
E		0.54	1.06	0.46	0.22	0.04				
ESE		0.63	1.00	0.62	0.33	0.02				
SE		0.76	1.14	0.67	0.21	0.19				
SSE		1.04	1.69	0.88	0.35	0.16				
S		1.25	3.08	3.80	2.29	0.81				
SSW		1.28	4.28	3.37	2.27	0.88				
SW		1.17	3.29	2.12	1.42	0.26				
WSW		0.67	1.65	1.63	1.07	0.50				
W		0.52	1.72	1.27	0.33	0.14				
W'NW		0.67	1.65	1.63	1.07	0.50				
NW		0.67	1.73	2.25	2.85	1.30				
NNW		0.63	1.78	2.56	2.94	0.86				
TOT	1.54	12.11	33.03	28.24	18.40	6.64				
SUM	1.54	13.65	46.68	74.92	93.32	99.96				

8760
OBSERVATIONS1 JUL 67 - 30 JUN 68
PERIOD

VELOCITY-DURATION CURVE

MARBLE HILL

SITE LOCATION:

The Marble Hill Nuclear Generating Station site (38.60°N/85.45°W) is in SE Indiana, 10 km NE of New Washington, in Jefferson County. The site is 48 km NE of Louisville, KY, and 105 km SW of Cincinnati, OH. It is situated 730 m W of the Ohio River.

TOPGRAPHY:

Considerable variation exists in the terrain surrounding the Marble Hill station site. Flat to gently rolling terrain characterizes the Indiana side of the Ohio River; however, near the Ohio River, the land becomes very hilly and then changes to ravines and bluffs along the river valley. Into Kentucky, the land becomes rolling and somewhat rough. Elevations range from 135 m (MSL) along the Indiana floodplain to 275 m (MSL) in Kentucky.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological monitoring program began on 1 Jan 1974. There are two towers instrumented as follows. A 60-m tower was erected on a hill above the Ohio River at an elevation of about 240 m (MSL). It was instrumented at 10 m and 60 m with Climet WS-011-1 cup anemometers for wind speed, and Climet WD-012-10 direction sensors. A 10-m tower was also erected in the river valley at about 135 m (MSL), and similarly instrumented.

The attached data are from the 10-m level of the 60-m tower.

NRC Docket No. 50-546

JOINT FREQUENCY DISTRIBUTION

MARBLE HILL

SITE

SE - INDIANA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.25	1.50	3.00	5.00	8.00	10.00	> 10.00				
N			0.84	1.82	1.30	0.55	0.06					
NNE			0.91	1.25	1.03	0.37	0.13	0.01				
NE			1.45	2.17	1.39	0.70	0.04					
ENE			1.40	2.53	1.49	0.48	0.06					
E			1.08	2.09	1.16	0.23	0.06					
ESE			0.71	1.30	0.91	0.04						
SE			0.73	1.17	0.85	0.12						
SSE			0.73	1.56	1.59	0.11						
S			1.41	3.05	2.64	0.92	0.13	0.03				
SSW			2.43	5.26	4.76	1.90	0.24					
SW			2.02	4.39	4.30	1.98	0.10	0.07				
WSW			1.11	2.56	2.39	1.15	0.20	0.04				
W			0.86	1.53	1.98	1.39	0.20	0.02				
WNW			0.75	1.22	2.37	1.54	0.20	0.01				
NW			0.52	1.23	1.95	0.77	0.03					
NNW			0.46	1.31	1.45	0.45	0.11					
TOT		2.19	17.41	34.44	31.56	12.70	1.56	0.18				
SUM		2.19	19.60	54.04	85.60	98.30	99.86	100.04				

8760

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site (35.43°N/80.95°W) is in NW Mechlenburg County, North Carolina, 27 km NNW of Charlotte. The site is bounded to the west by the Catawba River channel and to the north by the 32,500-acre Lake Norman. Lake Norman is impounded by Duke Power Company's Cowens Ford Dam hydroelectric station, which is immediately west of the site and on the Catawba River channel.

TOPOGRAPHY:

The McGuire site is located in the rolling Appalachian Piedmont area. The site varies in elevation from about 200 m to 250 m (MSL). Lake Norman extends some 55 km northward, and the tail water of Cowan's Ford Dam is the upper limit of Mountain Island Lake, which extends south for about 25 km. The east abutment dike of Cowan's Ford Dam has an elevation of 238 m while Lake Norman full pond is at 232 m.

ON-SITE WIND MEASUREMENTS:

Wind data are taken at 10 m and 40 m using Packard-Bell Model W/S 101B series wind speed-direction systems. The base of the tower is at 232 m (MSL).

NRC Docket No. 50-369

JOINT FREQUENCY DISTRIBUTION

McGUIRE

SITE

NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	> 9.49
N		0.89	1.69	1.33	0.78	0.35	0.24	0.17	0.12	0.04	0.04	
NNE		0.86	2.04	1.53	1.18	0.63	0.22	0.17	0.01	0.01	0.03	
NE		1.23	3.23	3.09	2.11	0.96	0.38	0.05			0.01	
ENE		0.87	2.89	2.20	0.97	0.47	0.17	0.05			0.01	
E		0.83	2.07	1.61	0.70	0.26	0.01		0.01			
ESE		1.05	1.50	0.68	0.40	0.04						
SE		1.81	1.16	0.47	0.17	0.08	0.01					
SSE		1.52	0.87	0.35	0.12	0.04	0.03					
S		2.90	2.13	0.91	0.58	0.27	0.08	0.03				
SSW		3.18	2.15	1.43	0.89	0.59	0.31	0.13	0.13	0.01	0.03	
SW		3.54	2.75	1.87	1.34	0.93	0.72	0.47	0.22	0.04	0.10	
WSW		1.84	1.46	0.82	0.69	0.46	0.33	0.22	0.20	0.03		
W		1.24	1.35	0.83	0.89	0.51	0.31	0.12	0.06	0.01		
WNW		0.79	0.92	0.69	0.50	0.37	0.41	0.23	0.09	0.06	0.10	
NW		0.81	1.14	0.59	0.66	0.28	0.33	0.17	0.13	0.04	0.03	
NNW		0.59	1.05	0.72	0.55	0.38	0.22	0.28	0.08	0.09	0.01	
TOT		1.87	23.95	28.39	19.10	12.52	6.61	3.76	2.07	1.05	0.35	0.36
SUM		1.87	25.82	54.21	73.31	85.83	92.44	96.20	98.27	99.32	99.65	100.01

7826

OBSERVATIONS

17 OCT 70 - 16 OCT 71

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

McGUIRE

SITE

NORTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	> 9.49
	0.44										
N		0.55	1.52	1.37	1.23	0.85	0.56	0.46	0.29	0.20	0.15
NNE		0.64	2.16	2.24	1.23	0.85	0.73	0.44	0.36	0.16	0.21
NE		0.84	2.78	2.50	1.37	1.22	1.03	0.53	0.26	0.06	
ENE		0.50	1.57	1.07	0.61	0.55	0.18	0.04	0.01		0.01
E		0.46	1.23	1.32	0.53	0.38	0.23	0.11	0.01	0.01	
ESE		0.44	0.89	0.61	0.30	0.18	0.14	0.05			
SE		0.56	0.94	0.82	0.69	0.20	0.15	0.04	0.03		
SSE		0.45	0.95	0.90	0.59	0.43	0.29	0.10	0.08		
S		0.48	1.00	1.23	1.37	0.80	0.55	0.24	0.11	0.08	0.05
SSW		0.48	1.76	2.27	2.33	1.71	1.18	0.74	0.40	0.18	0.14
SW		0.70	2.42	2.57	2.31	1.42	0.69	0.60	0.35	0.18	0.15
WSW		0.53	1.49	1.57	1.00	0.58	0.40	0.11	0.01	0.03	
W		0.51	0.95	1.07	0.84	0.53	0.48	0.23	0.08	0.05	0.06
WNW		0.29	0.70	0.73	0.84	0.59	0.41	0.33	0.18	0.10	0.11
NW		0.48	0.98	0.90	1.00	0.90	0.56	0.41	0.49	0.20	0.21
NNW		0.46	0.87	0.95	0.64	0.66	0.53	0.51	0.24	0.05	0.09
TOT	0.18	8.38	22.21	22.11	16.88	11.84	8.10	4.94	2.90	1.29	1.19
SUM	0.18	8.56	30.77	52.88	69.76	81.60	89.70	94.64	97.54	98.83	100.02

7975

OBSERVATIONS

17 OCT 70 - 16 OCT 71

PERIOD

VELOCITY-DURATION CURVE

MIDLAND

SITE LOCATION:

The site (43.58°N/84.23°W) is immediately south of Midland, Michigan, in Midland County, in the east central part of lower Michigan. The site location lies south of the Tittabawassee River, outside of the city limits of Midland. Saginaw Bay, an arm of Lake Huron, lies about 27 km ENE, the city of Saginaw is 28 km SE and Flint is 76 km SE.

TOPOGRAPHY:

The topography of the site is comparatively flat with elevations ranging from 183 m to 190 m (MSL). It is estimated that there are no changes in elevation greater than 15 m within 80 km. The site is covered with grain type vegetation and occasional groups of trees on the order of 15 m high.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made from three towers, one 90 m and two 10 m towers. The 90 m tower is used to measure wind speed and direction at 10 m and 60 m, and also wind speed only at 40 m and 90 m. Base elevation is at 187 m (MSL). The two 10-m towers are supplemental - one located near the bank of the Tittabawassee River of 183 m (MSL) to sample winds from the NE after they traverse the Dow Chemical Co. plant, and the other near the cooling pond at 191 m (MSL) to sample winds before they traverse the pond. The instruments being used are Climet WS-011-1 (speed) and the Climet WD-012-30 (direction) at all locations. The attached data are from the 10-m level of the 90-m tower.

NRC Docket No. 50-329

JOINT FREQUENCY DISTRIBUTION

MIDLAND

SITE

E - CENTRAL - MICHIGAN

LOCATION

SPEED (m/s)

	CALM 0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.03	0.70	1.27	1.00	0.06					
NNE		0.12	0.57	1.54	0.74	0.10	0.01				
NE		0.09	1.51	2.72	0.97	0.20					
ENE		0.25	2.54	2.31	0.87	0.03					
E		0.45	2.27	1.59	0.11	0.01					
ESE		0.55	2.89	0.81	0.05						
SE		0.72	2.27	1.03	0.36						
SSE		0.81	2.91	1.80	0.82	0.09					
S		0.84	3.12	2.39	0.98	0.15	0.02				
SSW		0.61	2.90	3.75	2.36	0.39	0.07				
SW		0.38	2.65	3.55	2.27	0.28	0.10				
WSW		0.53	2.40	3.37	2.70	0.69	0.23				
W		0.28	2.50	2.51	1.77	0.62	0.07				
WNW		0.21	1.83	2.59	1.79	0.60	0.09				
NW		0.11	1.02	2.00	2.12	0.60	0.21				
NNW		0.08	0.51	1.61	2.22	0.43	0.06				
TOT	0.26	6.06	32.59	34.84	21.13	4.25	0.86				
SUM	0.26	6.32	38.91	73.75	94.88	99.13	99.99				

8663

OBSERVATIONS

1 MAR 75 - 29 FEB 76

PERIOD

VELOCITY-DURATION CURVE

MILLSTONE POINT

SITE LOCATION:

The Millstone Point site (41.31°N/72.17°W) is located in New London County, Connecticut on the north shore of Long Island Sound, on the east side of the Niantic River estuary. The site is about 65 km SE of Hartford and 8 km WSW of New London.

TOPOGRAPHY:

The terrain in New London County is varied, rising from a coastal plain at sea level near the site to 135 m (MSL), 16 km NW in the foothills of the eastern highlands. The topography is marked by low rolling hills rising inland from the shoreline. To the south (E through W) are the open waters of Long Island Sound.

ON-SITE WIND MEASUREMENTS:

A 46-m tower was placed in operation in August 1965 at near sea level. Wind speed and direction were measured by Bendix-Friez "Aerovanes" at 10 m and 46 m. In late 1973, a 136-m tower was installed at 4 m (MSL) and instrumented at 10 m, 43 m, 114 m, and 136 m, with Bendix Model 2416914/2416970 wind sensors.

NRC Docket Nos. 50-245, -336, -423

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N			2.43	2.33	2.01	0.40	0.03					
NNE			2.13	1.97	1.06	0.14	0.07					
NE			1.92	1.56	1.38	0.35	0.14					
ENE			0.88	0.95	0.66	0.13	0.04					
E			1.16	1.21	1.19	0.67	0.09					
ESE			1.03	1.48	0.99	0.42	0.02					
SE			1.69	1.90	0.97	0.32	0.11					
SSE			1.30	1.42	0.78	0.21	0.08					
S			1.40	1.60	1.17	0.42	0.09					
SSW			1.20	1.60	1.03	0.52	0.16					
SW			1.37	2.72	2.26	1.05	0.23					
WSW			1.31	2.72	3.55	2.27	0.57					
W			1.49	1.90	2.88	2.10	1.19					
WNW			1.16	1.37	1.52	1.09	0.50					
NW			1.35	1.56	1.70	1.60	0.59					
NNW			1.74	2.18	2.37	1.44	0.28					
TOT		5.11	23.56	28.49	25.51	13.13	4.21	0				
SUM		5.11	28.67	57.16	82.67	95.79	100.00					

15,092

OBSERVATIONS

1 DEC 65 - 30 NOV 67

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
	0.22										
N		0.68	1.99	2.16	1.16	0.43					
NNE		0.72	1.84	1.95	0.91	0.64					
NE		0.46	1.22	1.08	0.78	0.35					
ENE		0.41	0.77	0.96	0.63	0.43					
E		0.60	1.03	1.54	1.23	0.83					
ESE		0.48	0.87	1.34	0.63	0.30					
SE		0.43	0.78	1.14	0.29	0.24					
SSE		0.62	0.74	0.69	0.35	0.13					
S		0.77	1.18	1.57	0.58	0.29					
SSW		0.64	1.26	1.57	0.91	0.69					
SW		0.71	2.11	2.60	1.74	1.20					
WSW		0.81	2.14	3.67	3.20	2.27					
W		1.25	2.41	2.90	1.93	1.90					
WNW		0.76	1.75	1.81	1.31	1.63					
NW		0.69	1.51	2.25	2.23	2.18					
NNW		0.62	1.51	2.80	2.02	0.72					
TOT	2.08	10.65	23.11	30.02	19.90	14.24	0				
SUM	2.08	12.73	35.84	65.86	85.76	100.0					

14,282
OBSERVATIONS1 DEC 65 - 30 NOV 67
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N			1.10	3.05	2.62	0.46	0.02					
NNE			1.25	3.09	2.27	0.49	0.02					
NE			0.84	1.82	1.31	0.45	0.18	0.12				
ENE			1.07	0.78	0.94	0.47	0.24	0.04				
E			0.32	0.77	1.27	1.41	0.80	0.08	0.01			
ESE			0.38	1.38	1.74	0.70	0.14	0.01	0.01			
SE			0.46	1.74	0.92	0.37	0.09	0.02				
SSE			0.78	1.25	0.82	0.19	0.14	0.08				
S			0.59	1.48	0.78	0.28	0.15	0.05	0.01			
SSW			0.32	1.30	1.94	1.54	0.45	0.17				
SW			0.50	2.08	3.92	1.70	0.44	0.08	0.01			
WSW			0.63	1.95	3.53	2.45	0.83	0.34	0.01			
W			0.75	1.66	2.00	1.63	0.52	0.20	0.01			
WNW			0.94	2.06	2.24	1.63	0.60	0.14				
NW			0.78	3.04	3.49	2.04	0.54	0.08				
NNW			0.78	2.77	3.60	0.99	0.07	0.01				
TOT		1.33	11.48	30.24	33.38	16.81	5.26	1.43	0.07	0		
SUM		1.33	12.81	43.05	76.43	93.24	98.50	99.93	100.0			

8448

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N			0.31	1.44	2.98	1.52	0.33	0.04				
NNE			0.25	1.34	2.76	1.78	0.20	0.02				
NE			0.14	0.84	1.52	0.89	0.37	0.20	0.07			
ENE			0.22	0.91	1.02	0.66	0.35	0.08				
E			0.15	0.77	1.03	1.26	0.76	0.17	0.02			
ESE			0.27	0.79	1.47	0.93	0.31	0.13		0.01		
SE			0.28	0.97	1.30	0.79	0.15	0.13	0.01			
SSE			0.22	0.60	0.95	0.70	0.20	0.17	0.08			
S			0.20	0.90	1.05	0.53	0.22	0.17	0.05			
SSW			0.28	1.09	1.85	1.70	1.19	0.52	0.07			
SW			0.32	1.30	3.28	3.07	1.12	0.48	0.05			
WSW			0.45	1.68	3.43	3.86	1.85	0.73	0.13			
W			0.35	2.01	2.22	1.78	0.64	0.26	0.01			
WNW			0.32	1.71	2.75	2.03	1.08	0.39	0.05			
NW			0.30	1.90	3.49	2.86	1.24	0.39	0.02			
NNW			0.39	1.26	2.89	2.03	0.41	0.07				
TOT		0.66	4.47	19.51	33.99	26.42	10.43	3.95	0.57	0.01		
SUM		0.66	5.13	24.64	58.63	85.05	95.48	99.43	99.99	100.0		

8464

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N			0.11	0.61	1.23	2.36	0.85	0.19				
NNE			0.11	0.50	1.45	2.49	1.19	0.32				
NE			0.19	0.52	0.97	1.31	0.48	0.29	0.12			
ENE			0.12	0.80	1.49	0.76	0.31	0.32	0.01			
E			0.11	0.51	1.22	1.19	0.89	0.52	0.06	0.01		
ESE			0.12	0.55	1.14	1.07	0.35	0.10	0.04	0.02		
SE			0.14	0.69	0.87	0.72	0.35	0.30	0.06	0.02		
SSE			0.19	0.61	0.76	0.64	0.38	0.21	0.25	0.08		
S			0.11	0.58	1.19	0.57	0.47	0.19	0.06	0.01		
SSW			0.21	0.70	1.93	1.62	1.55	1.10	0.38	0.05		
SW			0.12	0.92	2.93	3.45	2.53	1.22	0.27	0.01		
WSW			0.17	0.60	2.74	4.26	2.59	1.45	0.23			
W			0.26	0.69	1.86	2.84	1.36	0.36	0.07			
WNW			0.14	0.67	1.94	2.79	1.56	0.69	0.13			
NW			0.11	0.69	2.00	3.89	2.06	0.91	0.12			
NNW			0.11	0.72	1.66	2.93	1.55	0.26	0.04			
TOT	0.10	2.31	10.36	25.40	32.90	18.46	8.43	1.84	0.21			
SUM	0.10	2.41	12.77	38.17	71.06	89.52	97.95	99.79	100.0			

8387
OBSERVATIONS1 JAN 74 - 31 DEC 74
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MILLSTONE POINT

SITE

CONNECTICUT

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N		0.12	0.47	1.10	2.13	1.31	0.40					
NNE		0.11	0.60	1.13	2.07	1.21	0.41	0.04				
NE		0.14	0.72	1.29	0.85	0.36	0.08					
ENE		0.31	1.14	1.51	0.71	0.29	0.19	0.06				
E		0.18	0.42	0.90	1.07	0.75	0.59	0.06	0.04			
ESE		0.04	0.54	1.08	0.95	0.42	0.18	0.05	0.04			
SE		0.14	0.62	1.04	0.89	0.36	0.23	0.16	0.02			
SSE		0.17	0.68	0.86	0.53	0.35	0.25	0.25	0.14			
S		0.11	0.51	1.26	0.69	0.36	0.28	0.05	0.02			
SSW		0.16	0.72	1.68	1.51	1.47	1.15	0.37	0.08			
SW		0.16	0.61	2.65	3.20	2.59	1.72	0.38	0.01			
WSW		0.14	0.63	2.24	3.75	2.66	1.88	0.29	0.01			
W		0.11	0.61	1.70	2.90	2.02	0.63	0.11				
WNW		0.19	0.75	1.75	3.11	1.93	0.77	0.18				
NW		0.12	0.54	1.81	3.53	2.27	1.19	0.17				
NNW		0.07	0.62	1.63	2.49	2.13	0.48	0.06				
TOT	0.10	2.26	10.19	23.61	30.36	20.47	10.42	2.22	0.37			
SUM	0.10	2.36	12.55	36.16	66.52	87.00	97.41	99.63	100.0			

8352

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

MONTAGUE

SITE LOCATION:

The Montague site (42.58°N/72.53°W) is located in the north-western Massachusetts township of Montague, Franklin County, 2 km SSE of Turner Falls and 3 km E of the Connecticut River.

TOPOGRAPHY:

The terrain in the immediate vicinity of the site (plant grade elevation - 105 m (MSL)) is relatively flat for 2 to 3 km radial, except for a nearby ridge to the NW at about 150 m (MSL). At greater distances from the site (out to 8 km), the terrain is gently rolling with peaks to 180 m (MSL) from the S through NE. In other directions, the terrain is even more rugged in the peaks between 275 m and 400 m (MSL).

ON-SITE WIND MEASUREMENTS:

The on-site meteorological measurements program was initiated on 1 Sept 1975. A 152-m tower, at an elevation of 95 m (MSL) is instrumented with Climatronics Model F460 wind systems at 10 m, 46 m, 99 m and 151 m heights.

NRC Docket No. 50-496

JOINT FREQUENCY DISTRIBUTION

MONTAGUE

SITE

NW - MASSACHUSETTS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.4	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N			3.42	2.13	0.10							
NNE			5.21	1.56	0.19							
NE			4.24	1.31	0.32	0.05						
ENE			2.29	0.91	0.10	0.01	0.01					
E			1.28	0.29	0.04							
ESE			0.79	0.46	0.02							
SE			0.91	0.30	0.07							
SSE			1.55	0.59	0.14							
S			3.35	3.39	0.59	0.01						
SSW			3.79	4.63	1.12	0.06	0.01					
SW			3.42	2.29	0.35	0.05						
WSW			2.81	1.72	0.19							
W			2.77	2.62	1.32	0.12						
WNW			2.54	3.45	1.85	0.37	0.04					
NW			2.15	2.34	0.80	0.21	0.01					
NNW			2.07	1.41	0.27	0.02						
TOT		19.53	42.59	29.41	7.47	0.92	0.07	0	0	0		
SUM		19.53	62.12	91.53	99.00	99.93	100.0					

8018

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MONTAGUE

SITE

NW - MASSACHUSETTS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.5	3.3	5.5	8.2	10.8	15.0	20.0	> 20.0		
	0.4										
N		1.38	2.37	2.04	0.83	0.19					
NNE		1.57	4.83	3.42	0.92	0.05	0.01				
NE		1.78	3.90	1.68	0.30	0.04					
ENE		1.09	1.12	0.43	0.06	0.05	0.01				
E		0.87	0.70	0.63	0.03	0.03					
ESE		0.79	0.44	0.38	0.08	0.01					
SE		0.69	0.56	0.28	0.10	0.03					
SSE		0.92	1.61	1.18	0.18						
S		1.12	4.45	5.38	1.12	0.16					
SSW		1.35	4.39	3.22	1.12	0.26					
SW		1.73	3.60	1.29	0.15	0.04					
WSW		1.42	2.03	0.90	0.40	0.08					
W		1.28	2.06	2.25	1.02	0.26	0.01				
WNW		1.00	1.68	3.22	2.60	0.60	0.11				
NW		0.92	1.34	2.37	1.09	0.16					
NNW		0.99	1.34	1.33	0.50	0.11					
TOT	1.99	18.89	36.42	30.00	10.47	2.07	0.15	0	0		
SUM	1.99	20.88	57.31	87.31	97.78	99.85	100.0				

7973

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MONTAGUE

SITE

NW - MASSACHUSETTS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
	0.4										
N		0.48	2.33	2.05	1.61	0.45	0.09				
NNE		1.05	3.43	4.78	2.19	0.24	0.05				
NE		0.74	2.24	1.50	0.38	0.08	0.11				
ENE		0.66	0.84	0.49	0.10	0.03	0.04	0.01			
E		0.48	0.38	0.28	0.19		0.04				
ESE		0.31	0.30	0.33	0.11	0.03					
SE		0.35	0.40	0.38	0.16	0.03	0.01				
SSE		0.50	0.91	1.13	0.66	0.11	0.05				
S		1.14	3.11	5.69	3.94	0.95	0.20				
SSW		1.21	3.60	3.41	2.05	0.65	0.25				
SW		1.21	2.81	1.39	0.61	0.13	0.01				
WSW		0.96	1.98	1.23	0.25	0.13	0.04				
W		0.73	1.41	2.05	1.95	0.75	0.34				
WNW		0.68	1.21	2.38	2.98	1.59	0.65	0.09			
NW		0.71	1.15	1.45	2.01	0.59	0.10	0.01			
NNW		1.21	1.19	1.04	0.70	0.18	0.06				
TOT	2.11	13.04	27.34	29.55	19.89	5.91	2.04	0.11	0		
SUM	2.11	15.16	42.49	72.04	91.93	97.85	99.89	100.0			

7997

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MONTAGUE

SITE

NW - MASSACHUSETTS

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.4	1.5	3.3	5.5	8.2	10.8	15.0	20.0	>20.0		
N		0.63	1.99	1.86	2.19	0.92	0.34	0.03				
NNE		0.71	2.20	4.14	3.23	0.66	0.14					
NE		0.61	1.41	1.54	0.71	0.13	0.09	0.01				
ENE		0.34	1.07	0.74	0.36	0.25	0.04	0.06				
E		0.35	0.61	0.49	0.28	0.06	0.04	0.01				
ESE		0.13	0.43	0.47	0.13	0.06						
SE		0.34	0.41	0.57	0.18	0.06	0.01	0.01				
SSE		0.23	0.71	0.75	0.49	0.14	0.05	0.01				
S		0.43	2.15	4.46	4.62	1.41	0.39	0.03				
SSW		0.63	2.59	3.54	3.25	1.15	0.47	0.04				
SW		0.83	2.38	1.73	1.27	0.25	0.13					
WSW		0.63	1.88	1.68	0.93	0.22	0.10	0.01				
W		0.49	1.37	1.69	1.47	0.48	0.19	0.01				
WNW		0.57	1.16	2.23	2.45	1.41	0.66	0.09				
NW		0.54	1.27	1.38	2.32	1.42	0.45	0.01	0.01			
NNW		0.65	1.35	1.45	1.46	1.25	0.61	0.01				
TOT	0.76	8.11	22.98	28.78	25.34	9.88	3.71	0.41	0.01			
SUM	0.76	8.87	31.85	60.63	85.98	95.86	99.57	99.99	100.0			

7730

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

MONTICELLO

SITE LOCATION:

The Monticello site (45.33°N/93.83°W) is in east central Minnesota, about 5 km NW of the village of Monticello, in Wright County. The site is also about 35 km SE of St. Cloud and about 50 km NW of the nearest suburbs of Minneapolis.

TOPOGRAPHY:

The site is on the SW bank of the Mississippi River, which runs NW-SE in the region. The local terrain is characterized by relatively level areas which rise sharply above the river. Three distinct bluffs exist at the site at elevations of 280 m, 283 m, and 286 m (MSL). Normal river level is 275 m (MSL). About 2 km N and S of the site are bluffs to 290 m (MSL). Beyond 2 km N, the terrain is relatively level with numerous lakes and wooded areas. To the S, W, and E, the terrain is hilly and dotted with numerous small lakes.

ON-SITE WIND MEASUREMENTS:

In early 1967, a 46-m tower was installed and instrumented with Bendix-Friez "Aerovane" wind systems at 6-m and 43-m heights. Base elevation is at 283 m (MSL). In early 1973, a 100-m tower was installed at very nearly the same base elevation, and it was instrumented at 10 m, 43 m, and 100 m using Climet WS-011-1 and Climet WD-012-10 wind sensor systems.

NRC Docket No. 50-263

JOINT FREQUENCY DISTRIBUTION

MONTICELLO

SITE

E CENTRAL - MINNESOTA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	> 10.95				
	0.22										
N		0.62	2.05	1.82	1.10	0.05	0.01				
NNE		0.48	1.47	1.58	0.32	0.15	0.04				
NE		0.37	1.47	1.25	0.37	0.04					
ENE		0.64	1.69	1.01	0.26						
E		0.52	2.21	1.84	0.65						
ESE		0.42	1.88	1.61	0.98	0.02					
SE		0.58	2.24	2.73	1.59	0.06					
SSE		0.64	2.27	2.69	1.52	0.41	0.02				
S		0.83	2.56	3.61	2.45	0.59	0.07				
SSW		0.53	1.54	2.01	1.20	0.11					
SW		0.73	1.73	1.79	0.49	0.01					
WSW		0.89	2.08	1.25	0.40	0.06					
W		0.82	2.84	2.30	0.59	0.23					
WNW		0.48	2.01	2.93	2.35	0.20					
NW		0.58	3.37	3.94	2.48	0.57	0.01				
NNW		0.47	2.50	2.79	1.64	0.25					
TOT	0.02	9.60	33.91	35.15	18.40	2.76	0.16				
SUM	0.02	9.62	43.54	78.69	97.08	99.84	100.0				

8094

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

JOINT FREQUENCY DISTRIBUTION

MONTICELLO

SITE

E CENTRAL - MINNESOTA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.16	0.79	1.51	1.63	0.81	0.40					
NNE		0.21	0.51	0.68	1.08	0.73	0.29					
NE		0.24	0.67	0.89	1.79	0.80	0.16					
ENE		0.25	0.67	1.16	1.09	0.11	0.01					
E		0.23	0.53	1.28	1.33	0.67	0.20					
ESE		0.11	0.40	0.76	1.51	1.08	0.13					
SE		0.17	0.63	1.12	2.33	1.83	0.19					
SSE		0.11	0.61	1.43	2.11	1.67	0.65					
S		0.09	0.77	1.67	3.20	4.04	1.20					
SSW		0.23	0.61	1.33	1.63	2.16	0.65					
SW		0.23	0.91	1.36	1.60	1.55	0.13					
WSW		0.23	0.89	0.97	1.47	0.72	0.17					
W		0.20	1.51	1.39	2.36	1.59	0.49					
WNW		0.17	0.84	1.55	3.40	2.65	0.65					
NW		0.21	1.12	1.85	3.76	3.61	0.56					
NNW		0.19	0.69	1.09	1.92	1.65	1.00					
TOT	0	3.03	12.15	20.05	32.19	25.68	6.91					
SUM		3.03	15.18	35.23	67.41	93.09	100.0					

7497

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

MONTICELLO

SITE

E CENTRAL - MINNESOTA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
	0.22										
N		0.15	0.51	1.59	1.77	0.45	0.01				
NNE		0.16	0.45	1.31	1.06	0.38	0.01				
NE		0.10	0.43	1.31	1.02	0.30	0.02				
ENE		0.09	0.80	2.07	1.84	0.28	0.04				
E		0.14	0.54	1.10	0.90	0.20	0.03				
ESE		0.16	0.85	1.94	2.23	0.60	0.09				
SE		0.14	0.82	1.82	2.21	0.32	0.01				
SSE		0.18	1.02	2.45	2.99	0.97	0.06				
S		0.23	0.81	2.50	2.33	1.15	0.38				
SSW		0.14	1.13	2.99	3.25	1.10	0.32				
SW		0.16	0.82	2.03	2.11	0.31	0.13				
WSW		0.13	0.90	1.99	1.49	0.31	0.01				
W		0.16	0.56	1.50	1.76	0.36	0.06				
WNW		0.11	0.53	3.09	3.00	1.50	0.45				
NW		0.10	0.88	2.82	3.90	1.55	0.98				
NNW		0.16	1.17	3.87	4.83	1.29	0.55				
TOT	0.08	2.31	12.22	34.16	36.69	11.04	3.19				
SUM	0.08	2.46	14.86	49.04	85.73	96.37	99.96				

6721

OBSERVATIONS

9 FEB 67 - 10 FEB 68

PERIOD

VELOCITY-DURATION CURVE

NORTH ANNA

SITE LOCATION:

The North Anna Power Station site (38.06°N/77.79°W) is located in the NE portion of Virginia in Louisa County. The site is 10 km ENE of Mineral; 19 km E of Louisa; about 65 km NNW of Richmond; 60 km E of Charlottesville, 40 km SW of Fredericksburg, and 110 km SW of Washington, D.C.

TOPOGRAPHY:

The site region is characteristic of the central Appalachian Piedmont Plateau with a gently undulating surface varying from 60 m to 150 m (MSL). The site is on a peninsula on the southern shore of a newly formed reservoir, Lake Anna. An earth dam about 8 km SE forms the main reservoir, which is about 27 km long on the North Anna River. The North Anna River flows SE, joining the South Anna to form the Pamunkey about 43 km SE. The region surrounding the site is covered with forest and brushwood interspersed with an occasional farm. In general, local terrain is mainly forested with few farms.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological program is based on a 46-m tower instrumented with Bendix Friez "Aerovanes" at 11 m and 46 m. Base elevation is at 81 m (MSL).

NRC Docket Nos. 50-338, 50-404

JOINT FREQUENCY DISTRIBUTION

NORTH ANNA

SITE

NE - VIRGINIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	2.01	3.80	5.14	6.48	8.27	10.50	>10.50			
	0.22										
N		2.01	2.28	2.18	1.24	0.94	0.22	0.04			
NNE		1.15	1.28	0.80	0.63	0.58	0.11				
NE		1.27	1.65	0.88	0.39	0.24	0.02				
ENE		1.14	1.26	0.55	0.22	0.16	0.02				
E		1.94	1.34	0.63	0.43	0.12	0.06				
ESE		1.65	1.50	0.55	0.16	0.04	0.02	0.02			
SE		2.19	2.40	0.41	0.07	0.01					
SSE		1.97	2.84	1.26	0.39	0.13	0.04				
S		2.04	4.52	2.86	1.13	0.65	0.09				
SSW		1.08	2.48	1.71	0.67	0.34	0.12	0.01			
SW		0.89	1.32	1.23	0.74	0.22	0.07				
WSW		0.98	1.16	0.85	0.63	0.38	0.29	0.09			
W		2.82	2.16	1.26	0.7	0.58	0.51	0.24			
WNW		3.08	1.89	0.82	0.45	0.41	0.33	0.16			
NW		3.47	1.95	1.02	0.55	0.49	0.40	0.16			
NNW		2.30	2.03	1.54	1.08	1.00	0.43	0.07			
TOT	0.82	29.72	31.98	18.39	9.43	6.16	2.72	0.78			
SUM	0.82	30.54	62.52	80.91	90.34	96.50	99.22	100.0			

8275

OBSERVATIONS

16 SEP 71 - 15 SEP 72

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

NORTH ANNA

SITE

NE - VIRGINIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	2.01	3.80	5.14	6.48	8.27	10.50	> 10.50			
	0.22										
N		2.89	3.76	2.36	0.82	0.27	0.08				
NNE		1.58	2.04	0.94	0.39	0.15					
NE		1.67	1.92	0.62	0.33	0.08					
ENE		1.61	1.30	0.39	0.14	0.13	0.03				
E		1.81	1.54	0.53	0.14	0.04	0.03				
ESE		1.28	1.27	0.58	0.16	0.01					
SE		1.63	2.00	0.41	0.04	0.05					
SSE		1.22	2.58	0.99	0.27	0.14	0.03	0.01			
S		2.52	5.80	3.29	1.06	0.53	0.18				
SSW		1.91	3.77	2.36	0.84	0.25	0.01				
SW		1.65	2.84	1.43	0.46	0.27	0.06				
WSW		1.51	1.21	0.86	0.70	0.37	0.16				
W		2.09	1.59	0.85	0.48	0.38	0.14	0.05			
WNW		1.76	1.86	0.63	0.30	0.22	0.14				
NW		2.52	2.92	1.11	0.54	0.42	0.09	0.03			
NNW		2.35	3.05	1.51	0.80	0.49	0.19	0.04			
TOT	2.12	29.35	37.83	18.45	7.31	3.71	1.10	0.12			
SUM	2.12	31.47	69.30	87.75	95.06	98.77	99.87	100.0			

8069
OBSERVATIONS16 SEP 71 - 15 SEP 72
PERIOD

VELOCITY-DURATION CURVE

OCONEE

SITE LOCATION:

The site (34.79°N/82.90°W) is located in Oconee County, in extreme western South Carolina, about 13 km NE of Seneca. This is also 35 km NW of Anderson and 45 km WSW of Greenville.

TOPOGRAPHY:

The region is characterized by the undulating terrain of the southern Appalachian Piedmont Plateau, just SE of the Smokey Mountains. Immediately N and W of the site is Duke Power Company's Lake Keowee. To the S is Hartwell Reservoir.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made from a 46-m tower based at 243 m (MSL). Wind sensors, Packard-Bell WS-101 systems are at 10 m and 46 m (AGL).

NRC DOCKET Nos. 50-269, -287

JOINT FREQUENCY DISTRIBUTION

OCONEE

SITE

W - SOUTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
	0.44										
N		3.90	5.38	1.24	0.19	0.04	0.03	0.01			
NNE		2.34	2.24	1.14	0.20	0.05					
NE		1.82	2.61	2.34	1.26	0.41	0.13				
ENE		0.97	1.92	1.62	1.30	0.51	0.13	0.07	0.01		
E		0.96	2.22	1.28	0.41	0.16	0.07			0.01	0.01
ESE		0.88	1.33	0.57	0.21	0.03	0.04	0.01			
SE		1.18	1.76	0.67	0.08	0.01	0.04	0.03	0.01	0.01	0.01
SSE		1.32	1.96	1.28	0.37	0.04	0.04		0.03		
S		1.42	2.18	1.85	0.48	0.21	0.04	0.03	0.01		
SSW		1.28	2.24	2.22	0.98	0.67	0.14	0.03	0.03		0.01
SW		1.37	2.72	2.08	1.13	0.67	0.41	0.17	0.05	0.01	0.01
WSW		1.40	1.70	1.21	0.51	0.34	0.34	0.11	0.01	0.03	0.01
W		1.84	1.70	0.78	0.44	0.54	0.37	0.12	0.11	0.07	0.07
WNW		1.78	1.08	0.45	0.63	0.44	0.49	0.33	0.17	0.11	0.05
NW		2.05	1.66	0.25	0.27	0.32	0.24	0.09	0.04	0.03	
NNW		2.73	2.62	0.43	0.13	0.09	0.01				
TOT	0.34	27.26	35.33	19.43	8.60	4.54	2.54	1.00	0.48	0.27	0.21
SUM	0.34	27.60	62.92	82.36	90.96	95.50	98.04	99.52	99.52	99.79	100.0

7510

OBSERVATIONS

1 JAN 75 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

OCONEE

SITE

W - SOUTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
	0.44										
N		2.18	4.69	2.90	0.77	0.17	0.03	0.03	0.03		
NNE		1.28	2.44	1.41	0.63	0.19	0.03	0.03			
NE		0.97	2.28	2.05	1.57	1.09	0.40	0.19	0.04		
ENE		0.65	1.24	1.40	1.28	1.17	0.51	0.16	0.08	0.05	0.01
E		0.53	1.57	1.45	0.94	0.37	0.16	0.04	0.04		0.01
ESE		0.45	1.13	0.85	0.39	0.17	0.04	0.04		0.01	
SE		0.63	1.40	1.26	0.33	0.08	0.01	0.01	0.04	0.01	0.03
SSE		0.68	1.53	1.66	0.74	0.31	0.05	0.01	0.03		0.03
S		0.80	1.65	1.98	1.09	0.40	0.21	0.04	0.04		0.01
SSW		0.69	1.68	2.01	1.44	0.87	0.48	0.32	0.09	0.01	0.01
SW		0.70	2.06	2.10	1.44	0.96	0.51	0.43	0.28	0.09	0.07
WSW		0.81	1.44	1.30	0.80	0.45	0.27	0.24	0.24	0.08	0.04
W		1.14	1.70	1.05	0.47	0.36	0.48	0.23	0.36	0.04	0.23
WNW		0.97	1.64	0.43	0.36	0.49	0.31	0.48	0.29	0.27	0.33
NW		1.25	1.96	0.60	0.16	0.21	0.29	0.14	0.19	0.08	0.07
NNW		1.44	3.17	0.97	0.24	0.11	0.05	0.05			
TOT	0.24	15.19	31.57	23.45	12.65	7.40	3.82	2.44	1.74	0.65	0.84
SUM	0.24	15.43	47.00	70.45	83.10	90.50	94.32	96.76	98.50	99.15	99.99

8760

OBSERVATIONS

1 JAN 75 - 31 DEC 75

PERIOD

JOINT FREQUENCY DISTRIBUTION

OCONEE

SITE

W - SOUTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
	0.44										
N		5.45	8.18	2.89	0.47	0.19	0.04	0.04			
NNE		3.06	3.65	1.10	0.23	0.11	0.05	0.05	0.04	0.01	
NE		2.62	3.29	2.17	1.00	0.41	0.18	0.16	0.04		
ENE		1.57	1.68	1.12	0.97	0.28	0.12	0.04			
E		2.07	2.28	0.87	0.55	0.09	0.07	0.01			
ESE		1.53	1.65	0.39	0.09	0.05	0.01				
SE		1.02	1.80	0.55	0.21	0.01					
SSE		0.61	0.87	0.32	0.07	0.02					
S		0.54	1.17	0.18	0.08	0.06					
SSW		0.57	1.29	0.69	0.64	0.23	0.12	0.01			
SW		1.51	2.55	1.48	1.04	0.48	0.32	0.01			
WSW		1.24	1.31	1.15	0.42	0.40	0.32	0.15	0.04	0.02	0.04
W		1.53	1.46	1.07	0.61	0.59	0.46	0.25	0.14		0.04
WNW		1.37	1.34	0.54	0.46	0.29	0.11	0.08	0.06	0.01	0.01
NW		2.39	2.33	0.64	0.39	0.20	0.04	0.04		0.01	
NNW		3.14	3.55	1.08	0.16	0.05	0.04				
TOT	1.16	30.23	38.41	16.22	7.40	3.46	1.84	0.83	0.30	0.06	0.09
SUM	1.16	31.37	69.80	86.02	93.42	96.88	98.72	99.55	99.85	99.91	100.0

8537

OBSERVATIONS

19 JUN 68 - 19 JUN 69

PERIOD

VELOCITY-DURATION CURVE

PALISADES

SITE LOCATION:

The site (42.35°N/86.23°W) is on the eastern shore of Lake Michigan, on the SW side of Van Buren County, Michigan, about 7 km S of South Haven. The location is also 95 km SW of Grand Rapids and 65 km W of Kalamazoo.

TOPOGRAPHY:

The 487-acre site consists of rolling sand dunes which extend inland some 1500 m from Lake Michigan. The dunes rise from the beach level of about 180 m (MSL) to a maximum of about 230 m (MSL) and then drop off abruptly to 185 m (MSL) about 750 m E of the lakeshore. The land inland of the site is slightly rolling. The dunes are wooded, while east from the dunes, the land is partly wooded with many open fields, berry farms, and orchards.

ON-SITE WIND MEASUREMENTS:

The meteorological monitoring program at Palisades uses two 17-m towers, one inland at the eastern foot of the dunes at 185 m (MSL), and the other part way up the western slope of a dune with the tower base at 220 m (MSL). Wind sensors are Gill type propeller vanes, and data are taken every 15 minutes.

NRC Docket No. 50-255

JOINT FREQUENCY DISTRIBUTION

PALISADES

SITE

SW - MICHIGAN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			0.03	0.30	1.09	1.43	0.80	0.71				
NNE			0.05	0.37	0.85	1.22	0.42	0.08				
NE			0.05	0.56	0.88	0.40	0.05	0.01				
ENE			0.03	0.41	1.23	0.58	0.06	0.01				
E			0.02	0.35	1.25	1.29	0.35	0.14				
ESE			0.04	0.25	1.47	2.39	1.84	3.21				
SE			0.02	0.22	0.85	2.52	3.69	6.00				
SSE			0.01	0.18	0.90	2.55	3.31	1.65				
S			0.02	0.17	1.15	2.19	0.96	0.46				
SSW			0.02	0.25	0.77	1.01	0.47	0.29				
SW			0.03	0.27	0.46	0.48	0.36	0.39				
WSW			0.04	0.28	0.90	1.29	1.43	3.26				
W			0.02	0.30	1.04	2.18	2.49	5.09				
WNW			0.05	0.25	0.79	0.90	0.72	2.98				
NW			0.05	0.33	0.86	1.07	0.93	5.37				
NNW			0.03	0.29	0.96	1.78	1.25	4.76				
TOT	1.66	0.51	4.78	15.45	23.28	19.13	34.41					
SUM	1.66	2.17	6.95	22.40	45.68	64.81	99.22					

35,040

OBSERVATIONS

1 SEP 73 - 31 AUG 74

PERIOD

VELOCITY-DURATION CURVE

PALO VERDE

SITE LOCATION:

The site (33.39°N/112.86°W) is in Maricopa County, in SW Arizona, 24 km W of Buckeye, and 58 km W of Phoenix.

TOPOGRAPHY:

The site is rather flat with small, scattered hills often referred to as buttes. About 8 km to the W and NW are the Palo Verde Hills, sharply rising to over 650 m (MSL). Scattered hills with elevations of about 335 m (MSL) are numerous within 3 km of the site, while the site itself is at about 290 m (MSL).

ON-SITE WIND MEASUREMENTS:

The on-site meteorological measurement program began on 13 Aug 1973. A 61-m tower is instrumented at 11 m and 61 m with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors.

NRC Docket No. 50-528

JOINT FREQUENCY DISTRIBUTION

PALO VERDE

SITE

SW - ARIZONA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.67	1.56	2.46	3.80	6.48	9.16	>9.16			
	0.22	0.67	1.56	2.46	3.80	6.48	9.16	>9.16			
N		0.68	2.12	1.37	0.77	0.38	0.08				
NNE		0.49	1.76	1.89	1.05	0.51	0.09				
NE		0.36	1.79	1.46	0.75	0.29	0.11	0.02			
ENE		0.27	1.16	1.04	0.75	0.41	0.06	0.01			
E		0.47	1.93	1.89	1.48	1.55	0.51	0.05			
ESE		0.32	1.92	2.09	1.40	0.70	0.07	0.02			
SE		0.36	2.10	1.77	0.17	0.23	0.04	0.01			
SSE		0.32	1.82	1.63	0.83	0.27	0.09	0.04			
S		0.41	2.33	2.31	1.27	0.61	0.22	0.01			
SSW		0.32	1.41	1.76	1.83	1.91	0.67	0.20			
SW		0.28	1.40	1.67	3.01	4.35	1.41	0.25			
WSW		0.32	1.32	1.46	2.00	2.81	0.43	0.11			
W		0.31	1.21	1.10	1.41	1.56	0.32	0.04			
WNW		0.29	0.77	0.59	0.68	1.05	0.57	0.17			
NW		0.37	1.19	0.85	0.67	0.90	0.40	0.12			
NNW		0.45	1.55	1.07	0.57	0.41	0.18	0.04			
TOT	0.51	6.03	25.79	23.94	19.64	17.95	5.05	1.09			
SUM	0.51	6.54	32.32	36.26	75.91	93.86	98.91	100.0			

16,967

OBSERVATIONS

13 AUG 73 - 13 AUG 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PALO VERDE

SITE
SW - ARIZONA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.67	1.56	2.46	3.80	6.48	9.16	>9.16			
	0.22										
N		0.17	0.71	0.60	0.69	0.52	0.29	0.05			
NNE		0.25	0.83	1.05	1.14	1.05	0.39	0.14			
NE		0.23	1.29	1.55	1.87	1.17	0.29	0.15			
ENE		0.15	1.28	1.56	1.37	0.78	0.17	0.02			
E		0.23	1.45	1.87	1.84	1.94	0.78	0.16			
ESE		0.27	1.45	1.51	1.60	1.19	0.27	0.11			
SE		0.28	1.45	1.57	1.40	0.55	0.10	0.05			
SSE		0.24	1.22	1.28	1.08	0.55	0.07	0.11			
S		0.19	1.37	1.51	1.38	0.89	0.31	0.14			
SSW		0.24	1.21	1.24	1.55	2.13	0.90	0.56			
SW		0.19	1.13	1.53	2.54	5.16	3.13	1.36			
WSW		0.17	0.83	0.96	1.72	3.62	1.42	0.36			
W		0.17	0.84	0.84	1.12	2.18	0.91	0.25			
WNW		0.14	0.45	0.46	0.64	1.09	1.08	0.54			
NW		0.13	0.54	0.48	0.66	0.99	0.78	0.48			
NNW		0.11	0.48	0.46	0.64	0.64	0.33	0.20			
TOT	0.17	3.18	16.54	18.49	21.26	24.45	11.22	4.69			
SUM	0.17	3.35	19.89	38.38	59.64	84.09	95.31	100.0			

16,594
OBSERVATIONS13 AUG 73 - 13 AUG 75
PERIOD

VELOCITY-DURATION CURVE

PEBBLE SPRINGS

SITE LOCATION:

The Pebble Springs site (45.70°N/120.14°W) is in Gilliam County, north central Oregon about 5 km SE of the Columbia River. This location is also 5 km ESE of Arlington, 84 km E of Dallesport, 105 km W of Pendleton and 97 km SSE of Yakima, WA.

TOPOGRAPHY:

The plant site is in the southern part of the Columbia Basin. This basin area is bounded by the Cascade Range on the W, the high mountains of Canada to the N, the Blue Mountains and N Idaho plateau to the E and the mountainous central Oregon plateau to the S. The Columbia River Gorge cuts through the Cascades to the W. The site is in the W end of a large plain which slopes downward from the mountainous plateau of north central Oregon to the Columbia River at 60 m (MSL). The mountainous plateau on the N side of the river and the higher ground to the W mark the eastern end of the Columbia Gorge. The immediate area can be classified as rolling. The site is at 225 m (MSL) on the S slope of Hurlburt Flat, a broad flat-topped, gently sloping ridge which rises to 275 m (MSL). Beyond the ridge, about 5 km S, the slope upward increases markedly. About 2 km W is a 90-m deep, N-S canyon with steep walls. About 6 km E is another similar steep-walled canyon oriented NNE-SSW.

ON-SITE WIND MEASUREMENTS:

A meteorological measurement program began in late December, 1973, using a 70-m tower instrumented at 9 m, 40 m, and 70 m with MRI 1074-1 wind systems. Tower base is at about 220 m (MSL).

JOINT FREQUENCY DISTRIBUTION

PEBBLE SPRINGS

SITE

N - CENTRAL - OREGON

SPEED (m/s)

LOCATION

DIRECTION	CALM	1	2	3	4	5	6	7	8	9	10	>10
N	0.23	0.55	0.30	0.02			0.01	0.01	0.01			
NNE	0.23	0.53	0.56	0.33	0.09	0.08	0.06	0.01	0.03	0.02		
NE	0.22	0.68	1.14	1.22	0.85	0.35	0.19	0.12	0.16			
ENE	0.22	0.78	1.26	1.23	0.93	0.63	0.27	0.12	0.02			
E	0.39	1.10	0.98	0.57	0.40	0.08	0.03					
ESE	0.54	1.35	0.82	0.24	0.03							
SE	0.67	1.10	0.33	0.09	0.01							
SSE	0.44	0.88	0.12	0.03	0.02	0.01		0.01				
S	0.60	0.78	0.28	0.06	0.01		0.02		0.01			
SSW	1.06	1.74	0.80	0.20	0.10	0.06	0.02	0.01	0.01	0.01		
SW	1.12	2.25	1.18	0.90	0.75	0.37	0.20	0.24	0.17	0.19	0.19	
WSW	0.94	1.67	1.56	2.06	2.19	2.11	1.95	1.85	1.79	1.43	2.29	
W	0.79	1.79	2.15	2.18	2.45	3.41	3.69	3.32	3.32	2.45	5.15	
W'NW	0.53	1.51	1.48	1.75	1.40	1.09	0.59	0.47	0.27	0.09	0.17	
NW	0.42	0.80	0.54	0.16	0.10	0.08		0.01			0.01	
NNW	0.17	0.42	0.23	0.03								
TOT	8.61	17.93	13.72	11.09	9.34	8.29	7.03	6.17	5.80	4.29	7.82	
SUM	8.61	26.54	40.26	51.35	60.69	68.98	76.01	82.18	87.98	92.18	100.0	

8586

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PEBBLE SPRINGS

SITE

N - CENTRAL - OREGON

SPEED (m/s)

LOCATION

DIRECTION	CALM	1	2	3	4	5	6	7	8	9	10	>10
N	0.08	0.29	0.36	0.08	0.02	0.03	0.02				0.02	
NNE	0.09	0.36	0.51	0.35	0.11	0.12	0.11	0.11	0.09	0.05	0.06	
NE	0.08	0.57	0.92	0.75	0.53	0.56	0.21	0.38	0.14	0.11	0.11	
ENE	0.14	0.59	0.83	1.45	1.18	0.83	0.45	0.24	0.15	0.11	0.02	
E	0.15	0.75	0.98	0.91	0.60	0.42	0.20	0.08				
ESE	0.16	0.54	0.68	0.24	0.14	0.05	0.06					
SE	0.29	0.74	0.44	0.14	0.03	0.02						
SSE	0.27	0.74	0.24	0.08	0.08		0.03	0.02				
S	0.12	0.83	0.39	0.12	0.03	0.02	0.02	0.05		0.02		
SSW	0.17	1.42	1.40	0.44	0.15	0.12	0.06	0.02		0.02	0.03	
SW	0.25	1.47	2.13	0.98	0.47	0.45	0.56	0.26	0.21	0.11	0.65	
WSW	0.22	1.42	2.04	1.81	1.43	1.75	1.54	1.49	1.12	1.09	3.61	
W	0.27	1.45	1.90	2.04	2.07	3.00	2.97	3.26	3.05	2.31	7.73	
WNW	0.26	1.25	1.63	1.37	1.04	1.18	1.36	1.24	1.01	0.85	2.72	
NW	0.14	0.60	0.60	0.32	0.29	0.24	0.24	0.11	0.12	0.06	0.12	
NNW	0.05	0.24	0.20	0.09	0.02	0.02		0.03				
TOT	2.66	13.27	15.26	11.15	8.16	8.81	7.82	7.26	5.89	4.71	15.03	
SUM	2.66	15.92	31.18	42.33	50.49	59.30	67.12	74.88	80.26	84.97	100.0	

6627

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PEBBLE SPRINGS

SITE
N - CENTRAL - OREGON

SPEED (m/s)

LOCATION

DIRECTION	CALM	1	2	3	4	5	6	7	8	9	10	>10
	1	2	3	4	5	6	7	8	9	10	>10	
N	0.05	0.49	0.23	0.11	0.06	0.04	0.01	0.03	0.01	0.03	0.05	
NNE	0.11	0.52	0.66	0.42	0.14	0.24	0.27	0.13	0.30	0.13	0.15	
NE	0.07	0.47	1.00	1.04	0.75	0.49	0.35	0.13	0.15	0.10	0.09	
ENE	0.18	0.72	0.80	1.05	1.05	0.52	0.44	0.18	0.09	0.03	0.04	
E	0.07	0.64	0.63	0.66	0.43	0.34	0.19	0.10				
ESE	0.07	0.68	0.44	0.22	0.10	0.04	0.03	0.03	0.01		0.01	
SE	0.16	0.57	0.22	0.09	0.11		0.01	0.03				
SSE	0.16	0.66	0.19	0.11	0.06		0.01				0.01	
S	0.16	0.71	0.35	0.11	0.11	0.05	0.03	0.03		0.01	0.03	
SSW	0.11	0.80	0.56	0.33	0.14	0.20	0.14	0.20	0.14	0.08	0.23	
SW	0.14	1.09	1.19	1.04	0.77	0.99	0.85	1.08	1.08	0.91	4.56	
WSW	0.11	1.05	1.84	1.98	1.89	1.98	1.83	2.27	1.88	2.00	3.48	
W	0.08	1.38	2.26	2.09	1.72	2.15	2.40	2.93	2.48	2.08	7.34	
WNW	0.14	1.04	1.28	0.65	0.55	0.60	0.32	0.39	0.25	0.28	0.35	
NW	0.09	0.80	0.52	0.24	0.05	0.05	0.03	0.04	0.04	0.01	0.01	
NNW	0.09	0.37	0.15	0.11	0.03		0.01					
TOT	1.81	12.00	12.32	10.25	8.02	7.69	6.91	7.54	6.44	5.65	21.36	
SUM	1.81	13.80	26.12	36.38	44.40	52.10	59.01	66.55	72.99	78.64	100.0	

7889

OBSERVATIONS

1 JAN 74 - 31 DEC 74

PERIOD

VELOCITY-DURATION CURVE

PERKINS

SITE LOCATION:

The Perkins Nuclear Station site (35.85°N/80.45°W) is located in SE Davie County in central North Carolina. The site is 11 km SE of Mocksville, 18 km W of Lexington, 19 km N of Salisbury and about 30 km SW of Winston-Salem.

TOPOGRAPHY:

The site is located in the undulating Appalachian Piedmont Plateau. The Yadkin River borders the site on the S and is oriented ENE-WSW in this sketch. Plant elevation is about 215 m (MSL).

ON-SITE WIND MEASUREMENTS:

On-site meteorological equipment became operational on 11 Oct 1973. A 40-m tower is instrumented at 9 m and 40 m, using Packard-Bell Model W/S-101B Series Wind Direction-Speed Systems.

NRC Docket No. 50-488

JOINT FREQUENCY DISTRIBUTION

PERKINS

SITE

CENTRAL - NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
N			2.87	1.87	1.13	0.46	0.11	0.09				
NNE			2.30	2.19	1.44	0.41	0.05		0.01			
NE			3.99	3.07	2.25	0.56	0.07	0.02	0.01			
ENE			3.42	1.87	0.94	0.22	0.05					
E			3.89	1.47	0.60	0.07	0.01					
ESE			2.24	0.98	0.35	0.06	0.02					
SE			2.26	1.26	0.44	0.15	0.09	0.02				
SSE			1.64	0.08	0.36	0.22	0.07	0.07	0.01	0.01		
S			1.50	1.02	0.46	0.23	0.14	0.04	0.02	0.01		
SSW			1.61	2.06	1.42	0.79	0.53	0.02				
SW			2.68	3.84	2.59	1.74	1.07	0.43	0.10	0.02		
WSW			2.57	1.99	1.08	0.53	0.16		0.01			
W			2.50	1.46	0.90	0.34	0.23	0.06	0.01		0.01	
WNW			1.89	1.08	0.65	0.49	0.27	0.10				
NW			2.50	1.44	0.97	0.66	0.47	0.11	0.01	0.01		
NNW			1.98	1.42	0.85	0.47	0.29	0.04				
TOT	3.84	39.86	27.61	16.33	7.41	3.71	0.97	0.19	0.06	0.01	0	
SUM	3.84	43.71	71.32	87.65	95.06	98.77	99.74	99.93	99.99	100.0		

7867

OBSERVATIONS

12 OCT 73 - 11 OCT 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PERKINS

SITE

CENTRAL - NORTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.44	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49	9.49	>9.49
N			1.41	2.14	1.79	0.99	0.55	0.25	0.06	0.02		
NNE			0.71	1.95	1.90	1.06	0.61	0.12	0.05	0.01	0.02	
NE			1.28	2.30	2.83	2.19	0.58	0.14	0.04		0.02	
ENE			0.73	1.46	1.61	0.75	0.32	0.06	0.06			
E			0.90	1.51	1.18	0.34	0.11	0.01				
ESE			0.58	1.11	0.87	0.15	0.09	0.01				
SE			0.87	1.54	0.81	0.27	0.14	0.11	0.01	0.01		
SSE			0.66	1.36	1.16	0.43	0.29	0.17	0.05	0.01		
S			0.72	1.57	1.24	0.71	0.43	0.11	0.06	0.04	0.02	0.01
SSW			0.52	2.18	2.75	1.98	1.02	0.73	0.55	0.12	0.02	0.04
SW			1.02	2.95	3.71	2.18	1.26	1.11	0.58	0.40	0.14	0.06
WSW			0.86	1.98	1.61	0.65	0.22	0.15	0.06		0.01	
W			0.67	1.75	1.08	0.61	0.41	0.36	0.11	0.05	0.05	0.06
WNW			0.70	1.26	0.88	0.56	0.38	0.26	0.29	0.09	0.06	0.01
NW			0.86	1.56	1.49	0.81	0.75	0.53	0.30	0.24	0.07	0.04
NNW			1.03	1.73	1.32	0.93	0.66	0.24	0.17	0.07		
TOT		0.91	13.53	28.35	26.24	14.62	7.83	4.38	2.40	1.07	0.43	0.22
SUM		0.91	14.44	42.79	69.03	83.65	91.48	95.86	98.26	99.33	99.76	99.98

8032

OBSERVATIONS

12 OCT 73 - 11 OCT 74

PERIOD

VELOCITY-DURATION CURVE

PERRY

SITE LOCATION:

The Perry site (41.80°N/81.14°W) is located in Lake County, NE Ohio on the southeast shoreline of Lake Erie. It is partially within the boundary of the village of North Perry, 11 km NE of Painesville, 53 km NE of Cleveland and 30 km WSW of Ashtabula.

TOPOGRAPHY:

The plant site is located on the SE shoreline of Lake Erie on an ancient lake plain about 15 m above the lake. The 1100-acre site, though relatively flat, has a very gentle slope toward the lake and is dissected by small streams draining into the lake. The terrain around the site is gently rolling except for the 6-15 m bluff at the lake's shoreline, and is divided between light to heavy woodland, and farmland or nursery stock.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological program began in April 1972. The program includes a 61-m tower instrumented at 11 m and 61 m with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors. The tower is located about 1130 m inland from the lake at an elevation of about 190 m (MSL).

NRC Docket No. 50-440

JOINT FREQUENCY DISTRIBUTION

PERRY

SITE

NE - OHIO

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	2.01	2.91	3.80	5.14	6.48	8.27	10.50	13.63	17.66	>17.66
N		0.62	0.73	1.01	1.15	0.49	0.19	0.06	0.01			
NNE		0.97	0.50	0.73	0.56	0.30	0.09	0.10				
NE		1.33	0.91	0.79	1.11	0.51	0.40	0.04				
ENE		1.86	0.89	0.73	0.63	0.54	0.21					
E		4.15	1.40	0.54	0.13	0.02						
ESE		2.94	0.88	0.55	0.34	0.12	0.05	0.01				
SE		3.41	1.15	1.08	1.15	0.72	0.46	0.16	0.01			
SSE		3.52	1.62	1.30	0.91	0.52	0.39	0.02				
S		4.09	2.98	1.74	1.10	0.77	0.39	0.05	0.01			
SSW		2.30	2.57	1.68	1.38	0.84	0.57	0.09				
SW		1.37	0.80	0.83	1.55	1.30	1.07	0.34	0.11			
WSW		0.75	0.72	0.91	1.60	1.19	1.47	0.78	0.13			
W		0.99	1.13	1.38	1.04	0.94	0.91	0.22	0.18			
WNW		0.80	0.88	0.88	0.85	0.89	0.77	0.49	0.19			
NW		0.92	0.97	0.63	1.00	0.71	0.52	0.15	0.09			
NNW		0.90	0.65	0.74	0.84	0.40	0.55	0.12	0.05			
TOT	0.57	28.31	18.29	15.41	15.33	10.56	8.05	2.62	0.79	0.06	0	
SUM	0.57	28.88	47.17	62.58	77.91	88.47	96.52	99.14	99.93	99.99		

8208

OBSERVATIONS

1 MAY 72 - 30 APR 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PERRY

SITE

NE - OHIO

LOCATION

SPEED (m/s)

DIRECTION	CALM	2.01	2.91	3.80	5.14	6.48	8.27	10.50	13.63	17.66	>17.66
	0.22										
N		0.60	0.52	0.60	0.88	0.66	0.61	0.44	0.17	0.04	
NNE		0.34	0.47	0.50	0.65	0.50	0.27	0.12	0.15		
NE		0.64	0.67	0.77	1.02	0.99	0.93	0.58	0.10		
ENE		0.57	0.74	0.75	1.18	0.63	0.38	0.23	0.01		
E		0.92	0.77	0.89	1.30	0.82	0.06				
ESE		0.56	0.45	0.78	1.02	0.60	0.28	0.04			
SE		0.64	0.44	0.60	1.17	1.17	0.85	0.39	0.10	0.02	
SSE		0.51	0.37	0.72	1.73	1.35	1.39	0.72	0.22	0.19	0.11
S		0.72	0.51	1.07	2.30	2.60	1.81	0.74	0.39	0.23	0.12
SSW		0.62	0.79	0.90	1.96	2.07	1.87	0.86	0.32	0.05	0.04
SW		0.93	0.94	1.00	1.90	1.46	1.36	0.94	0.49	0.12	0.04
WSW		0.75	0.60	0.63	1.05	1.31	1.47	1.31	0.96	0.15	0.11
W		0.71	0.89	0.97	1.28	0.99	1.28	0.94	0.50	0.27	0.29
WNW		0.65	0.79	0.68	0.78	0.55	0.72	0.62	0.37	0.22	0.06
NW		0.53	0.82	0.90	0.73	0.63	0.75	0.63	0.43	0.22	0.04
NNW		0.43	0.45	0.68	0.58	0.73	0.78	0.32	0.15	0.09	
TOT	0.23	10.10	10.21	12.44	19.53	17.05	14.81	8.89	4.33	1.59	0.82
SUM	0.23	10.33	20.54	32.98	52.51	69.56	84.37	93.26	97.59	99.18	100.0

8215

OBSERVATIONS

1 MAY 72 - 30 APR 73

PERIOD

VELOCITY-DURATION CURVE

PHIPPS BEND

SITE LOCATION:

The Phipps Bend site (36.46°N/82.81°W) is located in Hawkins County, in extreme northeast Tennessee, about 24 km SW of Kingsport, on the Holston River. It is also 110 km NE of Knoxville.

TOPOGRAPHY:

The site is located in extreme northeast Tennessee in the upper Tennessee Valley of the southern Appalachian Region. The Holston River Valley is oriented NE-SW and is flanked by mountain ranges on both sides which rise to 1200 m and in places to 1800 m (MSL). The terrain rises well over 300 m above plant grade within 6 km S and SE of the site. The highest nearby terrain is River Mountain Ridge, 2 km SE, which extends 185 m above plant grade of 360 m (MSL).

ON-SITE WIND MEASUREMENTS:

The Phipps Bend temporary meteorological facility began collecting data in December 1973. The facility includes a 46-m tower at 362 m (MSL), which is instrumented at 10 m and 46 m with Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors.

NRC Docket No. 50-553

JOINT FREQUENCY DISTRIBUTION

PHIPPS BEND

SITE

NE - TENNESSEE

SPEED (m/s)

LOCATION

	CALM	0.67	1.56	2.46	3.35	5.59	8.27	11.85	>11.85		
DIRECTION	0.22										
N		1.38	2.30	1.03	0.17	0.23	0.01				
NNE		1.63	4.76	2.81	0.86	0.33					
NE		1.07	3.15	3.54	1.83	0.99	0.01				
ENE		0.59	1.58	0.90	0.71	0.44	0.05				
E		0.48	0.95	0.20	0.15	0.06	0.01				
ESE		0.59	0.68	0.19	0.05	0.13	0.01				
SE		0.64	0.78	0.26	0.13	0.12	0.01				
SSE		0.61	0.78	0.21	0.10	0.06	0.05				
S		0.61	1.40	0.62	0.36	0.40	0.11	0.01			
SSW		0.51	2.14	1.15	0.72	0.44	0.11	0.01			
SW		0.39	3.93	3.02	1.50	1.10	0.10				
WSW		0.39	2.35	2.67	1.69	2.33	0.51	0.04			
W		0.23	1.15	1.45	1.19	0.87	0.07				
WNW		0.67	1.58	1.64	1.29	1.46	0.04				
NW		1.21	1.88	0.65	0.55	0.61	0.05				
NNW		2.76	6.72	1.07	0.31	0.43	0.01				
TOT	5.82	13.76	36.13	21.41	11.61	10.08	1.15	0.08	0		
SUM	5.82	19.58	55.71	77.12	28.73	98.81	99.96	100.04			

8420

OBSERVATIONS

1 FEB 74 - 31 JAN 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PHIPPS BEND

SITE

NE - TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	2.46	3.35	5.59	8.27	11.85	>11.85		
	0.22										
N		0.39	0.78	0.31	0.12	0.23	0.03				
NNE		0.99	2.99	0.73	0.21	0.47	0.05				
NE		1.34	6.32	3.22	1.39	1.36	0.23				
ENE		1.21	7.22	5.74	2.92	2.70	0.12	0.01			
E		0.66	2.49	1.29	0.66	0.60	0.05				
ESE		0.39	0.74	0.31	0.09	0.13	0.03				
SE		0.30	0.55	0.09	0.09	0.13	0.04				
SSE		0.29	0.52	0.14	0.04	0.09	0.01	0.01			
S		0.29	0.42	0.22	0.06	0.19	0.12	0.03			
SSW		0.31	0.78	0.68	0.23	0.51	0.51	0.08			
SW		0.26	2.13	1.94	1.09	1.49	0.18	0.08	0.01		
WSW		0.48	2.10	2.79	2.64	4.26	1.78	0.38	0.14		
W		0.25	1.50	2.22	1.57	2.45	0.66	0.25	0.03		
WNW		0.21	0.95	1.21	0.94	1.69	1.00	0.04			
NW		0.32	0.69	0.60	0.49	1.09	0.42	0.03			
NNW		0.56	1.01	0.60	0.40	0.55	0.10	0.03			
TOT	1.21	8.25	31.27	22.09	12.94	17.82	5.33	0.94	0.18		
SUM	1.21	9.46	40.73	62.82	75.76	93.58	98.91	99.85	100.03		

7700

OBSERVATIONS

1 FEB 74 - 31 JAN 75

PERIOD

VELOCITY-DURATION CURVE

PILGRIM

SITE LOCATION

The Pilgrim site (41.94°N/70.58°W) occupies about 517 acres of land on the western shore of Cape Cod Bay in the town of Plymouth, Plymouth County, Massachusetts. The site is about 7 km ESE of the center of Plymouth and about 60 km SE of Boston.

TOPOGRAPHY:

To the N and E is the open water of Cape Cod Bay. A ridge immediately W and extending from Plymouth Bay southward for over 6 km is the dominant inland topographical feature. The ridge rises to over 120 m (MSL) and, in effect, separates the site from Plymouth Bay, 0.5 km WNW.

ON-SITE WIND MEASUREMENTS:

A 67-m tower was initially placed in operation on the site at 24 m (MSL) in May 1968. The total meteorological program was upgraded in April 1974 by installing new equipment on the 67-m tower and erecting a new 49-m tower at 7 m (MSL). Winds are now measured by Climatronics F460 wind systems at 10 m and 49 m on the 49-m tower and at 22 m and 67 m on the 67-m tower.

NRC Docket Nos. 50-293, -471

JOINT FREQUENCY DISTRIBUTION

PILGRIM

SITE

MASSACHUSETTS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.45	1.79	3.35	5.36	8.49	10.95	> 10.95				
N			0.59	1.20	1.39	1.81	0.84	0.22				
NNE			0.43	0.85	0.77	1.38	0.77	0.20				
NE			0.45	0.81	1.54	1.51	0.33	0.26				
ENE			0.46	0.78	1.15	1.28	0.68	0.23				
E			0.50	0.95	1.31	0.73	0.38	0.01				
ESE			0.92	0.99	0.32	0.18	0.04	0.05				
SE			0.95	1.79	0.41	0.31						
SSE			1.01	1.98	0.52	0.07						
S			1.03	2.36	1.72	0.17						
SSW			1.73	2.32	1.09	0.46						
SW			1.38	2.46	3.89	0.92	0.02					
WSW			0.85	2.31	6.46	3.31	0.15					
W			0.76	3.00	5.04	1.33	0.02					
WNW			0.55	3.65	3.76	0.57						
NW			0.35	2.23	3.20	1.62	0.33	0.05				
NNW			0.67	2.33	2.28	1.72	0.35	0.11				
TOT		0.11	12.63	30.01	34.85	17.37	3.91	1.12				
SUM		0.11	12.74	42.75	77.60	94.97	98.88	100.0				

8195

OBSERVATIONS

1 MAR 74 - 30 APR 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PILGRIM

SITE

MASSACHUSETTS

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.45	1.79	3.35	5.36	8.49	10.95	> 10.95				
N		0.49	0.91	1.20	1.33	0.85	0.65					
NNE		0.52	0.85	1.04	1.35	1.04	0.79					
NE		0.40	0.71	1.23	1.27	0.93	0.84					
ENE		0.45	0.65	1.00	1.28	0.56	0.56					
E		0.71	1.16	1.12	0.61	0.21	0.02					
ESE		0.60	1.18	0.60	0.40	0.12	0.07					
SE		0.34	1.00	1.22	0.74	0.23	0.22					
SSE		0.35	1.07	1.45	1.21	0.04	0.05					
S		0.26	1.04	1.87	1.26	0.09	0.07					
SSW		0.26	0.89	1.96	1.02	0.23	0.01					
SW		0.10	0.68	2.16	4.14	0.67	0.07					
WSW		0.20	0.63	2.93	6.48	1.49	0.34					
W		0.10	0.78	2.78	4.05	0.90	0.01					
WNW		0.15	0.99	3.96	4.60	0.48	0.12					
NW		0.26	0.89	3.18	3.00	0.82	0.44					
NNW		0.30	1.16	1.93	2.61	1.17	0.74					
TOT	0.09	5.49	14.59	29.63	35.35	9.83	5.00					
SUM	0.09	5.49	20.17	49.80	85.15	94.98	99.98					

8197

OBSERVATIONS

1 MAY 74 - 30 APR 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

PILGRIM

SITE

SE - MASSACHUSETTS

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.45	1.79	3.35	5.36	8.49	10.95	> 10.95				
N		0.15	0.73	1.35	1.66	1.05	0.51					
NNE		0.28	0.73	1.11	1.54	0.95	0.99					
NE		0.21	0.79	1.35	1.30	0.64	0.97					
ENE		0.27	0.90	1.10	0.67	0.50	0.12					
E		0.21	0.99	0.99	0.70	0.20	0.21					
ESE		0.28	0.75	0.90	0.70	0.12	0.20					
SE		0.17	1.22	1.48	1.13	0.24	0.20					
SSE		0.12	0.79	1.59	1.91	0.67	0.26					
S		0.18	0.53	1.00	1.26	0.38	0.02					
SSW		0.15	0.45	1.14	2.20	0.67	0.11					
SW		0.18	0.51	1.66	6.30	3.19	0.77					
WSW		0.06	0.57	1.79	4.82	2.27	0.35					
W		0.10	0.53	1.77	4.48	1.27	0.23					
WNW		0.12	0.54	1.74	4.38	1.91	0.92					
NW		0.21	0.84	1.55	3.36	1.15	1.59					
NNW		0.31	0.49	1.14	1.87	1.47	1.47					
TOT	0.07	3.00	11.36	21.66	38.28	16.68	8.92					
SUM	0.07	3.09	14.45	36.11	74.39	91.07	99.99					

8177

OBSERVATIONS

1 MAY 74 - 30 APR 75

PERIOD

VELOCITY-DURATION CURVE

POINT BEACH

SITE LOCATION:

The site (44.28°N/87.54°W) is in east central Wisconsin on the west shore of Lake Michigan, about 50 km SE of Green Bay and 145 km NNE of Milwaukee. The site is in the town of Two Creeks in the NE corner of Manitowoc County. The international boundary between Canada and the United States is about 325 km NE of the site.

TOPOGRAPHY:

The site is on the western shore of Lake Michigan in a relatively flat region of Wisconsin. Within a 15 km radius, the scattered hills and knolls do not exceed 245 m (MSL). Plant grade is 185 m (MSL).

ON-SITE WIND MEASUREMENTS:

Site data collection began in April 1967. A set of Belfort Type M wind instruments were installed on top of a 46-m tower at about 185 m (MSL).

NRC Docket Nos. 50-266, -301

JOINT FREQUENCY DISTRIBUTION

POINT BEACH

SITE

E - CENTRAL WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.56	1.42	2.93	3.16	1.11	0.66					
NNE		0.31	0.85	1.89	1.77	0.94	0.72					
NE		0.36	1.02	1.28	1.28	0.47	0.29					
ENE		0.40	0.66	0.51	0.44	0.27	0.12					
E		0.62	0.79	0.44	0.33	0.13	0.16					
ESE		0.52	0.66	0.44	0.17	0.20	0.05					
SE		0.51	1.02	0.81	0.61	0.31	0.27					
SSE		0.37	0.83	1.37	0.82	0.57	0.25					
S		0.48	1.25	2.63	2.13	1.04	0.53					
SSW		0.40	1.30	4.27	4.45	1.73	0.39					
SW		0.44	1.50	3.47	2.27	0.46	0.12					
WSW		0.26	0.83	1.78	1.30	0.38	0.13					
W		0.42	1.14	2.23	2.40	0.91	0.60					
WNW		0.32	1.13	2.88	3.52	1.37	0.43					
NW		0.29	1.05	2.72	2.47	0.45	0.15					
NNW		0.19	0.76	2.12	1.60	0.59	0.14					
TOT	0.91	6.45	16.21	31.76	28.73	10.92	5.02					
SUM	0.91	7.36	23.57	55.33	84.06	94.98	100.0					

14,647
OBSERVATIONS19 APR 67 - 18 APR 69
PERIOD

VELOCITY-DURATION CURVE

PRAIRIE ISLAND

SITE LOCATION:

The site (44.62°N/92.63°W) is located about 10 km NW of Red Wing, Minnesota, in Goodhue County, on the SE bank of the Mississippi River. It is also 45 km SE of Minneapolis, St. Paul and 145 km NW of La Crosse, WI.

TOPOGRAPHY:

The site is on the fairly level to slightly rolling ground of the Mississippi River Valley floodplain. The valley is about 5 km wide and elevation ranges from 205 m (MSL) at the river to about 215 m (MSL). The surface slopes gradually toward the Mississippi River on the NE and the Vermillion River on the SW. The Mississippi flows from NW to SE and is enclosed by very distinct bluffs over 90 m high that reach elevations over 300 m (MSL) at about 2.5 km NE and SW of the site. Beyond the bluffs elevation ranges from 300 m to 365 m (MSL) and the terrain is marked by many deeply eroded coulees.

ON-SITE WIND MEASUREMENTS:

Measurements of on-site wind parameters began in May 1968. A 43-m tower was instrumented at the 12 m and 43 m levels using Belfort Type "M" systems. Data consist of 15-minute averages.

NRC Docket Nos. 50-282, -306

JOINT FREQUENCY DISTRIBUTION

PRAIRIE ISLAND

SITE

SE - MINNESOTA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.22	1.10	1.41	1.00	0.28	0.05					
NNE		0.19	0.77	0.74	0.33	0.02						
NE		0.26	1.03	0.88	0.22	0.03						
ENE		0.31	1.10	0.86	0.26	0.07						
E		0.45	2.78	2.60	0.65	0.05						
ESE		0.60	2.89	2.65	2.49	0.03						
SE		0.95	3.49	3.87	2.66	0.29						
SSE		0.40	1.93	3.16	2.05	0.62	0.07					
S		0.46	1.34	2.99	2.20	0.83	0.09					
SSW		0.12	0.79	1.32	0.86	0.17	0.03					
SW		0.15	0.57	0.98	0.76	0.17	0.03					
WSW		0.17	0.79	0.89	0.70	0.15						
W		0.58	1.84	1.34	1.15	0.55	0.09					
WNW		0.69	2.80	2.30	1.43	0.69	0.15					
NW		0.84	3.42	4.76	3.39	1.20	0.45					
NNW		0.58	1.79	2.65	1.84	0.77	0.05					
TOT	0	7.85	29.60	33.57	22.04	5.93	1.01					
SUM		7.85	37.45	71.02	93.06	98.99	100.0					

5818

OBSERVATIONS

22 MAR 74 - 21 MAR 75

PERIOD

VELOCITY-DURATION CURVE

PUERTO RICO

SITE LOCATION:

The North Coast Nuclear Plant site (18.49°N/66.62°W) is located at Islote on the north central coast of Puerto Rico. The site is about 10 km E of Arecibo, and 55 km W of San Juan.

TOPOGRAPHY:

The site is 850 m S of the shoreline at 5.5 m (MSL). The surrounding area is relatively flat with a slight rise from SE through SW beyond 4 km.

ON-SITE WIND MEASUREMENTS:

Data have been collected since January 1974 using a 76 m tower at 14 m (MSL) and at a distance of 400 m S of the shoreline. The wind instrument is a combined cup and vane sensor, MRI Model 1074-2, at 10 m (AGL).

NRC Docket No. 50-376

JOINT FREQUENCY DISTRIBUTION

PUERTO RICO

SITE

N - CENTRAL

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.34	1.34	3.13	5.36	8.05	10.73	> 10.73				
N			0.04	0.12	0.04	0.02						
NNE			0.15	0.43	0.14	0.05	0.02					
NE			0.24	1.11	3.23	1.92	0.10					
ENE			0.26	1.81	9.27	13.75	1.14					
E			0.49	3.10	5.45	4.56	0.07					
ESE			2.30	10.77	2.94	0.30						
SE			6.83	8.58	0.39							
SSE			5.96	1.98	0.12	0.02						
S			4.35	1.30	0.04							
SSW			1.54	0.41	0.04	0.01						
SW			0.82	0.38	0.05							
WSW			0.48	0.23	0.02							
W			0.19	0.14	0.01							
WNW			0.04	0.12	0.05							
NW			0.04	0.07	0.04							
NNW			0.04	0.04	0.04							
TOT		2.86	23.75	30.57	20.85	20.64	1.33	0				
SUM		2.86	26.61	57.18	78.03	98.67	100.0					

8393

OBSERVATIONS

1 FEB 74 - 31 JAN 75

PERIOD

VELOCITY-DURATION CURVE

QUAD CITIES

SITE LOCATION:

The Quad Cities site (41.72°N/90.32°W) is in Rock Island County, Illinois, on the E bank of the Mississippi River, opposite the mouth of the Wapsipinicon River, and about 5 km N of Cordova, Illinois. It is also 32 km NE of the Quad-Cities (Davenport, Iowa; Rock Island, Moline, East Moline, Illinois).

TOPOGRAPHY:

The site is relatively flat, with a mean elevation of 184 m (MSL). At the river, the surface drops off abruptly, forming a bluff about 9 m high.

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at 11 m, 38 m, and 91 m using Belfort Type L sensor systems.

NRC Docket Nos. 50-254, 265

JOINT FREQUENCY DISTRIBUTION

QUAD-CITIES

SITE
NW - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.34	>20.34	
N		0.29	2.11	1.91	0.42	0.07	0.01					
NNE		0.32	1.32	1.66	0.86	0.18	0.03					
NE		0.43	1.59	1.55	0.65	0.16	0.02					
ENE		0.42	2.10	1.91	0.85	0.17	0.02					
E		0.42	2.10	0.85	0.17	0.02						
ESE		0.70	2.59	0.73	0.21							
SE		0.80	3.12	1.62	0.58	0.07	0.01					
SSE		0.51	2.40	2.19	1.05	0.09	0.01					
S		0.47	3.70	5.35	2.32	0.27	0.04					
SSW		0.57	2.34	1.55	0.56	0.14	0.01					
SW		0.80	2.68	1.24	0.33	0.05	0.02					
WSW		0.72	2.52	1.61	0.64	0.13	0.09	0.01				
W		0.59	1.88	1.93	1.31	0.47	0.06					
WNW		0.74	2.23	2.43	1.79	0.44	0.13					
NW		0.81	3.43	3.33	1.51	0.19	0.02					
NNW		0.62	3.00	2.19	0.63							
TOT	0.04	9.22	38.86	34.00	14.72	2.67	0.48	0.01	0	0		
SUM	0.04	9.26	48.12	82.12	96.84	99.51	99.99	100.0				

13,792

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

QUAD CITIES

SITE

NW - ILLINOIS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.34	>20.34	
	0.22										
N		0.23	1.46	3.19	0.77	0.14	0.06				
NNE		0.21	1.20	1.99	1.11	0.23	0.02				
NE		0.20	1.23	1.73	1.11	0.21	0.02				
ENE		0.24	1.48	1.67	0.81	0.01					
E		0.14	1.34	2.25	1.20	0.36	0.06				
ESE		0.16	1.69	2.70	1.28	0.41	0.07				
SE		0.11	1.90	1.50	1.05	0.13					
SSE		0.14	1.39	2.78	1.60	0.28	0.02				
S		0.24	1.50	3.42	1.92	0.51	0.08	0.02			
SSW		0.67	4.07	3.61	1.56	0.24	0.03				
SW		0.50	2.48	1.95	0.81	0.19	0.03	0.01			
WSW		0.29	1.37	1.80	0.98	0.22	0.09	0.04			
W		0.26	1.62	2.26	1.56	0.63	0.16				
WNW		0.32	1.91	2.59	2.51	0.84	0.23				
NW		0.30	2.32	3.24	2.12	0.64	0.06				
NNW		0.34	2.06	2.39	0.97	0.08					
TOT	0.03	4.38	29.03	39.07	21.35	5.13	0.94	0.07	0	0	
SUM	0.03	4.41	33.44	72.51	93.86	98.99	99.93	100.0			

14,646

OBSERVATIONS

1 JAN 74 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

QUAD - CITIES

SITE

NW - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.34	>20.34	
	0.22										
N		0.13	1.13	1.40	1.48	0.63	0.17	0.04	0.01		
NNE		0.17	1.05	1.41	1.13	0.66	0.22	0.04	0.01		
NE		0.15	0.84	1.33	1.30	0.62	0.17	0.01			
ENE		0.21	1.17	1.72	1.17	0.30	0.02	0.01			
E		0.20	0.86	1.65	1.72	0.78	0.32	0.05	0.03	0.01	
ESE		0.17	0.80	1.34	1.54	0.81	0.59	0.10	0.01		
SE		0.13	0.93	1.31	1.56	1.06	0.33	0.03			
SSE		0.14	0.77	1.47	1.77	1.20	0.44	0.04			
S		0.16	0.82	1.84	2.78	1.55	0.57	0.12	0.04	0.02	
SSW		0.22	1.76	2.02	2.88	1.38	0.44	0.12	0.02		
SW		0.23	1.47	1.71	2.67	1.21	0.34	0.10	0.01		
WSW		0.14	0.83	1.19	1.62	0.83	0.24	0.03	0.06		
W		0.17	0.76	1.41	1.90	1.33	0.48	0.08	0.01		
WNW		0.20	0.88	1.57	2.63	1.95	0.76	0.24	0.04		
NW		0.25	1.35	1.71	3.19	2.01	0.55	0.09	0.01		
NNW		0.22	1.27	1.74	2.01	0.74	0.11				
TOT	0.03	2.90	16.71	24.79	31.34	17.07	5.78	1.10	0.25	0.03	
SUM	0.03	2.93	19.64	44.43	75.77	92.84	98.62	99.72	99.97	100.0	

15,309

1 JAN 74 - 31 DEC 75

OBSERVATIONS

PERIOD

VELOCITY-DURATION CURVE

QUANICASSEE

SITE LOCATION:

The site (43.59°N/83.77°W) is in Bay County, Michigan on the south shore of Saginaw Bay, 3 km NW of the village of Quanicassee. The site is also 10 km E of Bay City, 25 km NE of Saginaw and about 60 km S of Flint.

TOPOGRAPHY:

The site is located on the southern edge of Saginaw Bay. Beginning NW of the site, the Bay shoreline runs in the NW-SE direction. At 2 km E of the site, the shoreline gradually changes direction and runs from SW-NE. The mean level of Lake Huron is 177 m (MSL), and the site is relatively flat with elevations within 5 km radius ranging from zero to 2 m above the normal level of Saginaw Bay. The inland area around the site is relatively flat also with elevations ranging from 177 m to 183 m (MSL) within 8 km, and is characterized by generally flat farmland with occasional trees to 15 m.

ON-SITE WIND MEASUREMENT:

Wind data are collected at five locations on and near the site. The primary location is a 100-m tower, which is instrumented with a Gill-type propeller vane (Model 35001, 2-19 cm blades) at 10 m and 80 m. Base elevation is about 180 m (MSL).

NRC Docket No. 50-475

JOINT FREQUENCY DISTRIBUTION

QUANICASSEE

SITE

NE - MICHIGAN

SPEED (m/s)

LOCATION

	CALM 0.22	1.56	3.35	5.59	8.25	10.95	13.63	>13.63			
DIRECTION											
N		0.43	1.29	1.73	1.13	0.39	0.30				
NNE		0.34	1.42	1.98	1.81	0.60	0.16				
NE		0.42	2.02	2.65	2.02	0.59	0.21	0.01			
ENE		0.31	2.19	2.63	1.26	0.52	0.29	0.02			
E		0.38	1.97	2.29	0.82	0.24	0.03	0.06			
ESE		0.42	1.73	1.59	0.74	0.10					
SE		0.52	1.77	1.86	0.90	0.10	0.02				
SSE		0.66	2.84	1.44	0.85	0.28	0.03	0.01			
S		0.61	2.52	1.85	0.60	0.21	0.07				
SSW		0.60	2.62	3.57	1.24	0.41	0.19	0.01			
SW		0.64	2.86	3.45	1.89	0.39	0.28	0.01			
WSW		0.64	2.94	2.55	1.73	0.57	0.24	0.03			
W		0.39	2.10	2.10	1.00	0.44	0.07				
WNW		0.37	1.84	1.49	0.74	0.34	0.03				
NW		0.36	1.01	1.46	0.63	0.16	0.07	0.01			
NNW		0.32	1.22	1.57	0.66	0.12	0.10	0.16			
TOT	0.12	7.41	32.32	34.20	18.01	5.47	2.00	0.36			
SUM	0.12	7.53	39.85	74.05	92.06	97.53	99.64	100.0			

8635

OBSERVATIONS

1 JUN 72 - 31 MAY 73

PERIOD

SITE LOCATION:

The site (38.30°N/121.14°W) is in SE Sacramento County, central California, near the town of Clay. The location is 42 km NNE of Stockton and 40 km SE of Sacramento.

TOPOGRAPHY:

The 2,480-acre site is located in the lower end of the Sacramento Valley between the Sierra Nevada range to the east and the Coast Range along the Pacific Ocean to the west. The region is flat to slightly rolling with a site elevation of 61 m (MSL), having risen from 5 m (MSL) at Sacramento. East of the site, the land becomes more rolling, rising to an elevation of 185 m (MSL) at 11 km and increasing in elevation thereafter approaching the Sierra Nevada. Elevations of over 3000 m occur 100 km E of the site.

ON-SITE WIND MEASUREMENTS:

Meteorological measurements were initiated in April 1967 using MRI Vector Vane on top of a 16-m tower. In June 1968, the 16-m temporary tower was replaced with a 61-m tower, instrumented at 15 m with an MRI Vector Vane and at 61 m with an MRI 1074 system.

NRC Docket No. 50-312

JOINT FREQUENCY DISTRIBUTION

RANCHO SECO

SITE

CENTRAL - CALIFORNIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	>9.0
	0.5										
N		0.51	1.47	0.91	0.54	0.50	0.33	0.14	0.09	0.05	0.11
NNE		0.37	1.15	0.62	0.31	0.24	0.20	0.09	0.04	0.11	0.05
NE		0.39	0.87	0.90	0.35	0.08	0.06	0.03	0.01		0.04
ENE		0.36	0.84	0.61	0.17	0.04	0.01	0.01			0.01
E		0.33	1.00	0.88	0.41	0.09	0.02				
ESE		0.38	1.03	1.04	0.63	0.44	0.15	0.03			0.02
SE		0.23	1.44	1.43	0.83	0.53	0.26	0.13	0.21	0.11	0.30
SSE		0.29	1.53	1.50	0.89	0.63	0.32	0.13	0.15	0.11	0.42
S		0.63	1.65	1.49	1.10	0.70	0.39	0.11	0.05	0.05	0.14
SSW		0.45	1.55	1.65	1.11	0.57	0.32	0.25	0.18	0.16	0.76
SW		0.51	1.69	1.73	1.21	0.51	0.40	0.23	0.09	0.06	0.19
WSW		0.64	2.35	2.78	2.61	1.13	0.39	0.20	0.05	0.03	0.05
W		0.51	2.99	3.90	2.49	0.56	0.33	0.05	0.04	0.02	
WNW		0.63	2.28	1.81	1.37	0.68	0.32	0.21	0.09	0.03	0.03
NW		0.51	1.97	2.19	1.89	1.28	0.87	0.13	0.20	0.09	0.11
NNW		0.78	1.88	1.28	1.07	0.73	0.53	0.20	0.20	0.17	0.22
TOT	4.30	7.52	25.69	24.72	16.98	8.71	4.90	2.24	1.40	0.99	2.55
SUM	4.30	11.82	37.51	62.23	79.21	87.92	92.82	95.06	96.46	97.45	100.0

11,616

OBSERVATIONS

1 APR 67 - 31 MAR 70

PERIOD

VELOCITY-DURATION CURVE

RIVER BEND

SITE LOCATION:

The River Bend site (30.76°N/91.33°W) is in West Feliciana Parish (County), Louisiana, on the Mississippi River about 40 km NNW of Baton Rouge. The village of St. Francisville is 5 km N of the site.

TOPOGRAPHY:

The terrain in the area is essentially flat with some small rolling hills. The greatest elevation within 8 km is 67 m (MSL), which is 38 m higher than the site (29 m). The site is on two levels, one is an alluvial floodplain along the river at an elevation of about 11 m (MSL) and the other is an upper terrace with an average elevation of 30 m (MSL). Numerous intermittent bayous and streams cross the site and drain to the E and W. The site is heavily wooded with several open fields dotting the landscape.

ON-SITE WIND MEASUREMENTS:

The meteorological measurement program was begun in December 1971, using a 46-m tower instrumented at 9 m and 46 m with Weathermeasure W-103 (speed) and W-104 (direction) sensors.

NRC Docket No. 50-458

JOINT FREQUENCY DISTRIBUTION

RIVER BEND

SITE
SE - LOUISIANA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			1.52	2.83	1.54	0.13	0.01					
NNE			2.70	3.37	0.75	0.05						
NE			4.51	2.65	0.50	0.04						
ENE			5.75	2.53	0.35	0.01						
E			4.81	3.66	0.43							
ESE			3.76	3.83	0.61	0.03						
SE			2.46	3.74	0.94	0.03						
SSE			1.82	2.74	1.19	0.13						
S			2.44	2.40	0.85	0.03						
SSW			2.24	2.47	0.33	0.03						
SW			1.77	2.05	0.31	0.01						
WSW			1.50	1.65	0.14							
W			1.72	1.93	0.25							
WNW			1.21	1.81	0.69	0.03						
NW			1.19	1.98	0.99	0.01						
NNW			1.31	2.39	1.26	0.13						
TOT	5.48	40.72	42.03	11.12	0.65	0.01	0					
SUM	5.48	46.19	88.22	99.34	99.99	100.0						

11,944

OBSERVATIONS

16 DEC 71 - 13 NOV 72

1 OCT 72 - 30 SEP 73

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

RIVER BEND

SITE

SE - LOUISIANA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.68	2.94	2.50	0.64	0.02						
NNE		0.62	2.83	2.92	0.35	0.03						
NE		0.72	3.30	2.87	0.20							
ENE		0.52	3.34	2.52	0.31	0.03						
E		0.62	3.99	3.08	0.49	0.02						
ESE		0.76	4.16	3.37	0.47	0.05						
SE		0.84	3.63	1.93	0.46							
SSE		0.98	2.47	1.97	0.50	0.03						
S		0.98	3.13	1.54	0.46	0.02						
SSW		0.98	3.37	1.66	0.37	0.01						
SW		0.94	2.72	0.93	0.11	0.01						
WSW		1.03	2.59	0.82	0.06	0.02	0.01					
W		0.97	2.58	0.90	0.13							
WNW		0.71	2.23	1.19	0.23							
NW		0.69	2.64	1.32	0.49	0.09	0.03					
NNW		0.72	2.95	1.82	0.63	0.08	0.06					
TOT	0.61	12.77	48.86	31.34	5.90	0.41	0.10					
SUM	0.61	13.39	62.25	93.59	99.50	99.90	100.0					

12,095
OBSERVATIONS

16 DEC 71 - 13 NOV 72
1 OCT 72 - 30 SEP 73
PERIOD

VELOCITY-DURATION CURVE

H. B. ROBINSON

SITE LOCATION:

The site (34.40°N/80.16°W) is located in the western corner of Darlington County, South Carolina, on the SW shore of Lake Robinson, about 7 km WNW of Hartsville. The location is also 40 km NW of Florence, 56 km NNE of Sumter and 90 km ENE of Columbia. The Atlantic Ocean is about 142 km SE.

TOPOGRAPHY:

The site is on the southern edge of the Sand Hills region of South Carolina. The region is typified by rolling hills interspersed with water courses and covered with wooded areas. To the S and E, the terrain becomes flat and swampy in the coastal plain. Lake Robinson is about 1200 m wide and 12 km long at an elevation of 68 m (MSL). The land surface rises 12-15 m above the lake, with an elevation of 155 m (MSL) being reached at 8 km NE. Site elevation is 83 m (MSL).

ON-SITE WIND MEASUREMENTS:

Wind measurements are made at 11 m and 61 m (AGL) using MRI Model 1074-22 sensors.

NRC Docket No. 50-261

JOINT FREQUENCY DISTRIBUTION

ROBINSON

SITE

SOUTH CAROLINA

LOCATION

SPEED (m/s)

DIRECTION	CALM										
	0.34	1.56	3.35	5.59	8.27	11.18	> 11.18				
N		2.08	3.46	0.81	0.06						
NNE		1.86	4.62	1.70	0.02		0.01				
NE		1.72	3.86	1.41	0.03						
ENE		1.02	3.34	1.50	0.05						
E		0.86	1.86	0.66	0.01						
ESE		1.05	1.48	0.59	0.02						
SE		1.12	2.28	0.92	0.02						
SSE		1.19	3.18	1.10	0.15						
S		2.45	3.69	1.80	0.40	0.01					
SSW		4.40	4.29	1.65	0.15	0.01					
SW		2.89	4.24	1.67	0.22	0.03					
WSW		1.58	2.66	0.96	0.27	0.02					
W		1.39	1.69	0.46	0.07						
WNW		1.28	1.63	0.63	0.06						
NW		1.64	1.97	0.61	0.04						
NNW		2.70	4.25	0.72	0.01						
TOT	3.41	29.25	48.52	17.17	1.59	0.06	0.01				
SUM	3.41	32.65	81.17	98.34	99.93	99.99	100.0				

20,859

OBSERVATIONS

1 JAN 75 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

ROBINSON

SITE

SOUTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	11.18	> 11.18				
	0.34										
N		0.45	1.86	2.73	2.02	0.39	0.13				
NNE		0.59	2.59	3.31	1.73	0.14	0.01				
NE		0.69	2.47	2.95	0.84	0.05					
ENE		0.55	2.08	2.34	0.56	0.02					
E		0.60	1.70	1.18	0.35	0.01	0.01				
ESE		0.70	1.78	1.06	0.19	0.01					
SE		0.74	2.01	1.63	0.34	0.02					
SSE		0.45	1.79	2.16	0.82	0.13					
S		0.32	2.25	3.74	1.24	0.39	0.02				
SSW		0.43	2.87	5.09	1.82	0.55	0.06				
SW		0.36	2.32	4.66	1.85	0.37	0.12				
WSW		0.37	2.18	3.06	1.28	0.35	0.10				
W		0.43	1.91	1.77	0.66	0.17	0.07				
WNW		0.33	1.40	1.37	0.86	0.13	0.05				
NW		0.36	1.07	1.43	0.86	0.12	0.01				
NNW		0.29	1.01	1.60	1.39	0.17	0.01				
TOT	0.55	7.66	31.30	40.10	16.79	3.01	0.58				
SUM	0.55	8.21	39.52	79.62	96.41	99.42	100.0				

32.661
OBSERVATIONS1 JAN 75 - 31 DEC 75
PERIOD

VELOCITY-DURATION CURVE

SAINT LUCIE

SITE LOCATION:

The site (27.33°N/80.25°W) is a 1,132-acre tract on Hutchinson Island in St. Lucie County on the central east coast of Florida. It is about 14 km SE of Ft. Pierce, about 12 km N of Stuart, and about 180 km N of Miami.

TOPOGRAPHY:

The site is generally flat, covered with water and has a dense vegetation characteristic of Florida coastal mangrove swamp. At the ocean shore, the land rises slightly in a dune or ridge of about 5 m height.

ON-SITE WIND MEASUREMENTS:

The meteorological program has been in operation since 1970. There is a 61-m tower located on relatively flat terrain. Its instrumentation includes 6-bladed Bendix-Friez "Aerovanes" mounted at the 15 m and 61 m levels. Strip chart recording is reduced to hourly means.

NRC Docket Nos. 50-335, -389

JOINT FREQUENCY DISTRIBUTION

SAINT LUCIE

SITE

E - CENTRAL - FLORIDA

SPEED (m/s)

LOCATION

	CALM	0.45	1.79	3.80	5.81	8.49	11.18	13.86	> 13.86			
DIRECTION												
N		0.68	1.47	1.89	0.31	0.05						
NNE		0.74	2.01	1.23	0.09	0.02						
NE		1.01	2.73	2.22	0.48	0.01						
ENE		1.04	3.63	2.42	0.35							
E		1.07	5.31	3.80	0.31							
ESE		1.22	5.33	2.92	0.16	0.01						
SE		1.27	4.47	4.06	0.12	0.01						
SSE		1.12	3.13	2.33	0.42							
S		0.86	2.91	1.96	0.26	0.01						
SSW		1.09	2.68	1.70	0.31							
SW		1.25	2.94	1.49	0.27	0.01						
WSW		1.42	1.77	0.84	0.16							
W		1.41	1.20	0.32	0.03	0.01						
WNW		1.45	2.00	0.63	0.06	0.01						
NW		1.32	3.55	1.01	0.03							
NNW		0.83	1.73	1.20	0.05							
TOT	1.78	17.78	46.87	30.93	3.41	0.13	0	0				
SUM	1.78	19.56	66.43	96.46	99.87	100.0						

17,325
OBSERVATIONS

1 JAN 72 - 31 DEC 73
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SAINT LUCIE

SITE

E - CENTRAL - FLORDIA

LOCATION

		SPEED (m/s)									
		CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08	
DIRECTION	N		0.23	1.26	2.41	0.98	0.09				
	NNE		0.42	1.30	1.45	0.40	0.09				
	NE		0.38	2.30	2.27	0.81	0.19	0.02			
	ENE		0.40	2.58	2.77	0.80	0.17	0.02			
	E		0.52	3.92	4.28	1.11	0.10				
	ESE		0.58	4.17	4.30	0.62	0.02				
	SE		0.55	3.39	5.12	0.75	0.01				
	SSE		0.36	2.45	3.10	1.07	0.04				
	S		0.44	2.63	2.99	0.64	0.01				
	SSW		0.40	2.29	1.95	0.60	0.14				
	SW		0.57	3.11	1.74	0.50	0.15	0.01			
	WSW		0.53	1.97	0.80	0.17	0.05				
	W		0.71	1.62	0.51	0.09	0.02				
	WNW		0.69	2.01	1.24	0.32	0.02				
	NW		0.52	3.20	2.19	0.46					
	NNW		0.25	1.62	1.46	0.34					
	TOT	3.22	7.58	39.82	38.59	9.64	1.10	0.05	0		
	SUM	3.22	10.80	50.62	89.21	98.85	99.95	100.0			
		16,840		1 MAR 71 - 29 FEB 72							
		OBSERVATIONS		1 JAN 75 - 31 DEC 75							
				PERIOD

SAN ONOFRE

SITE LOCATION:

The San Onofre site (32.37°N/117.56°W) is on the W coast of California, in San Diego County, about 100 km SE of Los Angeles and 80 km NW of San Diego. It is located entirely within the Camp Pendleton Marine Corps Base near the NW end of its 29 km shoreline.

TOPOGRAPHY:

The site is on the west coast of California, which is oriented SE-NW in this area. The dominant features of the surrounding terrain are the steep undulating hills which rise to over 500 m (MSL) just E of the site and to over 250 m in all onshore directions within 6 km. The San Onofre Canyon is N of the site and is oriented WSW-ENE for 5 to 6 km inland before it splits into several smaller canyons which persist for 11 to 13 km from the coast. The site is located on a slight plateau above the beach.

ON-SITE WIND MEASUREMENTS:

A 20 m tower was installed in late 1964 and replaced before 1973 by a 40 m tower. Vector Vane wind systems were used on top of the 20 m tower and at the 10 m and 37 m level on the 40 m tower. The high level sensor was raised to 40 m in October 1975. The tower location is atop a bluff at 45 m (MSL) and about 38 m from the edge, overlooking the beach.

NRC Docket Nos. 50-206, -361

JOINT FREQUENCY DISTRIBUTION

SAN ONOFRE
SITE
SW - CALIFORNIA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1	2	3	4	5	6	7	8	9	>9
	0.25										
N		0.35	1.39	0.89	0.43	0.23	0.06	0.06	0.02		
NNE		0.46	2.25	2.81	2.30	1.62	0.87	0.41	0.15	0.04	0.02
NE		0.38	2.42	3.19	2.74	2.34	1.62	0.92	0.29	0.10	0.04
ENE		0.28	1.15	0.52	0.23	0.20	0.20	0.13	0.10	0.04	0.03
E		0.28	0.67	0.39	0.10	0.05	0.04	0.03	0.03	0.03	0.01
ESE		0.21	0.67	0.64	0.39	0.13	0.07	0.04	0.01	0.02	0.02
SE		0.14	1.04	1.28	1.17	0.54	0.23	0.16	0.12	0.06	0.09
SSE		0.20	1.43	1.77	1.56	1.04	0.45	0.26	0.11	0.04	0.12
S		0.30	1.33	1.54	1.31	0.95	0.50	0.27	14.27	0.08	0.17
SSW		0.33	1.53	1.55	1.40	0.68	0.35	0.12	0.03	0.02	0.06
SW		0.25	1.33	1.62	1.24	0.52	0.16	0.04	0.06	0.05	0.04
WSW		0.33	1.52	2.11	1.57	0.50	0.13	0.11	0.05	0.03	0.03
W		0.26	1.48	2.34	2.52	1.32	0.30	0.13	0.03	0.06	0.13
WNW		0.25	1.36	2.59	3.07	1.89	0.79	0.35	0.12	0.15	0.20
NW		0.20	1.02	1.37	1.29	0.98	0.57	0.29	0.18	0.12	0.13
NNW		0.27	0.91	0.74	0.60	0.34	0.17	0.09	0.04	0.01	0.03
TOT	0.07	4.53	21.50	25.34	21.92	13.32	6.51	3.41	1.50	0.86	1.05
SUM	0.77	4.60	26.10	51.44	73.36	86.68	93.19	96.60	98.10	98.96	100.01

25,127
OBSERVATIONS

25 JAN 73 - 24 JAN 76
PERIOD

JOINT FREQUENCY DISTRIBUTION

SAN ONOFRE

SITE

SW - CALIFORNIA

SPEED (m/s)

LOCATION

DIRECTION	CALM	1	2	3	4	5	6	7	8	9	>9
	0.25										
N		0.56	1.85	1.57	0.85	0.51	0.24	0.06	0.05	0.01	
NNE		0.48	2.00	2.06	1.72	1.22	0.77	0.39	0.18	0.08	0.09
NE		0.61	1.46	1.25	0.95	0.57	0.29	0.25	0.19	0.10	0.15
ENE		0.58	1.02	0.37	0.15	0.09	0.10	0.08	0.03	0.06	0.08
E		0.59	1.16	0.58	0.23	0.09	0.03	0.02	0.02	0.02	0.07
ESE		0.56	1.31	1.16	0.69	0.21	0.10	0.07	0.04	0.02	0.03
SE		0.60	1.76	1.83	1.58	1.02	0.49	0.22	0.14	0.06	0.19
SSE		0.42	1.45	1.56	1.41	0.92	0.68	0.27	0.11	0.07	0.09
S		0.37	1.51	1.59	1.24	0.88	0.42	0.15	0.09	0.08	0.09
SSW		0.50	1.36	1.53	1.29	0.61	0.24	0.09	0.05	0.04	0.04
SW		0.41	1.35	1.88	1.27	0.56	0.18	0.09	0.05	0.03	0.05
WSW		0.39	1.53	2.12	1.86	0.74	0.26	0.11	0.08	0.03	0.09
W		0.43	1.49	2.24	2.60	1.69	0.70	0.34	0.15	0.12	0.22
WNW		0.44	1.23	1.88	2.12	1.71	1.04	0.64	0.30	0.28	0.42
NW		0.34	1.07	1.18	1.02	0.74	0.45	0.29	0.17	0.07	0.10
NNW		0.47	1.17	0.90	0.67	0.22	0.12	0.07	0.02	0.01	
TOT	0.72	7.71	22.68	23.70	19.65	11.78	6.12	3.13	1.68	1.08	1.73
SUM	0.72	8.43	31.11	54.81	74.46	86.24	92.36	95.49	97.17	98.25	99.98

21,065

OBSERVATIONS

25 JAN 73 - 24 JAN 76

PERIOD

VELOCITY-DURATION CURVE

SEABROOK

SITE LOCATION:

The site (42.90°N/70.85°W) is located near the northern boundary of the town of Seabrook in Rockingham County, New Hampshire, about 13 km SE of Exeter, 8 km NE of Amesbury, MA, 3 km W of the Hampton Harbor inlet, and about 65 km NNE of downtown Boston, MA.

TOPOGRAPHY:

The site is on the western edge of the tidal marshes that surround the Hampton Harbor. The harbor opens directly into the Atlantic Ocean through the Hampton Harbor Inlet, 3 km to the E. This inlet is about 250 m wide where it breaks through the sandy seacoast. There are no islands offshore. The immediate site area is tidal marsh with short grass, reeds and tidal channels. Short trees begin at the edge of the marsh as the terrain becomes slightly irregular. A few short ridges and hills occur within the first 8 km from the site. The first hills and ridges of the White Mountains of New Hampshire occur 30-40 km SW, W, and NW. Hilly terrain with peaks between 60 and 150 m are found 40 to 60 km away. The 300 m contour first occurs about 70 km W and beyond 80 km in other directions.

ON-SITE WIND MEASUREMENTS:

A 46 m tower became operational in November 1971. The tower, based at 3 m (MSL) and located near the S edge of Browns River north of the site, was instrumented at 9 m with a 6-bladed Bendix "Aerovane". In November 1972, the Aerovane was replaced with a Bendix P/N 2414914, 3-cup anemometer and P/N 2416970 vane system. Another Bendix system was also installed at the 40 m level.

NRC Docket Nos. 50-340, -443

JOINT FREQUENCY DISTRIBUTION

SEABROOK

SITE

SE - NEW HAMPSHIRE

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	4.0	6.0	8.0	>8.0					
N		1.2	2.3	0.4	0.1						
NNE		1.0	1.1	0.2	0.1						
NE		0.8	1.5	0.6	0.1	0.2					
ENE		0.4	1.7	1.3	0.7	0.4					
E		0.8	1.5	0.7	0.3	0.4					
ESE		0.8	2.7	0.4	0.1	0.1					
SE		1.2	2.8	0.3							
SSE		1.5	2.0	0.2							
S		1.8	1.1	0.1							
SSW		1.9	1.8	0.4							
SW		2.0	3.7	1.1	0.1						
WSW		3.4	4.8	0.6	0.1						
W		3.9	5.7	1.1	0.1						
WNW		6.3	6.8	2.4	1.0	0.2					
NW		3.1	6.2	2.9	1.6	0.7					
NNW		1.5	2.5	0.6	0.2						
TOT		31.6	48.3	13.4	4.6	2.1					
SUM		31.6	79.9	93.3	97.9	100.0					

8549

OBSERVATIONS

1 NOV 71 - 31 OCT 72

PERIOD

VELOCITY-DURATION CURVE

SEQUOYAH

SITE LOCATION:

The Sequoyah site (35.23°N/85.09°W) is near the center of Hamilton County, in SE Tennessee, about 12 km NE of Chattanooga, 23 km WNW of Cleveland and about 50 km SSW of TVA's Watts Bar Nuclear Plant.

TOPOGRAPHY:

The 525-acre site is situated on the western shore of Chickamauga Lake on the Tennessee River. This region is the eastern Tennessee portion of the Southern Appalachian Highlands. The rugged mountain ridge and valley terrain is aligned NE-SW with the high Cumberland Plateau at 480-550 m above the valley floor (210 m (MSL)). The Tennessee River flows SW through the narrow valley area. The valley floor where the site is located is relatively flat to slightly undulating.

ON-SITE WIND MEASUREMENTS:

A 91 m tower became operational in April 1971 at an elevation of about 230 m (MSL) or 15 m above plant grade. Wind direction and speed are measured at 10 and 91 m using Climet WS-011-11 (speed) and Climet WD-012-11 (direction) sensors.

NRC Docket No. 50-327

JOINT FREQUENCY DISTRIBUTION

SEQUOYAH

SITE

TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	2.46	3.35	5.59	8.27	10.95	> 10.95		
	0.22										
N		0.79	2.70	1.35	0.63	0.27					
NNE		1.65	6.49	4.16	2.19	1.88	0.10				
NE		1.31	5.13	2.83	1.21	0.81	0.12				
ENE		0.67	1.38	0.41	0.10						
E		0.50	0.56	0.05	0.01						
ESE		0.37	0.27	0.08	0.01						
SE		0.33	0.70	0.19	0.01	0.01					
SSE		0.43	0.83	0.33	0.12	0.12	0.01				
S		0.53	2.52	1.54	0.94	0.84	0.06				
SSW		0.62	3.90	4.67	3.43	1.99	0.11				
SW		0.63	4.04	5.27	3.24	2.46	0.15	0.01			
WSW		0.46	1.72	1.22	0.73	0.58	0.05	0.02			
W		0.33	0.71	0.47	0.37	0.42	0.04				
WNW		0.39	0.68	0.39	0.33	0.53	0.02				
NW		0.40	0.78	0.60	0.63	0.04	0.05		0.01		
NNW		0.75	2.40	1.57	0.91	1.12	0.06				
TOT	2.25	10.16	34.81	25.13	14.86	11.97	0.77	0.03	0.02		
SUM	2.25	12.41	47.24	72.35	87.21	99.18	99.95	99.98	100.0		

15,607

OBSERVATIONS

2 APR 71 - 31 MAR 73

PERIOD

VELOCITY-DURATION CURVE

SHOREHAM

SITE LOCATION:

The Shoreham site (40.96°N/72.87°W) is located in the town of Brookhaven, Suffolk County, New York on the N shore of Long Island about 80 km ENE of New York City and 5 km NE of Rocky Point.

TOPOGRAPHY:

The 500-acre site, on the N shore of Long Island, is slightly rolling and sloping up from beach level at the Sound to about 60 m (MSL) inland. It is mostly wooded with wetlands along the E and W boundaries, extending almost 1 km back from the shore. Wading River Creek flows through the wetlands on the E side of the site. The coastline runs E-W along the northern site boundary.

ON-SITE WIND MEASUREMENTS

A 122-m tower began collecting data in September 1973. Wind instrumentation includes Climatronics F460 wind sets (3-cup anemometer and vane) at 10 m, 46 m, and 122 m.

NRC Docket No. 50-322

JOINT FREQUENCY DISTRIBUTION

SHOREHAM

SITE

SE - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			0.86	2.63	0.77	0.02						
NNE			0.60	1.95	0.72							
NE			0.68	2.27	0.92	0.01	0.01					
ENE			0.62	1.95	1.80	0.26	0.03					
E			0.62	1.82	1.04	0.21	0.01					
ESE			0.48	1.45	0.79	0.12	0.01					
SE			0.92	1.77	0.75	0.18	0.02					
SSE			0.86	2.24	0.58	0.19						
S			0.90	3.64	1.64	0.29	0.01					
SSW			1.11	5.92	5.18	1.14	0.04					
SW			1.28	5.40	2.42	0.23	0.01					
WSW			0.79	2.52	1.12	0.25	0.01					
W			0.81	3.05	3.04	1.41	0.17					
WNW			0.71	4.86	4.37	2.17	0.13					
NW			0.84	4.37	4.03	1.28	0.02					
NNW			0.76	2.31	1.28	0.12						
TOT		0.19	12.84	48.16	30.45	7.88	0.48	0				
SUM		0.19	13.03	61.19	91.64	99.52	100.0					

16,189
OBSERVATIONS1 OCT 73 - 30 SEP 75
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SHOREHAM

SITE

SE - NEW YORK

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N		0.29	1.47	1.63	1.69	0.47	0.09					
NNE		0.20	1.39	1.33	1.42	0.22	0.01					
NE		0.16	1.12	1.50	1.17	0.26	0.03					
ENE		0.12	0.89	1.61	1.13	0.44	0.14					
E		0.12	0.92	1.58	0.46	0.11	0.04					
ESE		0.13	0.87	1.40	0.23	0.03	0.01					
SE		0.18	1.23	1.32	0.45	0.03	0.01					
SSE		0.10	0.78	2.01	0.68	0.17	0.03					
S		0.11	0.98	3.14	1.74	0.34	0.07					
SSW		0.10	0.93	4.43	5.41	1.03	0.26					
SW		0.10	1.04	4.00	3.60	0.24	0.03					
WSW		0.08	0.81	2.64	1.26	0.18	0.04					
W		0.18	1.17	3.25	2.00	0.87	0.25					
WNW		0.20	1.73	4.10	2.83	1.72	0.37					
NW		0.19	2.05	2.54	3.04	1.40	0.73					
NNW		0.33	1.59	1.58	2.16	1.26	0.20					
TOT	0.03	2.59	18.98	38.05	29.26	8.77	2.32					
SUM	0.03	2.62	21.60	59.65	88.91	97.68	100.0					

15,680

OBSERVATIONS

1 OCT 73 - 30 SEP 75

PERIOD

VELOCITY-DURATION CURVE

SKAGIT

SITE LOCATION:

The site (48.53°N/122.09°W) is in eastern Skagit County, Washington about halfway between Seattle, WA and Vancouver, BC. It is also 37 km SE of Bellingham, 10 km ENE of Sedro Woolley and 103 km N of Seattle.

TOPOGRAPHY:

The site is situated within the forested western foothills of the northern Cascade Mountains. The 1500-acre site is about 128 m (MSL) and more than 100 m above the Skagit River floodplain. The Skagit River is about 2 km S of Lake Minkler, a small shallow-water lake adjacent to the southern boundary of the site. The Nooksack River is about 9 km NE. The Skagit River Valley is oriented W to E and is about 5 km wide in the vicinity of the site. The mouth of the valley is about 8 km W and opens onto the lowlands bordering Puget Sound, some 27 km W of the site. Land surfaces are generally flat to gently rolling in the lowlands, but rise rather abruptly along the western edge of the Cascades. Progressing eastward, the terrain becomes increasingly more rugged and mountainous. The ridge directly N of the site rises to over 1200 m (MSL) within 5 km, while elevations on the S side of the Skagit exceed 1200 m within 11 km.

ON-SITE WIND MEASUREMENTS:

A 60-m tower was established in April 1973 at 128 m (MSL). Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors are located at 10 m and 60 m.

NRC Docket No. 50-522

JOINT FREQUENCY DISTRIBUTION

SKAGIT

SITE

NW - WASHINGTON

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.50	>10.50				
N			3.03	0.48	0.07	0.01						
NNE			1.50	0.48	0.10							
NE			1.24	1.54	0.96	0.31						
ENE			1.60	5.31	10.16	3.58	0.07	0.01				
E			1.63	5.00	4.01	0.22						
ESE			1.38	3.10	1.26	0.04						
SE			1.37	1.93	0.53							
SSE			1.23	0.63	0.11	0.01						
S			0.95	0.38	0.11	0.01						
SSW			0.55	0.26	0.22	0.11						
SW			0.81	0.78	0.43	0.10						
WSW			0.91	1.72	1.08	0.02						
W			1.76	5.10	5.47	0.43						
WNW			2.68	5.29	2.60	0.27						
NW			4.24	3.28	0.97	0.04						
NNW			5.01	1.02	0.22							
TOT	0.26	29.89	36.30	28.31	5.16	0.07	0.01					
SUM	0.26	30.15	66.45	94.76	99.92	99.99	100.0					

8122

OBSERVATIONS

1 MAY 73 - 2 MAY 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SKAGIT

SITE

NW - WASHINGTON

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.50	>10.50				
N			0.34	0.33	0.19	0.02						
NNE			0.39	0.39	0.12	0.01						
NE			0.45	0.67	0.52	0.15	0.04					
ENE			1.54	3.05	6.39	10.73	4.87	1.70				
E			2.36	4.94	5.63	3.01	0.51	0.02				
ESE			1.57	1.87	1.24	0.25						
SE			0.61	0.43	0.17	0.04						
SSE			0.43	0.31	0.13	0.08	0.01					
S			0.45	0.40	0.15	0.13	0.04	0.01				
SSW			0.38	0.39	0.19	0.07	0.14	0.12				
SW			0.42	0.71	0.71	0.24	0.02	0.02				
WSW			0.96	1.73	3.85	0.55	0.01	0.04				
W			1.88	4.36	6.45	2.03	0.10	0.02				
WNW			1.53	4.74	4.75	0.97	0.06	0.04				
NW			1.05	1.89	1.52	0.25	0.07					
NNW			0.42	0.43	0.12	0.02						
TOT		0.05	14.78	26.65	32.13	18.56	5.87	1.97				
SUM		0.05	14.83	49.47	78.60	92.16	98.03	100.0				

8418

OBSERVATIONS

1 MAY 73 - 2 MAY 74

PERIOD

VELOCITY-DURATION CURVE

SOUTH TEXAS

SITE DESCRIPTION:

The site (28.80°N/96.05°W) of the South Texas Project (STP) is located in a rural area of Matagorda County, along the central Gulf coast of Texas, about 19 km SSW of Bay City, 16 km N of Matagorda Bar, 6 km W of Wadsworth and about 120 km SSW of Houston. The Allens Creek site is about 95 km N of the STP site.

TOPOGRAPHY:

Local relief of the area is generally flat, about 7 m (MSL). The west branch of the Colorado River, as well as several sloughs, flow through the site. One of the sloughs feeds Kelly Lake, a 35-acre lake in the NE corner of the site. This region is part of the Coastal Prairie, which extends as a broad band parallel to the Texas Gulf coast for some 60-80 km inland.

ON-SITE WIND MEASUREMENTS:

On-site measurements began in July 1973 at the 10-m and 60-m level of a 60-m tower. Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors are used.

NRC Docket No. 50-498

JOINT FREQUENCY DISTRIBUTION

SOUTH TEXAS

SITE
SE - TEXAS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
	0.22										
N		0.27	1.36	2.20	2.24	1.26	0.13				
NNE		0.42	1.99	3.14	2.00	0.16	0.01				
NE		0.44	3.37	3.15	0.88	0.05					
ENE		0.39	2.40	1.54	0.34	0.01					
E		0.54	2.76	1.29	0.51	0.11	0.01				
ESE		0.48	2.73	1.47	0.84	0.32					
SE		0.57	3.09	4.89	3.98	0.81	0.18				
SSE		0.46	2.53	5.28	4.90	1.58	0.43				
S		0.54	2.12	4.14	4.86	2.26	0.76				
SSW		0.15	0.83	1.28	1.30	0.59	0.30				
SW		0.32	0.98	0.67	0.61	0.19	0.09				
WSW		0.28	0.34	0.23	0.14	0.02					
W		0.33	0.62	0.39	0.11	0.04	0.01				
WNW		0.20	0.47	0.37	0.18	0.07	0.06				
NW		0.29	0.76	0.49	0.21	0.11	0.07				
NNW		0.25	1.09	1.01	0.70	0.48	0.16				
TOT	1.04	5.92	27.43	31.54	23.79	8.04	2.22				
SUM	1.04	6.96	34.40	65.94	89.74	97.78	100.0				

8544
OBSERVATIONS20 JUL 73 - 20 JUL 74
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SOUTH TEXAS

SITE

SE - TEXAS

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			0.13	0.46	1.38	2.65	1.93	1.09				
NNE			0.08	0.31	1.73	2.65	1.13	0.12				
NE			0.14	0.64	1.92	2.10	0.87	0.02				
ENE			0.07	0.64	1.39	1.42	0.38	0.02				
E			0.12	0.65	1.34	1.65	0.57	0.05				
ESE			0.11	0.52	1.80	2.02	0.73	0.15				
SE			0.11	0.67	2.78	5.11	1.94	0.69				
SSE			0.07	0.72	3.10	8.06	4.63	1.74				
S			0.09	0.77	3.27	6.51	4.72	3.03				
SSW			0.11	0.55	1.14	2.37	1.21	0.45				
SW			0.18	0.41	0.92	0.99	0.58	0.38				
WSW			0.09	0.20	0.45	0.22	0.12	0.02				
W			0.09	0.34	0.28	0.28	0.14	0.12				
WNW			0.08	0.31	0.36	0.35	0.14	0.12				
NW			0.14	0.47	0.61	0.52	0.36	0.29				
NNW			0.07	0.29	0.60	0.78	0.71	1.08				
TOT		0.08	1.68	7.94	23.08	37.69	20.16	9.38				
SUM		0.08	1.77	9.70	32.78	70.46	90.62	100.0				

8494

OBSERVATIONS

20 JUL 73 - 20 JUL 74

PERIOD

VELOCITY-DURATION CURVE

STERLING

SITE LOCATION:

The site (43.39°N/76.98°W) is located on the south shore of the SE corner of Lake Ontario, in Oswego County, New York, about 13 km WSW of Oswego. Syracuse is 60 km SE and Rochester is 78 km WSW.

TOPOGRAPHY:

The terrain rises rather sharply from the lake (75 m (MSL)) for more than 30 m, and even forms cliffs to the SW toward Fair Haven. Back from the shore, the terrain is gently rolling and rises more gradually inland. Some hills to the SW, S, SE, and E rise to heights of 30 to 60 m within 5 to 8 km of the lake. The shoreline in front of the site is NNE-SSW, but changes sharply W at Fair Haven, 5 km to the SSW. At Burnt Point, 3 km NNE, the shoreline turns ENE.

ON-SITE WIND MEASUREMENTS

A 104-m tower is instrumented at 10 m, 46 m, and 104 m with Teledyne Model 50.1 Anemometers and Teledyne 50.2 "Quick-2" vanes. Base elevation is about 105 m (MSL).

NRC Docket No. 50-485

JOINT FREQUENCY DISTRIBUTION

STERLING

SITE

CENTRAL - NEW YORK

LOCATION

SPEED (m/s)

	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
DIRECTION												
N		0.39	1.37	1.16	0.52	0.01						
NNE		0.58	1.62	2.01	0.98	0.10						
NE		0.81	1.45	0.52	0.02							
ENE		0.67	1.31	0.19	0.04							
E		0.93	1.75	0.61	0.33	0.02						
ESE		0.97	1.98	1.79	0.50							
SE		1.33	3.85	3.33	0.76	0.01						
SSE		1.09	2.87	2.25	1.03	0.17	0.04					
S		1.19	3.68	3.33	1.84	0.24						
SSW		1.34	4.76	2.18	0.46	0.07						
SW		0.83	2.82	3.26	0.75	0.05	0.02					
WSW		0.39	2.38	4.22	2.66	0.58	0.08					
W		0.41	2.77	4.30	1.67	0.12	0.01					
WNW		0.33	1.83	2.08	0.90	0.05						
NW		0.31	1.96	2.25	0.69							
NNW		0.34	1.08	1.80	0.54	0.04						
TOT		0.04	11.91	37.48	35.27	13.69	1.46	0.16	0			
SUM		0.04	11.95	49.43	84.70	98.39	99.85	100.01				

8264

OBSERVATIONS

13 MAY 73 - 14 MAY 74

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site (34.30°N/81.32°W) is located in Fairfield County, central South Carolina, 24 km SW of Winniboro and 42 km NW of Columbia. The nearest community is Jenkinsville, about 5 km SE.

TOPOGRAPHY:

The site is a heavily wooded area in the rolling and hilly Appalachian Piedmont Plateau. Elevations range from 78 m (MSL) at the Parr Reservoir on the Broad River, 2 km W, to over 150 m at the tops of hills and ridges. Site elevation ranges from 135 to 150 m (MSL). The valley of the Broad River lies in a N-S direction, W of the site. The site is also 225 km NW of the Atlantic Ocean and 160 km SE of the Appalachian Mountains.

ON-SITE WIND MEASUREMENTS:

A 60-m tower, at 100 m (MSL) is instrumented at the top with a Bendix-Friez "Aerovane".

NRC Docket No. 50-395

JOINT FREQUENCY DISTRIBUTION

SUMMER

SITE

CENTRAL - SOUTH CAROLINA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08			
N			1.4	2.5	1.2	0.2	*					
NNE			0.7	1.8	1.1	0.2						
NE			0.8	2.7	2.5	0.5						
ENE			0.7	2.7	3.3	0.8	*					
E			0.8	2.4	2.6	0.5						
ESE			0.6	1.5	0.9	0.1						
SE			0.3	1.3	1.1	0.1						
SSE			0.8	2.2	1.6	0.1						
S			1.3	3.3	2.8	0.7	*	*				
SSW			1.0	3.1	1.6	0.3	*					
SW			0.7	3.0	2.1	0.6	*					
WSW			1.1	3.1	3.0	0.7	0.1	*	*			
W			2.2	3.7	4.5	2.7	0.7	0.1				
WNW			1.5	1.9	1.5	0.8	0.3	0.1				
NW			1.1	1.7	0.6	0.2		*				
NNW			1.4	2.3	1.0	0.1						
TOT	3.00	16.1	39.6	31.3	8.6	1.2	0.2	0				
SUM	3.00	19.1	58.7	90.0	98.6	99.8	100.0					

7164

OBSERVATIONS

6 JUN 65 - 5 JUN 66

PERIOD

* INDICATES < 0.05 %

VELOCITY-DURATION CURVE

SUMMIT

SITE LOCATION:

The Summit Power Station site (39.52°N/75.69°W) is in New Castle County, in northern Delaware, 8 km NNE of Middletown 24 km SSW of Wilmington and 48 km SW of Philadelphia, PA. The site is 2 km S of the Chesapeake and Delaware Canal. The Salem Power Station is 15 km ESE of Summit.

TOPOGRAPHY:

The topography is flat for an 8 km radius. The Delaware River is 12 km E and the Elk River, which empties into the Chesapeake Bay, is 15 km W, but neither accounts for any terrain relief.

ON-SITE WIND MEASUREMENTS:

In July 1973, a 61-m tower was established with instruments at 9 m and 60 m. Wind data are taken using Teledyne Geotech 50.1 (speed) and 50.2 (direction) sensors.

NRC Docket No. 50-450

JOINT FREQUENCY DISTRIBUTION

SUMMIT

SITE

N - DELAWARE

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	3.0	5.0	7.5	10.0	>10.0				
N		1.05	1.91	1.08	0.32						
NNE		0.85	1.50	0.80	0.11						
NE		0.93	1.19	2.07	0.71						
ENE		1.05	1.37	1.22	0.57	0.05					
E		1.02	1.70	0.64	0.19	0.06					
ESE		0.95	1.60	1.31	0.32	0.03	0.01				
SE		0.99	2.81	2.44	0.43	0.01	0.01				
SSE		1.19	2.21	0.62	0.14	0.04					
S		1.45	2.24	1.26	0.43	0.06					
SSW		1.21	3.96	2.38	1.05	0.25					
SW		1.89	4.31	2.91	0.61	0.08					
WSW		2.08	3.53	2.29	0.24	0.06	0.01				
W		2.07	3.38	2.16	1.36	0.60	0.13				
WNW		1.82	2.62	2.39	2.26	0.69	0.05				
NW		1.13	2.06	1.94	2.15	0.43	0.05				
NNW		1.07	1.42	1.11	0.61	0.10					
TOT		21.35	37.80	26.60	11.51	2.46	0.27				
SUM		21.35	59.16	85.76	57.27	99.73	100.0				

7872

OBSERVATIONS

1 AUG 73 - 31 JUL 74

PERIOD

VELOCITY-DURATION CURVE

SURRY

SITE LOCATION:

The Surry Power Station (37.17°N/76.70°W) is in Surry County, Virginia on a point of land called Gravel Neck, which juts into the James River from the south. The James River runs generally NW-SE with considerable meander. The site is across the river from Newport News.

TOPOGRAPHY:

The terrain at the site is generally flat, with steep banks sloping down to the river. Maximum elevation is about 12 m (MSL) and station grade is 8 m. Beyond the site boundaries, maximum land elevations within 8 km are in the range of 12 m to 18 m. Further away the terrain is gently rolling, with few hills over 60 m (MSL) within 80 km. The Atlantic Ocean lies some 65 km E.

ON-SITE WIND MEASUREMENTS:

Wind data have been taken at two locations. A temporary 6 m tower was erected on Hog Island, the tip of a peninsula jutting out into the James River. The tower had a Belfort 1250-1275 wind system on top. A 46 m tower in the middle of the site, at about 8 m (MSL) is also instrumented with a Belfort 1250-1275 wind system. There is a 23 m clearing among 20 m trees surrounding the 46 m tower. The Hog Island station was situated on sandy marshland with only low scrub bush.

NRC Docket Nos. 50-280, -434

JOINT FREQUENCY DISTRIBUTION

SURREY

SITE

SE - VIRGINIA (HOG ISLAND)

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50	>10.50
N		1.56	1.85	1.76	1.75	1.50	0.95	0.51	0.02		
NNE		0.40	1.04	1.35	1.12	0.87	0.57	0.21	0.05		
NE		0.54	0.81	1.01	1.26	1.18	0.61	0.21	0.18	0.03	
ENE		0.48	0.51	0.58	0.52	0.41	0.25	0.17	0.21	0.08	
E		0.81	0.78	0.83	0.98	1.13	0.23	0.05	0.06	0.15	
ESE		0.43	0.55	0.93	0.93	1.47	0.32	0.14	0.05	0.11	
SE		0.63	0.83	0.98	1.06	0.92	0.34	0.06			
SSE		0.61	1.16	1.20	0.90	0.66	0.21	0.03			
S		1.00	1.61	1.62	1.26	0.75	0.17				
SSW		0.90	1.18	1.06	0.70	0.23	0.08	0.05			
SW		1.26	1.15	1.10	1.13	0.55	0.11	0.12			
WSW		0.78	1.35	1.39	2.33	1.06	0.18	0.02			
W		1.29	1.99	2.31	1.87	0.97	0.26	0.11			
WNW		1.18	1.84	1.72	1.18	0.92	0.58	0.21	0.03	0.02	
NW		1.12	1.46	1.03	1.18	1.29	0.70	0.37	0.06	0.06	
NNW		1.79	2.15	1.62	1.65	0.97	0.57	0.26		0.02	
TOT	3.52	14.25	19.54	19.78	19.13	14.36	5.91	2.42	0.64	0.44	
SUM	3.52	17.77	37.31	57.09	76.22	90.58	96.47	98.91	99.55	99.99	

6764

OBSERVATIONS

1 FEB 68 - 1 FEB 69

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SURRY

SITE

SE - VIRGINIA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50	>10.50
N		0.22	0.85	1.63	2.89	1.64	0.54	0.21	0.05	0.08	
NNE		0.27	0.80	1.37	1.50	1.03	0.26	0.16	0.02		
NE		0.23	0.81	1.35	1.20	0.60	0.17	0.05	0.02	0.01	
ENE		0.22	0.64	1.27	1.22	0.57	0.11	0.03	0.03	0.02	
E		0.24	0.71	1.62	1.86	0.69	0.10	0.03	0.04	0.03	
ESE		0.23	0.81	1.68	1.56	0.54	0.11	0.04	0.01		
SE		0.28	0.72	1.34	1.50	1.08	0.31	0.10	0.02		
SSE		0.22	0.48	0.86	1.53	0.68	0.10	0.04			
S		0.24	0.73	1.11	2.02	1.46	0.25	0.10	0.01		
SSW		0.26	0.66	1.27	2.45	2.23	0.74	0.20	0.04	0.02	
SW		0.33	0.74	1.47	2.16	1.96	0.95	0.47	0.14		
WSW		0.37	0.74	1.45	1.76	1.10	0.59	0.44	0.09	0.03	
W		0.47	1.06	1.30	1.18	1.04	0.72	0.45	0.07	0.02	
WNW		0.37	1.16	1.25	1.14	1.05	0.76	0.75	0.31	0.07	
NW		0.41	1.24	1.36	1.49	1.69	1.41	0.98	0.42	0.23	
NNW		0.28	1.01	1.55	1.67	1.71	1.07	0.69	0.26	0.05	
TOT		0.73	4.66	13.07	21.73	26.14	18.93	8.15	4.59	1.52	0.48
SUM		0.73	5.39	18.46	40.19	66.33	85.26	93.41	98.00	99.52	100.0

48,520

OBSERVATIONS

1 JAN 68 - 31 DEC 69

PERIOD

VELOCITY-DURATION CURVE

SUSQUEHANNA

SITE LOCATION:

The site (41.10°N/76.14°W) is in east central Pennsylvania, on the west bank of the Susquehanna River, in Luzerne County. It is 6 km S of Shickshinny; 8 km NE of Berwick; 19 km NNW of Hazleton; 24 km SW of Wilkes-Barre; 80 km NW of Allentown; and 113 km NE of Harrisburg.

TOPOGRAPHY:

The site is located on a plateau above the Susquehanna River, in the rugged Appalachian Highlands of Pennsylvania. The river valley is rather flat-bottomed, running N-S and widening to the S and W. Moderately steep slopes rise on both sides of the river.

ON-SITE WIND MEASUREMENTS:

A 91 m tower was installed at 199 m (MSL) and instrumented at 9 m and 91 m with Climet WS-011-1/WD-012-10 data systems. Supplementary data are taken at two other locations, but data have not been published.

NRC Docket No. 50-387

JOINT FREQUENCY DISTRIBUTION

SUSQUEHANNA

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.35	1.5	3.0	5.0	7.5	10.0	12.5	>12.5			
N			2.49	1.28	0.86	0.14	0.04					
NNE			3.15	1.89	0.75	0.05						
NE			4.23	2.39	0.86	0.02						
ENE			6.60	2.21	0.55	0.06						
E			5.96	1.75	0.41	0.09	0.01					
ESE			3.06	0.99	0.23	0.01						
SE			1.66	0.82	0.10	0.03						
SSE			2.20	1.25	0.21	0.03						
S			2.66	1.93	0.83	0.32	0.01					
SSW			2.94	2.02	0.86	0.48	0.03	0.01				
SW			3.32	3.11	0.76	0.20	0.06					
WSW			2.72	4.57	2.42	0.49	0.01					
W			2.60	3.02	2.97	1.23	0.03					
WNW			1.82	1.26	1.51	0.79	0.05					
NW			1.56	1.06	0.79	0.21						
NNW			1.74	1.21	0.80	0.27						
TOT	0.99	48.69	30.77	14.92	4.42	0.20	0.01	0				
SUM	0.99	49.69	80.45	95.37	99.79	99.99	100.0					

23,969
OBSERVATIONS1 JAN 73 - 31 DEC 75
PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

SU SQUEHANNA

SITE

SE - PENNSYLVANIA

LOCATION

DIRECTION	SPEED (m/s)										
	CALM 0.35	1.5	3.0	5.0	7.5	10.0	12.5	>12.5			
N		1.77	3.43	2.12	0.83	0.08					
NNE		2.15	3.40	1.97	0.81	0.08					
NE		1.75	1.98	1.06	0.32	0.06	0.01				
ENE		1.25	1.13	0.79	0.31	0.01					
E		1.09	0.80	0.76	0.37	0.04					
ESE		0.88	0.84	0.88	0.50	0.06					
SE		0.90	0.99	1.02	0.56	0.08	0.01				
SSE		1.26	1.09	1.36	0.74	0.11					
S		1.47	1.60	1.56	1.25	0.32	0.03				
SSW		1.60	3.14	2.40	1.17	0.25	0.03				
SW		1.52	3.62	4.66	2.98	0.59	0.17				
WSW		0.79	2.13	2.98	2.98	0.78	0.17				
W		0.57	1.12	2.00	2.66	0.56	0.11				
WNW		0.39	0.52	1.39	2.04	0.42	0.03				
NW		0.52	0.53	1.19	1.34	0.09					
NNW		1.05	1.50	1.52	0.89	0.03					
TOT	1.68	18.97	27.83	27.68	19.74	3.55	0.55	0			
SUM	1.68	20.65	48.48	76.16	95.90	99.45	100.0				

25,298

OBSERVATIONS

1 JAN 73 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

THREE MILE ISLAND

SITE LOCATION:

The site ($40.13^{\circ}\text{N}/76.73^{\circ}\text{W}$) is located about 4 km S of Middletown, Pennsylvania in Dauphin County. Harrisburg is 18 km NW; Lancaster is 37 km ESE, and Philadelphia is about 125 km E.

TOPOGRAPHY:

The site is an island in the Susquehanna River in southeast Pennsylvania. The 500 m by 3300 m island is one of the largest of a group of several islands in the river and is situated about 275 m from the east bank. It is elongated, parallel to the N-S flow of the river. The southeast-flowing Susquehanna River makes a sharp change in direction, to nearly due south, in the vicinity of Middletown, just north of Three Mile Island, and widens to about 2.5 km. The river cuts across the NE-SW-oriented low ridges of the foothills of the Appalachian Range to the northwest. This is the Piedmont Plateau region of Pennsylvania, consisting of rolling uplands, low hills and fertile valleys. The long ridge of the Blue Mountains, with elevations of about 300 m above the site, begins to rise about 30 km NW. The land surrounding the site slopes to the NW-SE river valley floor, while the terrain slopes generally upward to the NW toward the Appalachians.

ON-SITE WIND MEASUREMENTS:

On-site data collection began in May 1967. Two 30-m towers were located on the southern half of the island. Teledyne Geotech 50.1 (speed) and 50.2 (direction) instruments were used to take wind data. Base elevation is 91 m (MSL).

NRC Docket Nos. 50-289, -320

JOINT FREQUENCY DISTRIBUTION

THREE MILE ISLAND

SITE

SE - PENNSYLVANIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
N		1.98	1.71	0.59	0.12	0.01						
NNE		1.30	1.03	0.19	0.02							
NE		1.77	1.37	0.24	0.04	0.01						
ENE		2.17	2.16	0.51	0.08	0.01	0.01	0.01				
E		2.76	3.51	1.17	0.16		0.02	0.01				
ESE		2.81	2.88	1.07	0.10	0.01						
SE		2.51	2.17	0.74	0.12							
SSE		2.02	1.61	0.55	0.16	0.05						
S		2.01	2.07	0.86	0.19	0.02						
SSW		1.94	2.26	0.94	0.24							
SW		2.37	2.05	0.58	0.24	0.12	0.04					
WSW		2.01	1.94	0.89	0.46	0.21	0.05					
W		2.18	2.25	1.85	1.26	0.59	0.11					
WNW		2.04	2.47	2.35	1.71	0.49	0.12	0.01				
NW		2.42	2.79	2.74	2.29	1.06	0.15					
NNW		2.96	2.85	1.52	0.91	0.29	0.04					
TOT	1.27	35.26	35.11	16.80	8.07	2.89	0.56	0.03				
SUM	1.27	36.53	71.64	88.44	96.51	99.40	99.96	100.0				

20,867

OBSERVATIONS

1 APR 71 - 31 MAR 72, 1 OCT 72 - 30 SEP 73,
PERIOD AND 1 NOV 74 - 31 OCT 75

VELOCITY-DURATION CURVE

TROJAN

SITE LOCATION:

The Trojan Nuclear Plant site ($46.04^{\circ}\text{N}/122.87^{\circ}\text{W}$) lies along the bank of the Columbia River, in Columbia County, Oregon, about 70 km N of Portland. Rainier, OR is 7 km NW; Kalama, WA is 5 km SE; Longview, WA is 10 km NE; Carrolls, WA is 4 km NE; Gable, OR is 2.4 km SE; and Prescott, OR is 0.8 km N.

TOPOGRAPHY:

The site is in the Columbia River Valley, which in this locale runs generally S-N, having shifted from its E-W flow near Portland. It swings generally westward again after Longview. In the immediate vicinity, there is a bluff 400 m W, rising sharply to 120-150 m (MSL). North of the site is a wooded hill that rises to 30 m. The remaining area in the immediate vicinity of the plant is flat and low. The Columbia River is about 3 km wide just E of the site and widens to 5 km at Longview-Kelso, 10 km NE. In general, the terrain is mountainous and cut-through by the Columbia River and its tributaries. The Kalama River flows into the Columbia about a kilometer north. The valley walls rise to over 300 m (MSL) within 3 km to the west and only slightly lower to the east.

ON-SITE WIND MEASUREMENTS:

On-site data collecting began in October 1969 from a 152-m tower (tower A) instrumented at 67 m, 113 m and 152 m, using Bendix Aerovanes, and from a 9 m tower (tower B) on the bank of the Columbia, also instrumented with a Bendix Aerovane. Another 9 m tower (C) was installed in February 1971, using a Climet WS-011-1 (speed) and Climet WD-012-10 (direction) system. Tower A is at 6 m (MSL), tower B at 7 m (MSL) and tower C at 6 m (MSL).

JOINT FREQUENCY DISTRIBUTION

TROJAN

SITE

NW - OREGON

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.12	2.01	2.91	3.80	5.14	6.48	8.27	10.50	>10.50	
	0.22										
N		0.58	1.29	1.96	2.60	3.64	3.14	2.05	1.60	0.20	
NNE		0.17	0.48	0.83	1.04	1.69	0.88	0.24			
NE		0.17	0.26	0.34	0.41	0.28	0.14				
ENE		0.15	0.26	0.12	0.05	0.01		0.01			
E		0.27	0.31	0.11	0.01	0.01					
ESE		0.38	0.35	0.18	0.07	0.01					
SE		0.64	0.86	1.25	0.86	0.72	0.24	0.10			
SSE		1.02	1.54	1.35	1.26	2.33	1.87	1.37	1.16	0.11	
S		1.89	2.39	2.24	2.65	4.27	3.28	2.29	1.05		
SSW		1.03	0.87	1.27	1.52	1.44	0.65	0.21	0.01		
SW		0.84	0.56	0.38	0.34	0.36	0.15	0.01			
WSW		0.69	0.32	0.08	0.13	0.03	0.01	0.02	0.01		
W		0.99	0.42	0.36	0.12	0.07	0.11	0.06	0.05		
WNW		1.08	0.92	0.46	0.14	0.25	0.18	0.45	0.23		
NW		0.79	1.49	1.18	0.66	0.91	0.84	0.70	0.44	0.01	
NNW		0.62	1.20	1.45	1.29	1.82	1.78	2.44	2.13	0.37	
TOT	0.03	11.31	13.52	13.56	13.15	17.84	13.27	9.95	6.68	0.69	
SUM	0.03	11.34	24.86	38.42	51.57	69.41	82.68	92.63	99.31	100.0	

8760

OBSERVATIONS

1 SEP 71 - 31 AUG 72

PERIOD

VELOCITY-DURATION CURVE

TURKEY POINT

SITE LOCATION:

The site (25.43°N/80.33°W) is located on the western shore of Biscayne Bay, 40 km S of Miami, in Dade County, Florida.

TOPOGRAPHY:

The western shore of Biscayne Bay is flat terrain that has a gentle slope from an elevation of sea level at the shoreline up to an elevation of 3 m at about 15 km inland. The land in and around the shoreline area of the site is mostly mangrove swamps which extend 5-7 km inland (clockwise SW to NNW). Open fields extend inland from the edge of these swamp areas. The entire Dade County area is quite flat with the highest level on a ridge in the Miami area. The ridge parallels the shoreline and reaches an elevation of about 6 m, some 50 km N.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological program became operational in late 1967. Bendix-Friez Aerovanes (6-bladed) were mounted at 9 m (MSL) near the Ranger House and at 73 m (MSL) atop a water tower.

NRC Docket No. 50-250

JOINT FREQUENCY DISTRIBUTION

TURKEY POINT

SITE

SE - FLORIDA

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.45	1.79	3.58	5.81	8.49	11.18	13.86	>13.86			
N		0.45	1.52	1.25	0.31							
NNE		0.55	1.19	0.78	0.54	0.58	0.08					
NE		0.28	1.18	2.37	1.66	0.34	0.03					
ENE		0.35	2.08	5.97	4.44	4.48						
E		0.29	3.69	7.74	3.20	0.23						
ESE		0.63	3.67	6.72	2.62	0.08						
SE		0.35	1.97	4.64	1.78	0.25						
SSE		0.28	2.04	2.75	0.74	0.08						
S		0.25	1.84	1.27	0.53	0.14						
SSW		0.25	1.32	1.12	0.48	0.34	0.03					
SW		0.22	1.20	0.60	0.18	0.03						
WSW		0.12	0.49	0.29	0.01							
W		0.20	1.08	0.60	0.20							
WNW		0.43	2.13	1.02	0.09							
NW		1.02	2.61	2.32	0.46	0.01						
NNW		0.58	3.57	2.23	0.59	0.01						
TOT	0.04	6.23	31.59	41.66	17.82	2.55	0.13	0				
SUM	0.04	6.27	37.88	79.54	97.36	99.91	100.02					

7975

OBSERVATIONS

1 JAN 73 - 31 DEC 73

PERIOD

VELOCITY-DURATION CURVE

NEAR SEA LEVEL

BASE ELEVATION (MSL)

9 m

SENSOR HEIGHT (AGL)

4 m/s

MEAN VELOCITY

82 W/m²

AVAIL POWER

TYRONE

SITE LOCATION:

The site (44.70°N/91.83°W) is located in southern Dunn County, west central Wisconsin, about 13 km NE of Durand and 30 km WSW of Eau Claire.

TOPOGRAPHY:

West central Wisconsin is generally gently rolling. The site, which varies in elevation from 250 to 258 m (MSL), is located on the S bank of the Chippewa River, about 30 m above the river valley. Plant grade is 256 m (MSL). The 4700-acre site is level with gently rolling hills. Two creeks dissect the site and flow into the Chippewa River which flows NE-SW. The largest hills are located in a ridge to the SE that rises to 370 m (MSL) at about 7 km and to about 390 m (MSL) at about 8 km.

ON-SITE WIND MEASUREMENTS:

The on-site meteorological program began in May 1973. The system includes Climet WS-011-1 (speed) and Climet WD-012-10 (direction) sensors at 11 m, 61 m, and 104 m on a 104 m tower, based at 253 m (MSL). The tower is in a wheat field, with a grove of 6-8 m pines beginning 365 m S, 4-6 m pine windbreaks about 200 m E and W, and a field of 1 m high replanted pines to the N.

NRC Docket No. 50-484

JOINT FREQUENCY DISTRIBUTION

TYRONE

SITE

W-CENTRAL WISCONSIN

LOCATION

SPEED (m/s)

DIRECTION	CALM									
	0.22	1.56	3.35	5.59	8.27	10.95	>10.95			
N		1.08	1.19	0.65	0.60	0.03				
NNE		1.13	1.53	0.76	0.38	0.03				
NE		1.57	2.14	1.19	0.56	0.08				
ENE		1.39	2.37	1.86	0.15	0.01				
E		1.70	2.71	2.30	0.43	0.02				
ESE		0.93	2.78	2.53	0.67	0.14				
SE		0.86	2.38	2.45	0.36	0.02	0.01			
SSE		0.82	2.13	2.19	0.83	0.08	0.01			
S		1.68	2.88	3.09	1.77	0.28	0.03			
SSW		1.54	2.73	1.82	0.79	0.13				
SW		2.21	4.18	1.81	0.67	0.08				
WSW		1.05	2.50	1.04	0.86	0.08				
W		1.25	2.74	2.89	1.23	0.10				
WNW		0.75	1.62	2.08	1.28	0.14				
NW		1.08	1.97	1.79	0.58	0.09				
NNW		0.88	1.31	0.83	0.56	0.06				
TOT	0.47	19.92	37.16	29.30	11.72	1.37	0.06			
SUM	0.47	20.39	57.55	86.85	98.57	99.94	100.0			

8642

OBSERVATIONS

19 MAY 73 - 18 MAY 74

PERIOD

VELOCITY-DURATION CURVE

VERMONT YANKEE

SITE LOCATION:

The site (42.78°N/72.52°W) is located in Vernon, extreme SE Vermont, in Windham County on the west shore of the Connecticut River, immediately upstream of the Vernon Hydro-electric Station dam. Brattleboro is 8 km N and Northampton, MA is 50 km S.

TOPOGRAPHY:

The terrain is dominated by the presence of the Connecticut River valley, which runs SSE in this area. The region is typical of the northern Appalachian highlands, with rolling to rugged hills. The Pisgah Mountains are about 8 km NE and several peaks above 500 m (MSL) abound within 15 km.

ON-SITE WIND MEASUREMENTS:

A 43-m tower was installed at an elevation of about 84 m (MSL). Instrumentation consists of a Bendix "Aerovane" wind system at the top of the tower.

NRC Docket No. 50-271

JOINT FREQUENCY DISTRIBUTION

VERMONT YANKEE

SITE

SE - VERMONT

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	>8.27					
	0.22										
N		2.53	1.66	1.49	0.72	0.19					
NNE		1.37	0.48	0.21	0.25	0.05					
NE		1.23	0.20	0.12							
ENE		1.37	0.35	0.07							
E		1.59	0.54	0.16							
ESE		2.95	2.40	0.74	0.20						
SE		3.25	3.38	1.22	0.22						
SSE		2.55	3.22	1.76	0.57	0.09					
S		1.38	1.54	2.00	1.39	0.60					
SSW		0.67	0.85	0.68	0.35	0.07					
SW		0.52	0.67	0.43	0.05						
WSW		0.32	0.76	0.79	0.32						
W		0.67	0.96	2.21	1.60	0.42					
WNW		0.93	1.34	2.25	2.51	1.21					
NW		2.02	3.39	2.65	2.00	1.18					
NNW		3.40	6.35	4.10	3.34	1.47					
TOT	4.98	26.75	28.09	20.88	13.52	5.28					
SUM	4.98	32.17	60.32	81.20	94.72	100.0					

8760

OBSERVATIONS

1 AUG 67 - 31 JUL 68

PERIOD

VELOCITY-DURATION CURVE

ALVIN W. VOGTLE

SITE LOCATION:

The site (33.14°N/81.76°W) is in Burke County, northeast Georgia, across the Savannah River from the United States Government's Savannah River Plant. This location is about 24 km ENE of Waynesboro, GA and 42 km SSE of Augusta.

TOPOGRAPHY:

The site is in the rolling Appalachian Piedmont Plateau, generally 45-76 m (MSL). The site terrain is generally flat with the 3-8 km wide Savannah River valley representing a depression of about 43 m and running NW-SE about 900 m to the NE. Plant grade is at 67 m (MSL).

ON-SITE WIND MEASUREMENTS:

The on-site meteorological measurement program began in April 1972. A 46-m tower is located at plant grade in a clearing south of the plant. Data are taken by Climet WS-011-1 (speed) and WD-012-10 (direction) sensors.

NRC Docket No. 50-424

JOINT FREQUENCY DISTRIBUTION

VOGTLE

SITE

NE - GEORGIA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.53	>14.53			
N			1.10	2.52	0.61	0.04						
NNE			1.15	2.28	0.78	0.10						
NE			1.18	3.72	2.05	0.21						
ENE			0.96	3.96	1.47	0.06						
E			1.08	3.99	1.70	0.07						
ESE			1.20	3.24	1.53	0.04						
SE			1.40	3.14	1.43	0.27						
SSE			1.50	2.84	1.31	0.37	0.01					
S			1.33	3.15	1.54	0.36	0.03					
SSW			1.31	3.39	1.05	0.34	0.07	0.01				
SW			1.31	4.40	1.41	0.23	0.01					
WSW			1.21	4.48	1.64	0.48	0.01					
W			1.23	3.64	2.48	0.88	0.10					
WNW			1.10	3.02	1.95	1.20	0.17					
NW			0.81	2.52	1.33	0.87	0.03					
NNW			0.90	1.67	0.48	0.03	0.01					
TOT		0.48	18.76	51.96	22.77	5.56	0.46	0.01	0			
SUM		0.48	19.24	71.20	93.97	99.53	99.99	100.0				

7015

OBSERVATIONS

1 DEC 72 - 30 NOV 73

PERIOD

VELOCITY-DURATION CURVE

WATERFORD

SITE LOCATION:

The site (30.00°N/90.47°W) is in southeast Louisiana, on the former Waterford Plantation and a part of the Killona Plantation on the west bank of the Mississippi River near Taft, LA, in northwest St. Charles Parish (County). New Orleans is about 35 km ESE and Baton Rouge is 80 km NNW.

TOPOGRAPHY:

The region is very flat and very near sea level. The Mississippi River is restrained by levees through much of the area, and Lake Pontchartrain, about 8 km NE, is open directly to the Gulf of Mexico.

ON-SITE WIND MEASUREMENTS:

An on-site meteorological monitoring program was initiated at the Waterford site in June, 1971. A 40-m tower is located in a sugarcane field in a flat area at about 4 m (MSL). Only during late summer and early fall does the cane reach 2.5-3 m, and then a 9 m diameter clearing is maintained around the tower. The tower is equipped with a Weathermeasure W1034 wind system at 9 m height, and a Gill Anemometer Bivane and a 4-bladed Weathermeasure W101-P Skyvane I wind sensor as backup at the 60-m level.

NRC Docket No. 50382

JOINT FREQUENCY DISTRIBUTION

WATERFORD

SITE

SE - LOUISIANA

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	>14.08			
N			1.22	1.61	1.45	0.25	0.01					
NNE			1.16	4.18	3.44	0.28						
NE			1.17	4.07	2.97	0.47	0.01					
ENE			1.13	2.76	1.79	0.10						
E			0.44	1.39	0.94	0.09						
ESE			1.56	4.49	2.66	1.02	0.11					
SE			2.14	2.76	1.97	1.14	0.12	0.02				
SSE			2.67	2.55	1.45	0.76	0.09	0.01				
S			1.71	1.50	0.66	0.19	0.01					
SSW			1.66	2.08	1.21	0.24	0.03					
SW			1.67	1.34	1.07	0.31						
WSW			2.33	1.43	0.79	0.11						
W			1.85	1.41	1.10	0.43						
WNW			1.80	1.92	1.27	0.52						
NW			1.50	2.79	1.59	0.35	0.01					
NNW			1.03	2.89	2.82	0.38	0.01					
TOT		1.26	25.78	39.70	26.49	6.32	0.41	0.03	0			
SUM		1.26	27.04	66.74	93.23	99.55	99.96	100.0				

8074

OBSERVATIONS

1 MAY 72 - 30 APR 73

PERIOD

VELOCITY-DURATION CURVE

WATTS BAR

SITE LOCATION:

The site (35.63°N/84.79°W) is in Rhea County in eastern Tennessee, 80 km NNE of Chattanooga and 24 km NE of Dayton. The site is on the W bank of Chickamauga Lake on the Tennessee River, about 3 km S of the Watts Bar Dam. The Sequoyah Nuclear Plant is 50 km SSW.

TOPOGRAPHY:

The Watts Bar site is in the eastern Tennessee portion of the Southern Appalachian Region. The region is typified by moderately wooded rolling hills. The site is on the W bank of Chickamauga Lake (normal pool elevation 208 m (MSL)) on the Tennessee River, just 3 km below Watts Bar Reservoir (normal pool elevation 226 m (MSL)). The Tennessee River Valley runs generally NE-SW with a shallow, undulating valley floor, 15 km wide here, while the lake adjoining the site averages 400 m wide. The site is near the center of the valley, which is flanked to the W by 275 to 550 m Walden Ridge and to the E by a series of 250 to 300 m ridges.

ON-SITE WIND MEASUREMENTS:

On-site meteorological measurements began in June 1971 from a temporary 40-m tower at 220 m (MSL). Climet WS-011-1 (speed) and WD-012-10 (direction) sensors were installed at 10 m and 40 m. A permanent 91-m tower was installed in late 1972 at 217 m (MSL), about 17 m lower than plant grade. Climet instruments were installed at 10 m and 91 m.

NRC Docket No. 50-390

JOINT FREQUENCY DISTRIBUTION

WATTS BAR

SITE

E - TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	>8.27						
N			4.33	1.07	0.14	0.03							
NNE			4.16	2.11	0.29	0.01							
NE			5.26	4.12	0.49								
ENE			3.90	2.07	0.23	0.01							
E			1.64	0.50	0.04								
ESE			1.11	0.45	0.25								
SE			1.72	0.50	0.33								
SSE			2.27	0.81	0.16								
S			2.94	2.83	0.68	0.15							
SSW			2.54	4.69	1.80	0.33							
SW			2.54	3.08	0.62	0.04							
WSW			2.07	1.08	0.20	0.03							
W			2.18	1.26	1.02	0.09							
WNW			2.38	1.21	0.90	0.01							
NW			4.97	1.74	0.73	0.06							
NNW			5.71	2.13	0.29	0.05							
TOT	11.64	49.72	29.65	8.17	0.81	0							
SUM	11.64	61.36	91.01	99.18	99.99								

7972

OBSERVATIONS

1 JUL 71 - 28 JUN 72

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WATTS BAR

SITE

E - TENNESSEE

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	>10.95				
N			2.36	3.07	1.06	0.10	0.01					
NNE			2.83	4.29	2.28	0.25						
NE			3.25	4.37	1.58	0.06						
ENE			3.48	2.38	0.63	0.07	0.01					
E			1.40	0.45	0.15	0.02	0.01					
ESE			0.93	0.21	0.05	0.01						
SE			1.03	0.28	0.02	0.02	0.06					
SSE			1.71	0.67	0.14	0.05	0.04					
S			3.34	3.27	0.95	0.33	0.17	0.03				
SSW			4.07	5.63	4.22	1.03	0.14					
SW			2.96	3.25	2.00	0.54	0.09					
WSW			2.05	1.67	0.49	0.06						
W			1.82	0.93	0.78	0.26	0.04					
WNW			1.30	1.04	1.18	0.21						
NW			1.36	0.94	1.18	0.21	0.01					
NNW			2.08	1.78	0.97	0.26	0.04	0.05				
TOT	7.91	35.97	34.23	17.68	3.48	0.62	0.08					
SUM	7.91	43.88	78.11	95.79	99.27	99.89	99.97					

8147

OBSERVATIONS

1 JUL 71 - 28 JUN 72

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WATTS BAR

SITE

E - TENNESSEE (PERM. TWR.)

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.67	1.56	2.46	3.35	5.59	8.27	10.95	>10.95		
	0.22										
N		1.16	1.73	1.03	1.09	1.06	0.12				
NNE		0.99	2.09	1.64	1.30	2.03	0.13				
NE		0.94	2.75	1.70	1.23	1.42	0.04				
ENE		0.88	2.92	1.17	0.55	0.28	0.02				
E		0.89	2.12	1.05	0.41	0.24					
ESE		0.38	0.87	0.34	0.09	0.05					
SE		0.35	0.91	0.40	0.08	0.06					
SSE		0.60	1.67	0.64	0.18	0.19	0.06	0.02			
S		0.61	2.21	1.40	0.56	0.68	0.18	0.01			
SSW		0.63	2.95	3.48	2.49	3.77	1.45	0.17			
SW		0.54	2.31	2.40	1.98	1.68	0.47	0.05	0.01		
WSW		0.85	1.76	1.09	0.64	0.62	0.27	0.02			
W		1.21	2.04	0.86	0.63	0.68	0.17	0.04	0.02		
WNW		1.09	1.73	0.58	0.50	0.74	0.14	0.04			
NW		1.70	2.48	0.74	0.77	1.02	0.19				
NNW		1.90	2.05	0.81	0.91	1.29	0.09				
TOT	0.38	14.72	32.59	19.33	13.41	15.81	3.33	0.35	0.03		
SUM	0.38	15.10	47.69	67.02	80.43	96.24	99.57	99.92	99.95		

16,449

OBSERVATIONS

1 JUL 73 - 30 JUN 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WATTS BAR

SITE

E - TENNESSEE (PERM. TWR)

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.67	1.56	2.46	3.35	5.59	8.27	10.95	> 10.95		
	0.22										
N		0.18	0.61	0.86	0.84	1.64	1.15	0.06			
NNE		0.18	1.40	2.17	1.88	3.31	1.46	0.23	0.01		
NE		0.19	1.86	3.14	2.55	4.16	1.18	0.11			
ENE		0.12	1.26	1.53	1.29	1.46	0.19	0.03	0.01		
E		0.07	1.07	1.15	0.74	0.88	0.13		0.01		
ESE		0.04	0.58	0.61	0.33	0.26	0.04				
SE		0.12	0.54	0.43	0.12	0.16	0.04	0.01			
SSE		0.08	0.79	0.46	0.14	0.29	0.08	0.01	0.01		
S		0.08	0.85	0.73	0.53	0.55	0.33	0.21	0.06		
SSW		0.08	1.37	2.30	1.69	2.82	1.77	0.67	0.15		
SW		0.09	1.49	3.14	3.14	5.94	3.14	1.15	0.21		
WSW		0.10	1.05	1.56	1.48	2.75	1.44	0.40	0.11		
W		0.06	0.75	0.72	0.58	0.95	0.61	0.18	0.13		
WNW		0.08	0.53	0.38	0.29	0.92	0.69	0.16	0.03		
NW		0.08	0.51	0.35	0.34	1.21	0.81	0.21	0.01		
NNW		0.11	0.65	0.40	0.45	1.21	0.79	0.12	0.01		
TOT	0.04	1.66	15.31	19.94	16.39	28.51	13.85	3.55	0.75		
SUM	0.04	1.70	17.01	36.95	53.34	81.85	95.70	99.25	100.0		

15,662
OBSERVATIONS

1 JUL 73 - 30 JUN 75
PERIOD

VELOCITY-DURATION CURVE

WOLF CREEK

SITE LOCATION:

The site (38.24°N/95.69°W) is about 6 km NE of Burlington in Coffey County, east central Kansas, and also 120 km SW of Kansas City and 160 km NE of Wichita. The spillway of the John Redmond Reservoir on the Neosho River is 6 km W.

TOPOGRAPHY:

The site is situated in the level to gently undulating, dissected uplands E of the Neosho River Valley. Elevations in the region range from 310 to 340 m (MSL). The greatest variation in elevation along an 8-km radial is 40 m to the NNE. Within 80 km, maximum elevations occur to the W and NW where the terrain rises to between 105 and 125 m above plant grade at distances from 55 to 65 km.

ON-SITE WIND MEASUREMENTS:

A 90-m tower with instrumentation was placed in operation in May 1973. It is located in an open field on a flat ridge, at 338 m (MSL) and variations in elevation do not exceed 17 m for at least 2 km out. Climet WS-011-1 (speed) and WD-012-10 (direction) sensors are mounted at 10 m, 35 m, and 60 m.

NRC Docket No. 50-482

JOINT FREQUENCY DISTRIBUTION

WOLF CREEK

SITE

E - CENTRAL - KANSAS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.5	3.0	5.0	7.5	10.0	>10.0				
	0.5										
N		0.35	1.27	1.93	1.65	0.57	0.12				
NNE		0.30	1.69	2.18	0.87	0.54	0.14				
NE		0.32	1.52	1.59	0.51	0.04	0.01				
ENE		0.23	1.12	1.47	0.53	0.14	0.01				
E		0.23	1.45	1.04	0.66	0.08	0.05				
ESE		0.16	1.46	1.66	0.63	0.13	0.05				
SE		0.25	2.09	2.26	0.74	0.19	0.04				
SSE		0.23	3.88	4.52	1.99	0.60	0.29				
S		0.41	2.81	6.14	6.34	3.07	1.16				
SSW		0.30	1.36	2.57	2.80	1.47	0.81				
SW		0.24	0.97	1.21	1.00	0.49	0.28				
WSW		0.31	0.84	0.63	0.37	0.17	0.05				
W		0.38	1.14	0.83	0.31	0.12					
WNW		0.33	1.34	1.40	0.74	0.17	0.13				
NW		0.33	1.57	1.65	1.59	0.81	0.65				
NNW		0.19	1.23	1.81	2.45	0.98	0.25				
TOT	0.04	4.55	25.73	32.88	23.19	9.58	4.03				
SUM	0.04	4.59	30.32	63.20	86.39	95.97	100.0				

8361

OBSERVATIONS

1 JUN 73 - 31 MAY 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WOLF CREEK

SITE

E - CENTRAL - KANSAS

LOCATION

SPEED (m/s)

DIRECTION	CALM 0.5	1.5	3.0	5.0	7.5	10.0	>10.0				
N		0.12	0.38	0.83	2.23	1.86	1.57				
NNE		0.09	0.24	0.93	1.82	1.12	0.94				
NE		0.17	0.50	1.32	1.40	0.33	0.02				
ENE		0.04	0.43	0.97	1.28	0.80	0.32				
E		0.07	0.33	0.80	1.72	1.07	0.19				
ESE		0.09	0.24	0.85	1.22	0.73	0.24				
SE		0.09	0.27	0.72	2.12	1.18	0.57				
SSE		0.13	0.23	0.99	2.32	2.84	1.83				
S		0.05	0.30	1.32	4.98	7.26	6.02				
SSW		0.07	0.21	0.95	3.58	4.69	3.19				
SW		0.06	0.18	0.94	2.22	1.73	0.91				
WSW		0.06	0.30	0.79	0.87	0.57	0.21				
W		0.10	0.40	0.84	1.01	0.39	0.13				
WNW		0.02	0.24	0.66	1.29	0.97	0.19				
NW		0.09	0.18	0.93	2.00	1.19	1.27				
NNW		0.09	0.26	0.65	2.34	1.86	0.84				
TOT	0.05	1.29	4.70	14.48	32.39	28.63	18.46				
SUM	0.05	1.34	6.04	20.52	52.91	81.54	100.0				

8206

OBSERVATIONS

1 JUN 73 - 31 MAY 74

PERIOD

VELOCITY-DURATION CURVE

WPPSS (HANFORD)

SITE LOCATION:

The site (46.47°N/119.32°W) of Washington Public Power Supply System Nuclear Projects No. 1 and No. 4 is adjacent to No. 2, all within ERDA's Hanford Reservation in south central Washington. Hanford includes parts of Benton, Franklin and Grant Counties, and is about 50 km N of Oregon and 160 km W of Idaho. The sites are about 4 km W of the Columbia River and 3 km N of Richland, WA.

TOPOGRAPHY:

The site is located in the Lower Columbia Basin, 150 km E of the Cascade Mountains and 120 km NW of the Blue Mountains. The dominant regional features are the Rattlesnake Hills 15 km SW and W at over 1000 m (MSL); the Saddle Mountains 30 km NW and W over 750 m; and the steep, river-cut bluffs forming the east bank of the Columbia River about 4 km E.

ON-SITE WIND MEASUREMENTS:

The Hanford Reservation is a large federal reservation managed by ERDA. It contains many installations besides the WPPSS units and has a major meteorological monitoring program, in addition to meteorological towers adjacent to WPPSS-2 and one at the N-Reactor.

The Hanford Meteorological Station (HMS) provides the primary meteorological support to the ERDA activities on the reservation. Bendix-Freiz Aerovanes (Model 120) are used at 15 m, 61 m, and 122 m, on the 122 m tower located on a plateau at 223 m (MSL) about 40 km NW of Richland, and slightly north and west of the center of the reservation.

The WPPSS-2 tower is at 134 m (MSL) in the southeast corner of the reservation. Climet WS-011-1 and WD-012-10 instruments are located at 2, 10 and 75 m (AGL) on the 75-m tower.

NRC Docket Nos. 50-397, -460, -513

BNWL-1605

JOINT FREQUENCY DISTRIBUTION

WPPSS(2) HANFORD

SITE

SE - WASHINGTON

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		2.35	2.03	0.88	0.08	0.01						
NNE		1.58	1.50	0.39	0.08	0.11						
NE		0.85	1.13	0.14	0.01							
ENE		0.80	0.95	0.11								
E		0.62	0.51	0.08								
ESE		1.04	0.69	0.17	0.01							
SE		1.96	1.98	0.42	0.04							
SSE		2.89	4.11	0.88	0.06							
S		2.79	4.57	2.70	0.36	0.02						
SSW		2.58	2.83	3.00	1.00	0.21	0.02					
SW		2.85	1.99	1.71	1.32	0.27	0.05					
WSW		2.55	1.67	1.04	0.64	0.18	0.01					
W		2.77	1.87	1.09	0.49	0.15	0.02					
WNW		3.54	2.69	2.02	1.33	0.29	0.02					
NW		4.15	3.96	1.66	0.78	0.28	0.01					
NNW		3.09	2.66	0.94	0.12	0.01						
*TOT	0	38.70	36.09	17.30	6.30	1.48	0.13					
*SUM		38.70	74.79	92.09	98.39	99.87	100.0					

17,083

OBSERVATIONS

1 APR 74 - 31 MAR 76

PERIOD

* INCLUDES VARIABLES

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WPPSS(2) HANFORD

SITE
SE - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	>10.95				
	0.22										
N		1.89	2.62	1.08	0.33	0.01	0.01				
NNE		1.48	2.00	0.78	0.19	0.05	0.12				
NE		1.23	1.56	0.38	0.07	0.01					
ENE		0.99	1.27	0.41	0.01						
E		1.05	0.77	0.18							
ESE		1.17	0.99	0.21							
SE		1.11	2.31	0.70	0.13	0.01					
SSE		1.11	4.20	2.46	0.35	0.02					
S		1.18	3.9	3.94	1.21	0.14					
SSW		1.19	2.73	2.64	2.22	0.64	0.22				
SW		1.17	1.93	1.19	1.40	0.61	0.26				
WSW		1.16	1.61	1.08	0.67	0.36	0.14				
W		1.00	1.80	1.32	0.67	0.30	0.21				
WNW		1.68	2.61	2.44	1.45	0.62	0.15				
NW		1.87	4.26	2.76	1.24	0.61	0.27				
NNW		2.11	3.94	1.44	0.35	0.05	0.01				
* TOT	0.01	22.49	39.37	23.11	10.29	3.43	1.31				
* SUM	0.01	22.49	61.86	84.97	95.27	98.69	100.0				

16,917

OBSERVATIONS

1 APR 74 - 31 MAR 76

PERIOD

* INCLUDES VARIABLES

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WPPSS(2) HANFORD

SITE

SE - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		0.82	2.40	1.51	0.61	0.11	0.01					
NNE		0.65	1.80	1.33	0.36	0.77	0.18					
NE		0.49	1.30	0.96	0.23	0.05	0.03					
ENE		0.41	1.14	0.73	0.11	0.04						
E		0.54	1.08	0.43	0.05	0.01						
ESE		0.63	1.30	0.58	0.09	0.05						
SE		0.68	1.97	1.25	0.45	0.14	0.04					
SSE		0.69	2.71	2.56	1.33	0.21	0.04					
S		0.76	2.62	3.68	2.60	0.84	0.14					
SSW		0.71	1.99	2.14	2.73	1.46	1.30					
SW		0.74	1.58	1.17	1.12	1.01	0.88					
WSW		0.62	1.34	1.05	0.82	0.44	0.51					
W		0.65	1.61	1.25	1.23	0.65	0.35					
WNW		0.78	1.75	2.13	2.49	2.26	1.38					
NW		0.78	2.75	3.06	2.57	1.13	0.59					
NNW		0.73	2.76	2.12	1.22	0.14	0.02					
TOT	0	11.15	30.68	26.04	18.07	8.59	5.47					
SUM		11.15	41.83	67.87	85.93	94.53	100.0					

16,733

OBSERVATIONS

1 APR 74 - 31 MAR 76

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WPPSS - HANFORD (HMS)

SITE

SE - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79
N		2.0	1.8	0.6	0.2	*	*				
NNE		1.4	1.4	0.6	0.3	*	*				
NE		1.6	1.2	0.4	0.2	*	*				
ENE		1.0	0.8	0.2	*	*	*				
E		1.2	1.0	0.2	*	*					
ESE		1.2	1.1	0.2	*	*					
SE		1.6	1.6	0.4	0.1	*	*				
SSE		0.9	1.1	0.5	0.1	*	*				
S		1.0	1.3	0.4	0.2	0.1	*	*	*		
SSW		0.9	1.3	0.7	0.6	0.3	0.2	*	*		
SW		1.0	2.0	1.6	1.4	0.8	0.3	0.1	*	*	
WSW		1.0	2.5	2.7	6.6	0.5	0.2	*	*		
W		1.4	3.9	3.2	1.0	0.2	*	*			
WNW		1.5	4.5	6.1	2.9	0.9	0.1	*			
NW		2.1	4.9	5.2	2.8	1.3	0.3	*			
NNW		1.7	2.3	0.8	0.1	*	*				
1 TOT		2.2	23.2	33.4	23.8	11.5	4.2	1.2	0.2	0.1	*
1 SUM		2.2	25.4	58.8	82.6	94.1	98.3	99.5	99.7	99.9	100.0

1955 - 1970

OBSERVATIONS

PERIOD

1 INCLUDES VARIABLES *DENOTES < 0.05%
VELOCITY-DURATION CURVE

WPPSS - HANFORD (HMS)

JOINT FREQUENCY DISTRIBUTION

SITE
SE - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79
	0.22									
N		1.6	2.1	0.9	0.3	0.1	*	*		
NNE		1.2	1.4	0.8	0.5	0.1	0.1	*		
NE		1.4	1.3	0.6	0.2	0.1	*	*		
ENE		0.9	0.9	0.3	0.1	*	*	*		
E		1.1	1.0	0.3	0.1	*	*			
ESE		1.3	1.1	0.3	*	*				
SE		1.5	1.6	0.6	0.2	*	*	*		
SSE		0.8	1.0	0.6	0.3	0.1	*	*		
S		0.7	1.0	0.4	0.3	0.2	0.1	*	*	*
SSW		0.5	0.9	0.7	0.5	0.4	0.3	0.1	0.1	*
SW		0.6	1.2	1.3	1.3	1.0	0.7	0.2	0.1	*
W'SW		0.6	1.2	1.8	2.0	1.1	0.5	0.2	*	*
W		0.9	1.9	2.7	2.1	0.5	0.1	*	*	
W'NW		0.9	2.3	4.5	5.4	2.2	0.8	0.1	*	*
NW		1.3	3.4	5.5	5.3	2.6	1.3	0.2	*	
NNW		1.4	2.6	1.6	0.5	0.1	*	*		
1 TOT	1.5	17.6	25.3	22.9	19.1	8.5	3.9	0.8	0.3	0.1
1 SUM	1.5	19.1	44.4	67.3	86.4	94.9	98.8	99.6	99.9	100.0

1955 - 1970

OBSERVATIONS

PERIOD

¹ INCLUDES VARIABLES * DENOTES < 0.05%

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WPPSS - HANFORD (HMS)

SITE

SE - WASHINGTON

SPEED (m/s)

LOCATION

	CALM	0.22	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79	
DIRECTION												
N		1.5	2.0	1.0	0.5	0.1	*	*				
NNE		1.0	1.3	0.8	0.5	0.2	0.1	*				
NE		1.2	1.1	0.5	0.3	0.1	0.1	*				
ENE		0.8	0.8	0.3	0.1	*	*	*				
E		1.2	0.9	0.3	0.1	*	*	*				
ESE		1.0	1.0	0.3	*	*	*					
SE		1.3	1.5	0.6	0.2	0.1	*	*	*			
SSE		0.7	0.9	0.5	0.3	0.1	*	*	*			
S		0.6	0.9	0.5	0.3	0.2	0.1	*	*	*		
SSW		0.4	0.8	0.7	0.5	0.4	0.3	0.2	0.1	*		
SW		0.6	1.0	1.1	1.3	1.1	0.9	0.4	0.1	*		
WSW		0.5	1.0	1.4	1.9	1.4	0.7	0.3	0.1	*		
W		0.8	1.6	2.0	2.3	0.9	0.3	0.1	*	*		
WNW		0.9	2.1	3.5	4.7	3.2	1.7	0.6	0.1	*		
NW		1.4	3.1	5.3	5.3	2.4	1.6	6.6	0.1	*		
NNW		1.3	2.7	2.0	0.8	0.1	*	*				
1TOT	2.2	16.1	22.9	20.8	19.1	10.3	5.8	2.2	0.5	0.1		
1SUM	2.2	18.3	41.2	62.0	81.1	91.4	97.2	99.4	99.9	100.0		

1955 - 1970

OBSERVATIONS

PERIOD

1 INCLUDES VARIABLES * DENOTES < 0.05%

VELOCITY-DURATION CURVE

SITE LOCATION:

The site (46.96°N/123.47°W) of the Washington Public Power Supply System (WPPSS) Nuclear Projects Nos. 3 and 5 are in southeast Grays Harbor County, Washington, 42 km SW of Olympia, 26 km E of Aberdeen, and 3 km S of Satsop. The confluence of the Chehalis River and the Satsop River is about 2 km north.

TOPOGRAPHY:

The site is located at the southern end of the Olympic Peninsula where the terrain is still quite rolling and heavily forested. The site is on the southern edge of the broad valley of the Chehalis River. The land rises rapidly to the south to over 500 m (MSL), while the broad flat river valley with elevations near sea level lies to the north. Plant elevation is at about 122 m (MSL).

ON-SITE WIND MEASUREMENTS:

A 60-m tower was established on Fuller Hill, a clear, flat pasture at about 90 m (MSL). There are stands of fir trees on the north and west edges of the pasture. To the north, tree heights are 13-17 m, while to the west, they are 18-23 m. Distances from the trees to the tower are about 70 m at the closest point. Wind speed and direction are measured at both 10 m and 60 m using MRI 1074-2 wind systems.

NRC Docket No. 50-508

JOINT FREQUENCY DISTRIBUTION

WPPSS - SATSOP

SITE

SW - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.31	1.34	3.13	5.36	8.05	10.73	14.30	> 14.30			
N			0.77	0.51	0.05							
NNE			0.93	0.65	0.10							
NE			1.13	1.16	0.23	0.01						
ENE			1.36	2.42	0.57	0.07						
E			1.61	2.07	0.24	0.02						
ESE			1.26	1.55	0.13							
SE			1.75	2.63	0.80	0.01						
SSE			2.43	2.63	0.30							
S			3.49	3.91	1.05	0.02						
SSW			3.37	5.81	1.48	0.19						
SW			2.89	7.31	2.64	0.42	0.05					
WSW			1.89	7.69	3.89	0.32	0.04					
W			1.16	5.51	3.47	0.33	0.06					
WNW			0.64	1.70	1.25	0.06						
NW			0.37	0.70	0.05							
NNW			0.44	0.51	0.01							
TOT	9.88	25.49	46.77	16.26	1.46	0.15	0	0				
SUM	9.88	35.37	82.14	98.39	99.85	100.0						

8398

OBSERVATIONS

1 MAY 73 - 30 APR 74

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

WPPSS - SATSOP

SITE

SW - WASHINGTON

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.31	1.34	3.13	5.36	8.05	10.73	14.30	> 14.30			
N			0.66	0.63	0.02	0.01						
NNE			0.76	0.91	0.13	0.03						
NE			1.17	2.48	1.73	0.44	0.12	0.01				
ENE			1.21	2.99	2.59	0.41						
E			0.96	2.16	1.41	0.03						
ESE			0.74	2.00	2.01	0.26	0.01					
SE			0.50	1.80	2.14	0.40						
SSE			0.64	1.35	1.49	0.28						
S			0.70	2.45	2.85	0.73	0.12	0.01				
SSW			0.71	3.25	3.35	1.32	0.59	0.23				
SW			0.92	3.71	5.04	1.96	0.26	0.07				
WSW			0.89	3.32	8.31	3.61	0.27	0.03				
W			0.66	2.84	5.13	3.17	0.26					
WNW			0.56	0.87	0.73	0.78	0.05					
NW			0.60	0.55	0.21	0.03	0.01					
NNW			0.46	0.48	0.05							
TOT	3.38	12.16	31.76	37.18	13.48	1.68	0.36	0				
SUM	3.38	15.54	47.30	84.48	97.96	99.64	100.0					

8604

OBSERVATIONS

1 MAY 73 - 30 APR 74

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site (42.73°N/72.93°W) is located in Franklin County, northwest Massachusetts, about 40 km NE of Pittsfield, 20 km S of Wilmington, VT and 13 km NNW of Charlemont, MA. The site is on the south end of Sherman Dam, on the Deerfield River.

TOPOGRAPHY:

The site is located at the bottom of a deep river valley in the hilly and forested Berkshire Hills region of northwest Massachusetts. At the site, the elevation is about 350 m (MSL). The steep-sloped valley rises to over 600 m (MSL) on both sides of the NNE-SSW river. The course of the river is very erratic with a general decrease in elevation to the S.

ON-SITE WIND MEASUREMENTS:

During the summer of 1971, a 43-m tower was erected adjacent to Sherman Pond. A low threshold Climet C125 system is located at 9 m above the ground.

NRC Docket No. 50-029

JOINT FREQUENCY DISTRIBUTION

YANKEE ROWE

SITE

NW - MASSACHUSETTS

LOCATION

SPEED (m/s)

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	> 10.95				
N		4.79	2.52	1.18	0.19	0.02					
NNE		4.61	1.66	0.22	0.01						
NE		5.30	1.38	0.07	0.02						
ENE		5.55	0.66	0.01	0.01						
E		3.83	0.53	0.19	0.03						
ESE		2.54	0.82	0.15	0.06						
SE		2.66	1.75	0.56	0.20	0.01	0.01				
SSE		3.30	2.78	1.23	0.55	0.09	0.07				
S		3.21	4.59	1.39	0.62	0.14	0.14				
SSW		3.02	3.39	1.37	0.21	0.07					
SW		2.03	2.01	0.86	0.23	0.03					
WSW		1.32	1.36	0.58	0.22	0.02					
W		1.55	1.29	0.56	0.27	0.07					
WNW		1.36	1.32	0.67	0.59	0.14	0.03				
NW		2.27	2.14	1.31	0.74	0.42	0.17				
NNW		2.94	2.56	2.15	0.64	0.31	0.08				
TOT		50.28	30.77	12.51	4.59	1.34	0.51				
SUM		50.28	81.05	93.56	98.15	99.49	100.0				

8608

OBSERVATIONS

1 OCT 71 - 30 SEP 72

PERIOD

VELOCITY-DURATION CURVE

YELLOW CREEK

SITE LOCATION:

The Yellow Creek site (34.96°N/88.22°W) is located in extreme northeast Mississippi, in Tishomingo County, on the right bank of the Yellow Creek embayment, about 24 km E of Corinth. TVA's Pickwick Landing Dam on the Tennessee River is about 11 km N; Memphis, TN is 160 km E; and Huntsville, AL is 145 km E.

TOPOGRAPHY:

The site is on the western side of a peninsula, which projects N into Pickwick Reservoir with the Tennessee River to the E and the Yellow Creek embayment on the W, both of which flow N. The site is located in a band of hills which extend through TN from N to S along both sides of the Tennessee River, crossing the river in the site area, and extending to the S and SE into Mississippi and Alabama. The elevation of the hills is generally 180-210 m (MSL). The general terrain slopes very gradually downward to the W, with elevations generally about 100 m (MSL) near Memphis and as low as 75 m (MSL) in the Mississippi River floodplain both N and S of Memphis. To the E, the Tennessee River Valley broadens through northern Alabama to the southern reaches of mountains associated with the Cumberland Plateau, near Huntsville. The valley floor slopes upward from about 150 m (MSL) a few km E of the site to over 200 m (MSL) near Huntsville.

ON-SITE WIND MEASUREMENTS:

A 46-m tower is located on the west side of the Yellow Creek embayment, in a large clearing at an elevation of about 154 m (MSL), near the center of the base of the peninsula which extends eastward into the Yellow Creek embayment. Climet WS-011-1 (speed) and WD-012-10 (direction) sensors are located at 10 m and 46 m.

JOINT FREQUENCY DISTRIBUTION

YELLOW CREEK

SITE

NE - MISSISSIPPI

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.67	1.56	2.46	3.35	5.59	8.27	10.95	> 10.95		
	0.22										
N		0.29	1.22	0.91	0.79	0.46					
NNE		0.41	2.20	2.31	1.67	0.35					
NE		0.32	1.27	1.73	1.10	0.40	0.01				
ENE		0.22	0.59	0.67	0.33	0.09					
E		0.29	0.67	0.74	0.32	0.08					
ESE		0.54	1.20	1.70	0.78	0.32					
SE		0.59	1.81	2.06	1.00	0.53	0.03				
SSE		1.06	4.64	3.46	1.76	1.48	0.40				
S		0.94	4.45	3.28	2.14	2.70	0.46				
SSW		0.84	2.05	1.84	1.58	2.82	0.59				
SW		0.74	1.68	0.82	1.00	1.15	0.23				
WSW		0.82	1.02	0.59	0.44	0.71	0.25	0.01			
W		0.72	0.89	0.61	0.52	0.94	0.23	0.03			
WNW		1.15	0.97	0.44	0.87	1.14	0.41	0.03			
NW		0.67	0.95	1.16	1.25	1.39	0.13				
NNW		0.66	2.34	2.34	1.73	1.51	0.03				
TOT	1.14	10.06	27.95	24.66	17.28	16.07	2.77	0.07	0		
SUM	1.14	11.20	39.15	63.81	81.09	97.16	99.93	100.0			

8692

OBSERVATIONS

1 JUL 74 - 30 JUN 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

YELLOW CREEK

SITE
NE - MISSISSIPPI

SPEED (m/s)

LOCATION

DIRECTION	CALM	0.22	0.67	1.56	2.46	3.35	5.59	8.27	10.95	> 10.95		
N		0.02	0.35	0.89	1.68	3.19	1.03	0.06				
NNE		3.08	1.13	2.46	2.36	3.01	0.38	0.01				
NE		0.07	1.01	0.98	0.91	1.45	0.17	0.01				
ENE		0.10	0.45	0.65	0.38	0.43	0.02					
E		0.13	0.50	0.79	0.51	0.32	0.01					
ESE		0.06	0.79	1.62	1.18	1.03	0.10					
SE		0.17	1.10	2.44	2.05	2.31	0.34	0.03				
SSE		0.08	1.28	2.66	2.74	2.74	0.97	0.34				
S		0.13	0.89	2.39	3.47	4.88	1.60	0.50	0.05			
SSW		0.02	0.66	1.86	2.10	4.23	2.23	0.43	0.10			
SW		0.03	0.40	1.01	1.19	1.89	0.46	0.06				
WSW		0.02	0.25	0.47	0.72	0.86	0.57	0.06				
W		0.02	0.24	0.39	0.61	1.03	0.35	0.13	0.02			
WNW		0.02	0.25	0.35	0.60	1.26	0.77	0.14	0.05			
NW		0.03	0.24	0.27	0.64	1.73	0.73	0.09				
NNW		0.05	0.49	0.50	1.01	3.12	1.41	0.08				
TOT		0.27	1.03	10.03	19.73	22.15	33.48	11.14	1.94	0.22		
SUM		0.27	1.30	11.33	31.06	53.21	86.69	97.83	99.78	100.0		

8647
OBSERVATIONS1 JUL 74 - 30 JUN 75
PERIOD

VELOCITY-DURATION CURVE

WM. H. ZIMMER

SITE LOCATION:

The site (38.87°N/84.23°W) is located in southwest Ohio, Clermont County, 39 km SE of Cincinnati and 1 km N of Moscow, on the east bank of the Ohio River, which flows N in this area.

TOPOGRAPHY:

The site is on the floodplain of the Ohio River Valley, which is rather pronounced and has rather high bluffs rising to over 240 m (MSL) within 2 km of the river. The immediate site locale is relatively level, with an average elevation 150 m (MSL). At the site, the floodplain is about 2 km wide, after rising sharply up from the river at 140 m (MSL) normal pool elevation. The general rolling terrain around the site is wooded, with shrubs and brush along the creeks.

ON-SITE WIND MEASUREMENTS:

Two towers were installed in April 1971. A dual-level 61-m tower is located along the bank of the Ohio River, at 155 m (MSL). The tower has MRI 1074-1 sensors at 9 m and 61 m. A 15-m tower is located at 270 m (MSL) on a hilltop to the NE, and is instrumented with an MRI 1074-2 on top.

NRC Docket No. 50-358

JOINT FREQUENCY DISTRIBUTION

ZIMMER

SITE

SW - OHIO

LOCATION

SPEED (m/s)

DIRECTION	CALM	0.5	1	2	3	4	5	6	7	8	9	>9
N	1.00	1.26	1.99	1.11	0.62	0.15	0.02					
NNE	0.90	0.81	0.84	0.40	0.13							
NE	0.94	0.65	0.73	0.34	0.06			0.01				
ENE	0.76	0.44	0.63	0.34	0.06	0.02						
E	1.05	0.72	0.61	0.41	0.12	0.04	0.02					
ESE	1.75	1.63	1.17	0.59	0.16	0.08	0.06	0.01				
SE	2.75	3.82	3.70	1.41	0.53	0.24	0.15	0.09	0.01	0.01	0.01	
SSE	1.22	2.38	4.06	2.28	1.35	0.85	0.44	0.16	0.07	0.07	0.07	
S	0.69	1.12	2.52	2.36	1.56	1.15	0.72	0.36	0.18	0.06	0.06	
SSW	0.42	0.77	1.80	1.51	0.86	0.65	0.32	0.16	0.07	0.06	0.06	
SW	0.62	1.08	2.10	1.34	0.81	0.54	0.18	0.05	0.03	0.01	0.01	
WSW	0.64	1.11	1.78	1.07	0.66	0.23	0.08	0.01				
W	0.64	1.10	1.63	0.86	0.58	0.24	0.05					
WNW	0.74	1.23	1.59	1.13	0.74	0.32	0.17	0.01				
NW	0.61	1.01	1.55	0.83	0.50	0.16	0.02	0.01				
NNW	0.84	1.22	1.96	1.41	0.51	0.20	0.10					
TOT	15.57	20.35	28.65	17.42	9.24	4.87	2.34	0.85	0.36	0.21	0.14	
SUM	15.57	35.92	64.57	81.99	91.23	96.10	98.44	99.29	99.65	99.86	100.0	

17,520

OBSERVATIONS

1 MAR 72 - 28 FEB 74

PERIOD

VELOCITY-DURATION CURVE

SITE LOCATION:

The site (42.45°N/87.80°W) is in the extreme eastern portion of the city of Zion, Lake County, Illinois, on the west shore of Lake Michigan, about 10 km NNE of Waukegan, IL, and 13 km S of Kenosha, WI.

TOPOGRAPHY:

The terrain is relatively flat with elevations varying from 176 m (MSL) at the Lake Michigan shoreline to 182 m (MSL) inland. Just behind the beach, there is a low line of bluffs about 2 to 3 m high. The site itself has very little slope and is rather flat.

ON-SITE WIND MEASUREMENTS:

Wind speed and direction are measured at 11 m, 38 m, and 76 m on the Zion meteorological tower. Base elevation is at about 180 m (MSL), which is grade level. Measurements are made with Belfort-type L wind systems.

NRC Docket No. 50-295, -304

JOINT FREQUENCY DISTRIBUTION

ZION

SITE

NE - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	> 17.21		
	0.22										
N		0.43	1.45	1.93	1.13	0.39	0.02				
NNE		0.35	1.69	2.72	2.05	0.62	0.13	0.01			
NE		0.37	1.51	1.44	0.84	0.30	0.09				
ENE		0.32	1.11	0.86	0.61	0.35	0.13				
E		0.32	1.06	0.92	0.65	0.28	0.07	0.02			
ESE		0.41	1.17	0.76	0.45	0.18	0.04				
SE		0.51	1.94	0.93	0.20	0.07					
SSE		0.47	2.17	1.60	0.50	0.14	0.02				
S		1.02	4.17	2.42	0.55	0.03					
SSW		1.04	2.91	1.84	1.00	0.31	0.03				
SW		0.87	2.86	3.36	1.89	0.54	0.09	0.02			
WSW		0.81	3.09	3.10	1.40	0.25	0.08	0.02			
W		0.93	3.36	2.85	1.50	0.27	0.07				
WNW		1.17	2.82	2.03	0.33	0.04					
NW		1.27	3.61	2.03	0.37						
NNW		0.72	2.35	1.90	0.71	0.06					
TOT	1.96	11.01	37.27	30.69	14.40	3.83	0.77	0.07	0		
SUM	1.96	12.97	50.24	80.93	95.33	99.16	99.93	100.0			

30,876

OBSERVATIONS

1 JAN 72 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

JOINT FREQUENCY DISTRIBUTION

ZION

SITE

NE - ILLINOIS

SPEED (m/s)

LOCATION

DIRECTION	CALM	1.56	3.35	5.59	8.27	10.95	14.08	17.21	20.79	>20.79	
	0.22										
N		0.09	0.46	1.35	1.87	1.62	0.86	0.27	0.03	0.02	
NNE		0.08	0.69	1.62	1.90	1.45	0.69	0.38	0.11	0.03	
NE		0.11	0.75	1.27	1.06	0.74	0.45	0.12	0.04		
ENE		0.12	0.68	0.82	0.74	0.55	0.36	0.20	0.04		
E		0.14	0.65	0.87	0.83	0.54	0.32	0.08	0.03		
ESE		0.09	0.55	0.99	0.79	0.55	0.23	0.09	0.01		
SE		0.13	0.76	1.50	1.19	0.82	0.31	0.05			
SSE		0.14	1.01	1.96	2.00	1.06	0.39	0.06			
S		0.08	0.64	1.60	2.35	1.31	0.48	0.10	0.01		
SSW		0.10	0.49	1.57	3.07	1.67	0.72	0.17	0.05	0.01	
SW		0.09	0.73	1.88	3.84	2.60	0.86	0.23	0.03	0.04	
WSW		0.13	0.68	1.89	2.77	2.02	0.63	0.12	0.04		
W		0.09	0.64	1.91	2.88	1.48	0.44	0.14	0.08		
WNW		0.10	0.68	2.28	2.56	0.75	0.09	0.01			
NW		0.09	0.79	2.43	2.84	0.67	0.04	0.01			
NNW		0.08	0.51	1.55	2.16	0.85	0.24	0.04			
TOT	0.86	1.66	10.71	25.49	32.85	18.68	7.11	2.07	0.47	0.10	
SUM	0.86	2.52	13.23	38.72	71.57	90.25	97.36	99.43	99.90	100.0	

32,038

OBSERVATIONS

1 JAN 72 - 31 DEC 75

PERIOD

VELOCITY-DURATION CURVE

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