

EFF-85A  
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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

SUPPLEMENTAL INFORMATION

FACILITY: H. B. Robinson

LICENSE: DPR-23

1. REGULATORY LIMITS

- A. Fission and Activation Gases: 15,000 uCi/sec. based on Xe-133
- B. Iodines:  $7.15E-03$  uCi/sec. based on I-131.
- C. Particulates, half lives greater than 8 days:  $7.15E-03$  uCi/sec.
- D. Liquid Effluents: Tritium not to exceed annual daily average of 10.5 curies. All others not to exceed 10 CFR 20, Appendix B, Table 2, Column 2, except unidentified not to exceed annual daily limit average of 26 mCi/day.

2. MAXIMUM PERMISSIBLE CONCENTRATIONS

- A. Gaseous Effluent: The average annual release rates of gaseous wastes is limited to  $\sum \frac{Q_i}{MPC_i} \leq 5.0E04 \text{ m}^3/\text{sec.}$   
 $Q_i$  is the annual release rate (Ci/sec) of any radioisotope,  $i$ , and (MPC) $_i$ ; in units of uCi/cc as defined in Column 1, Table II of Appendix B, 10 CFR 20, except that for isotopes of Iodine and particulates with half-lives greater than 8 days, the values of (MPC) $_i$  are reduced by a factor of 1/700.
- B. LIQUID EFFLUENTS: 1.00E-07 uCi/cc unidentified  
3.00E-03 uCi/cc Tritium

3. AVERAGE ENERGY OF FISSION & ACTIVATION GASES RELEASED

1st Quarter .164 MEV  
2nd Quarter .167 MEV

4. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

- A. Fission and Activation Gases: measured and determined by continuous monitors, periodic grab samples, radionuclide gamma analysis, and scintillation counting.
- B. Iodines: measured and determined by continuous sample monitors and radionuclide gamma analysis.
- C. Particulates: measured and determined by continuous sample monitors, radionuclide gamma analysis, gross alpha and beta counting.
- D. Liquid Effluents: measured and determined by composite sample analysis, individual sample analysis, radionuclide gamma analysis, gross alpha and beta counting, and liquid scintillation counting.

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5. BATCH RELEASES

A. Liquid

1. Number of Batch Releases: 8.80E01
2. Total Time Period for Batch Releases: 1.71E04 Min.
3. Maximum Time Period for a Batch Release: 6.69E02 Min.
4. Average Time Period for Batch Releases: 1.94E02 Min.
5. Minimum Time Period for a Batch Release: 7.00E01 Min.
6. Average Stream Flow during Periods of Release of Effluent into a Flowing Stream: 4.12E05 GPM

B. Gaseous

1. Number of Batch Releases: 9.00E01
2. Total Time Period for Batch Releases: 6.02E04 Min.
3. Maximum Time Period for a Batch Release: 1.01E04 Min.
4. Average Time Period for a Batch Release: 6.69E02 Min.
5. Minimum Time Period for a Batch Release: 1.10E01 Min.

6. ABNORMAL RELEASES

- A. Liquid - 0
- B. Gaseous - 0

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	<u>UNITS</u>	<u>1st QUARTER</u>	<u>2nd QUARTER</u>	<u>% ERROR</u>
<u>A. FISSION AND ACTIVATION GASES</u>				
1. Total Release	Ci	<u>1.29E02</u>	<u>5.92E02</u>	1.00E01
2. Average Release Rate	uCi/sec	<u>1.66E01</u>	<u>7.53E01</u>	
3. % of Tech. Spec. Limit	%	<u>1.14E-01</u>	<u>5.19E-01</u>	
4. Maximum Release Rate/Hour	uCi/sec	<u>8.93E02</u>	<u>3.53E03</u>	
<u>B. IODINES</u>				
1. Total Iodine-131	Ci	<u>5.62E-04</u>	<u>5.94E-04</u>	1.00E01
2. Average Release Rate	uCi/sec	<u>7.23E-05</u>	<u>7.55E-05</u>	
3. % of Tech. Spec. Limit	%	<u>1.01E00</u>	<u>1.06E00</u>	
4. Total Iodine	Ci	<u>6.73E-04</u>	<u>6.19E-04</u>	
<u>C. PARTICULATES</u>				
1. Particulates T <sub>1/2</sub> > 8 days	Ci	<u>1.34E-06</u>	<u>3.41E-06</u>	1.00E01
2. Average Release Rate	uCi/sec	<u>1.72E-07</u>	<u>4.34E-07</u>	
3. % of Tech. Spec. Limit	%	<u>8.04E-04</u>	<u>1.21E-03</u>	
4. Gross Alpha Radioactivity	Ci	<u>0.00E00</u>	<u>0.00E00</u>	
5. Total Gross Radioactivity	Ci	<u>1.34E-06</u>	<u>3.41E-06</u>	
<u>D. TRITIUM</u>				
1. Total Release	Ci	<u>1.65E01</u>	<u>7.13E01</u>	1.00E01
2. Average Release Rate	uCi/sec	<u>2.12E00</u>	<u>9.07E00</u>	
3. % of Tech. Spec. Limit	%	<u>2.12E-02</u>	<u>9.07E-02</u>	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

GASEOUS EFFLUENTS - ELEVATED RELEASES

No elevated releases made at H. B. Robinson.

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

GASEOUS EFFLUENTS<sup>1</sup> - GROUND LEVEL RELEASES

	UNITS	<u>CONTINUOUS MODE</u>		<u>BATCH MODE</u>	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
1. <u>FISSION GASES</u>					
Ar-41	Ci	4.18E-02	4.14E-01	7.94E-03	1.97E-02
Kr-85	Ci	3.68E-01	5.42E00	6.99E-02	5.40E-01
Kr-85m	Ci	2.11E-02	2.31E-01	4.01E-03	3.37E-02
Kr-87	Ci	2.33E-03	0	4.44E-04	0
Kr-88	Ci	0	1.97E-03	0	5.17E-04
Xe-131m	Ci	4.62E-01	8.08E00	8.77E-02	9.16E-01
Xe-133	Ci	1.26E02	5.62E02	2.16E-01	7.13E01
Xe-133m	Ci	1.01E00	6.59E00	1.92E-01	1.03E00
Xe-135	Ci	1.59E00	9.03E00	8.46E-02	1.52E00
Xe-135m	Ci	0	0	0	0
Total for Period	Ci	1.29E02	5.92E02	2.20E01	7.54E01
2. <u>IODINES</u>					
I-131	Ci	5.62E-04	5.94E-04	1.94E-05	1.58E-05
I-132	Ci	0	0	2.54E-07	0
I-133	Ci	1.11E-04	2.49E-05	2.87E-05	1.33E-06
I-135	Ci	0	0	4.98E-07	7.45E-08
Total for Period	Ci	6.73E-04	6.19E-04	4.89E-05	1.72E-05
3. <u>PARTICULATES</u>					
F-18	Ci	0	0	0	0
Na-24	Ci	0	0	0	0
K-40	Ci	0	0	0	0
Cr-51	Ci	0	0	0	0
Mn-54	Ci	0	0	7.36E-09	1.00E-09
Co-58	Ci	0	0	9.38E-09	1.24E-10
Co-60	Ci	1.34E-06	0	7.23E-09	0
Y-88	Ci	0	0	0	0
Rb-88	Ci	0	0	0	0
Mo-99	Ci	0	0	0	0
Tc-99m	Ci	0	0	0	0
Cd-109	Ci	0	0	8.98E-09	0
I-131	Ci	0	0	3.59E-08	3.47E-08
Cs-134	Ci	0	0	6.47E-07	1.33E-06
Cs-136	Ci	0	0	2.62E-08	2.15E-07
Cs-137	Ci	0	3.41E-06	1.17E-06	2.76E-06
Cs-138	Ci	0	0	0	0
Ba-139	Ci	0	0	0	0
Ce-139	Ci	0	0	6.19E-12	0
Cd-144	Ci	0	0	2.24E-08	7.96E-08
Total for Period	Ci	1.34E-06	3.41E-06	1.96E-06	4.42E-06

<sup>1</sup> Continuous Accountability includes Batch Accountability.

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNITS	1st QUARTER	2nd QUARTER	% ERROR
<u>A. FISSION AND ACTIVATION PRODUCTS</u>				
1. Total Release	Ci	<u>1.68E-02</u>	<u>1.79E-02</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>9.66E-11</u>	<u>7.67E-11</u>	
3. % of Applicable Limit	%	<u>9.66E-02</u>	<u>7.67E-02</u>	
<u>B. TRITIUM</u>				
1. Total Release	Ci	<u>1.64E01</u>	<u>8.78E01</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>9.43E-08</u>	<u>3.77E-07</u>	
3. % of Applicable Limit	%	<u>3.14E-03</u>	<u>1.26E-02</u>	
<u>C. DISSOLVED AND ENTRAINED GASES</u>				
1. Total Release	Ci	<u>3.31E-03</u>	<u>1.09E-01</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>1.90E-11</u>	<u>4.68E-10</u>	
3. % of Applicable Limit	%	<u>6.34E-04</u>	<u>1.56E-02</u>	
<u>D. GROSS ALPHA RADIOACTIVITY</u>				
1. Total Release	Ci	<u>0.00E00</u>	<u>0.00E00</u>	1.00E01
<u>E. VOLUME OF WASTE RELEASED</u>				
	Liters	<u>9.83E05</u>	<u>7.14E06</u>	1.00E01
<u>F. VOLUME OF DILUTION WATER</u>				
	Liters	<u>1.74E11</u>	<u>2.33E11</u>	1.00E01
<u>G. MAXIMUM CONCENTRATION OF GROSS RADIOACTIVITY RELEASED</u>				
	uCi/ml	<u>8.71E-09</u>	<u>1.41E-08</u>	

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE		BATCH MODE	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
Na-24	Ci	0	0	5.93E-06	0
Cr-51	Ci	0	0	0	0
Mn-54	Ci	0	0	2.05E-05	2.82E-05
Fe-59	Ci	0	0	0	0
Co-58	Ci	0	0	2.48E-04	1.41E-05
Co-60	Ci	0	0	4.35E-03	8.72E-03
Zn-65	Ci	0	0	0	0
Y-88	Ci	0	0	0	0
Sr-89	Ci	0	0	0	0
Sr-90	Ci	1.75E-05	2.72E-04	3.59E-06	0
Sr-92	Ci	0	0	0	0
Zr-95	Ci	0	0	0	0
Nb-95	Ci	0	0	1.92E-05	0
Nb-97	Ci	0	0	0	0
Zr-97	Ci	0	0	0	0
Tc-99m	Ci	0	0	0	0
Mo-99	Ci	0	0	0	0
Cd-109	Ci	0	0	0	0
Ag-110m	Ci	0	0	9.53E-03	8.47E-05
Sn-113	Ci	0	0	0	0
Sb-124	Ci	0	0	7.36E-05	0
Sb-125	Ci	0	0	4.49E-04	0
I-131	Ci	0	0	1.36E-05	6.89E-04
I-132	Ci	0	0	0	0
I-133	Ci	0	0	1.67E-06	0
Cs-134	Ci	0	0	7.55E-04	2.84E-03
Cs-136	Ci	0	0	0	4.61E-05
Cs-137	Ci	0	0	1.31E-03	5.15E-03
Ce-144	Ci	0	0	0	0
<b>Total</b>	<b>Ci</b>	<b>1.75E-05</b>	<b>2.72E-04</b>	<b>1.68E-02</b>	<b>1.76E-02</b>
F-18	Ci	0	0	0	4.36E-07
Ar-41	Ci	0	0	0	0
Kr-85	Ci	0	0	0	0
Kr-85m	Ci	0	0	0	0
Kr-87	Ci	0	0	0	0
Kr-88	Ci	0	0	0	0
Xe-131m	Ci	0	0	0	2.86E-05
Xe-133	Ci	0	7.89E-02	3.30E-03	2.59E-02
Xe-133m	Ci	0	1.24E-03	0	1.15E-04
Xe-135	Ci	0	2.24E-03	7.47E-06	1.50E-04
Xe-135m	Ci	0	0	0	0
<b>Total.</b>	<b>Ci</b>	<b>0</b>	<b>8.24E-02</b>	<b>3.31E-03</b>	<b>2.62E-02</b>



TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1985

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

1. <u>Type of Waste</u>	<u>Units</u>	<u>Totals</u>	<u>% Error</u>
(a) Spent resins, filter sludges, evaporator bottoms, etc.	M <sup>3</sup>	6.31E01	1.00E01
	Ci	6.56E01	
(b) Dry compressible waste, contaminated equipment, etc.	M <sup>3</sup>	2.67E02	1.00E01
	Ci	1.44E00	
(c) Irradiated components, control rods, etc.	M <sup>3</sup>	0	0.00E00
	Ci	0	
(d) Other:	M <sup>3</sup>	0	0.00E00
	Ci	0	

2. Estimate of Major Nuclide Composition (By Type of Waste)

	<u>%</u>	<u>Ci</u>
(a) Fe-55	3.34	2.19E00
H-3	65.70	4.31E01
Ni-63	2.33	1.53E00
Co-60	11.60	7.61E00
Cs-134	2.82	1.85E00
Sr-90	2.39	1.57E00
Cs-137	7.36	4.83E00
Others*	4.46	2.93E00
(b) Fe-55	35.07	5.05E-01
Cs-137	11.39	1.64E-01
Co-60	47.29	6.81E-01
Cs-134	4.85	6.98E-02
Others**	1.40	2.02E-02

3. Solid Waste Disposition

Number of Shipments: 18  
Mode of Transportation: Sole use vehicle  
Destination: Barnwell, South Carolina  
Hanford, Washington

\* Others include: Ag-110m, Co-58, Mn-54, Cm-244, Cm-242, Am-241, Pu-239,  
Pu-238, Pu-240, Tc-99, C-14, U-234, Np-237, Sb-125,  
and Tc-125m

\*\* Others include: Co-58, Mn-54, Cm-244, Cm-242, Am-241, Pu-238, Pu-239,  
Pu-240, C-14, H-3, Ni-63, U-234, Np-237

B. IRRADIATED FUEL SHIPMENT (FOR STORAGE)

Number of Shipments: 0  
Mode of Transportation: N/A  
Destination: N/A  
Number of Bundles: 0

RADIOLOGICAL DOSE IMPACT ON MAN

The model used to calculate the dose commitment estimates presented in this report were taken from Regulatory Guide 1.109, "Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance With 10 CFR Part 50, Appendix I," March 1974. The dose commitments are based on Plant effluent data integrated over the six-month period from January 1, 1985, through June 30, 1985. Eight-day depleted X/Q's were utilized for all airborne pathways, and all usage factors were for the maximum exposed individual.

DOSE FROM EATING GREEN LEAFY VEG. FROM CRITICAL GARDEN  
MREM/YEAR

	CHILD	TEEN	ADULT
BONE	6.24E-06	3.45E-06	3.74E-06
LIVER	1.96E-03	1.65E-03	2.50E-03
WHOLE BODY	1.96E-03	1.65E-03	2.49E-03
THYROID	1.96E-03	1.65E-03	2.49E-03
KIDNEY	1.96E-03	1.65E-03	2.49E-03
LUNG	1.96E-03	1.65E-03	2.49E-03
GI-LLI	1.96E-03	1.65E-03	2.49E-03

DOSE FROM EATING PRODUCE FROM CRITICAL GARDEN  
MREM/YEAR

	CHILD	TEEN	ADULT
BONE	9.44E-05	3.92E-05	2.30E-05
LIVER	2.98E-02	1.89E-02	1.54E-02
WHOLE BODY	2.98E-02	1.88E-02	1.54E-02
THYROID	2.97E-02	1.88E-02	1.54E-02
KIDNEY	2.98E-02	1.88E-02	1.54E-02
LUNG	2.98E-02	1.88E-02	1.54E-02
GI-LLI	2.97E-02	1.88E-02	1.54E-02

DOSE FROM SHORELINE SEDIMENT  
MREM/YEAR

	CHILD	TEEN	ADULT
WHOLE BODY	5.99E-09	2.87E-08	5.13E-09
SKIN	7.03E-09	3.36E-08	6.02E-09

DOSE FROM EATING FISH  
MREM/YEAR

	CHILD	TEEN	ADULT
BONE	1.00E-06	8.13E-07	7.76E-07
LIVER	1.13E-06	1.29E-06	1.25E-06
WHOLE BODY	2.06E-07	5.22E-07	9.17E-07
THYROID	1.23E-08	1.27E-08	1.44E-08
KIDNEY	3.63E-07	4.28E-07	4.19E-07
LUNG	1.32E-07	1.67E-07	1.42E-07
GI-LLI	1.49E-08	3.55E-08	4.86E-08

I-131 DOSE FROM DRINKING MILK FROM CRITICAL CDM  
MREM/YEAR

	INFANT	CHILD	TEEN	ADULT
BONE	2.13E-04	1.02E-04	4.20E-05	2.31E-05
LIVER	2.50E-04	1.02E-04	5.88E-05	3.31E-05
WHOLE BODY	1.10E-04	5.82E-05	3.16E-05	1.90E-05
THYROID	8.23E-02	3.39E-02	1.72E-02	1.08E-02
KIDNEY	2.92E-04	1.68E-04	1.01E-04	5.67E-05
LUNG	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GI-LLI	8.94E-06	9.12E-06	1.15E-05	8.73E-06

TOTAL DOSE FROM DRINKING MILK FROM CRITICAL CDM  
MREM/YEAR

	INFANT	CHILD	TEEN	ADULT
BONE	2.35E-04	1.16E-04	4.77E-05	2.63E-05
LIVER	1.74E-03	1.08E-03	6.77E-04	5.07E-04
WHOLE BODY	1.58E-03	1.03E-03	6.45E-04	4.91E-04
THYROID	8.38E-02	3.49E-02	1.78E-02	1.13E-02
KIDNEY	1.76E-03	1.14E-03	7.15E-04	5.27E-04
LUNG	1.47E-03	9.67E-04	6.12E-04	4.70E-04
GI-LLI	1.47E-03	9.75E-04	6.23E-04	4.78E-04

I-131 INHALATION DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY  
MREM/YEAR

	INFANT	CHILD	TEEN	ADULT
BONE	3.21E-05	4.07E-05	3.00E-05	2.13E-05
LIVER	3.75E-05	4.07E-05	4.15E-05	3.02E-05
WHOLE BODY	1.66E-05	2.31E-05	2.23E-05	1.73E-05
THYROID	1.26E-02	1.37E-02	1.24E-02	1.01E-02
KIDNEY	4.38E-05	6.67E-05	7.10E-05	5.18E-05
LUNG	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GI-LLI	8.95E-07	2.40E-06	5.49E-06	5.31E-06

TOTAL INHALATION DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY  
MREM/YEAR

	INFANT	CHILD	TEEN	ADULT
BONE	3.48E-05	4.46E-05	3.28E-05	2.34E-05
LIVER	8.15E-03	1.42E-02	1.60E-02	1.59E-02
WHOLE BODY	8.13E-03	1.41E-02	1.60E-02	1.59E-02
THYROID	2.10E-02	2.82E-02	2.86E-02	2.61E-02
KIDNEY	8.16E-03	1.42E-02	1.60E-02	1.59E-02
LUNG	8.12E-03	1.41E-02	1.60E-02	1.59E-02
GI-LLI	8.11E-03	1.41E-02	1.60E-02	1.59E-02

SKIN DOSES FROM AIR SUBMERSION IN RADIONOBLE GASES  
MREM/YEAR

DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY= 3.37E-01 MREM/6 MOS.

	RADIAL DISTANCE, MILES				
	0.5	1.5	2.5	3.5	4.5
S	1.96E-02	6.63E-03	3.05E-03	1.85E-03	1.27E-03
SSM	1.47E-02	5.13E-03	2.20E-03	1.29E-03	8.65E-04
SM	1.26E-02	4.25E-03	1.91E-03	1.10E-03	7.33E-04
WSM	7.77E-03	2.64E-03	1.14E-03	6.60E-04	4.40E-04
W	4.84E-03	1.61E-03	6.74E-04	3.81E-04	2.49E-04
WNW	6.45E-03	2.05E-03	9.09E-04	5.28E-04	3.52E-04
NW	9.67E-03	3.22E-03	1.45E-03	8.50E-04	5.72E-04
NNW	2.49E-02	8.35E-03	3.81E-03	2.35E-03	1.61E-03
N	7.62E-02	2.64E-02	1.22E-02	7.62E-03	5.28E-03
NNE	6.30E-02	2.05E-02	9.97E-03	6.16E-03	4.25E-03
NE	4.84E-02	1.61E-02	7.77E-03	4.69E-03	3.22E-03
ENE	3.81E-02	1.29E-02	6.01E-03	3.66E-03	2.49E-03
E	2.64E-02	8.79E-03	3.96E-03	2.49E-03	1.61E-03
ESE	3.81E-02	1.25E-02	5.86E-03	3.66E-03	3.66E-03
SE	5.42E-02	1.76E-02	8.35E-03	5.28E-03	3.66E-03
SSE	5.28E-02	1.76E-02	8.35E-03	5.28E-03	3.66E-03
	7.5	15.0	25.0	35.0	45.0
S	6.08E-04	2.13E-04	9.28E-05	5.31E-05	3.52E-05
SGM	3.96E-04	1.29E-04	5.42E-05	3.08E-05	1.91E-05
SM	3.37E-04	1.10E-04	4.54E-05	2.64E-05	1.61E-05
WSM	2.05E-04	6.45E-05	2.64E-05	1.47E-05	9.67E-06
W	1.14E-04	3.66E-05	1.47E-05	8.35E-06	5.42E-06
WNW	1.61E-04	5.57E-05	2.35E-05	1.32E-05	8.50E-06
NW	2.64E-04	8.79E-05	3.66E-05	2.05E-05	1.36E-05
NNW	7.62E-04	2.64E-04	1.17E-04	6.74E-05	4.40E-05
N	2.64E-03	9.53E-04	4.25E-04	2.49E-04	1.61E-04
NNE	2.05E-03	7.48E-04	3.37E-04	1.91E-04	1.28E-04
NE	1.61E-03	5.57E-04	2.49E-04	1.41E-04	9.23E-05
ENE	1.22E-03	4.25E-04	1.91E-04	1.08E-04	7.04E-05
E	7.91E-04	2.78E-04	1.20E-04	6.89E-05	4.40E-05
ESE	1.26E-03	4.54E-04	2.05E-04	1.19E-04	1.17E-04
SE	1.91E-03	6.74E-04	3.08E-04	1.76E-04	1.17E-04
SSE	1.76E-03	6.60E-04	2.93E-04	1.76E-04	1.13E-04

WHOLE BODY DOSES FROM AIR SUBMERSION IN RADIONOBLE GASES  
MREM/YEAR

DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY= 1.17E-01 MREM/6 MOS.

	RADIAL DISTANCE, MILES				
	0.5	1.5	2.5	3.5	4.5
S	6.80E-03	2.29E-03	1.05E-03	6.39E-04	4.39E-04
SSW	5.07E-03	1.77E-03	7.61E-04	4.46E-04	2.99E-04
SW	4.36E-03	1.47E-03	6.59E-04	3.80E-04	2.54E-04
WSW	2.69E-03	9.13E-04	3.96E-04	2.28E-04	1.52E-04
W	1.67E-03	5.58E-04	2.33E-04	1.32E-04	8.62E-05
WNW	2.23E-03	7.10E-04	3.14E-04	1.83E-04	1.22E-04
NW	3.35E-03	1.12E-03	5.02E-04	2.94E-04	1.98E-04
NNW	8.62E-03	2.89E-03	1.32E-03	8.11E-04	5.58E-04
N	2.64E-02	9.13E-03	4.21E-03	2.64E-03	1.83E-03
NNE	2.18E-02	7.10E-03	3.45E-03	2.13E-03	1.47E-03
NE	1.67E-02	5.58E-03	2.69E-03	1.62E-03	1.12E-03
ENE	1.32E-02	4.46E-03	2.08E-03	1.27E-03	8.62E-04
E	9.13E-03	3.04E-03	1.37E-03	8.62E-04	5.58E-04
ESE	1.32E-02	4.31E-03	2.03E-03	1.27E-03	1.27E-03
SE	1.88E-02	6.09E-03	2.89E-03	1.83E-03	1.27E-03
SSE	1.83E-02	6.09E-03	2.89E-03	1.83E-03	1.27E-03

	RADIAL DISTANCE, MILES				
	7.5	15.0	25.0	35.0	45.0
S	2.10E-04	7.35E-05	3.21E-05	1.84E-05	1.22E-05
SSW	1.37E-04	4.46E-05	1.88E-05	1.06E-05	6.59E-06
SW	1.17E-04	3.80E-05	1.57E-05	9.13E-06	5.58E-06
WSW	7.10E-05	2.23E-05	9.13E-06	5.07E-06	3.35E-06
W	3.96E-05	1.27E-05	5.07E-06	2.89E-06	1.88E-06
WNW	5.58E-05	1.93E-05	8.11E-06	4.56E-06	2.94E-06
NW	9.13E-05	3.04E-05	1.27E-05	7.10E-06	4.72E-06
NNW	2.64E-04	9.13E-05	4.06E-05	2.33E-05	1.52E-05
N	9.13E-04	3.30E-04	1.47E-04	8.62E-05	5.58E-05
NNE	7.10E-04	2.59E-04	1.17E-04	6.59E-05	4.41E-05
NE	5.58E-04	1.93E-04	8.62E-05	4.87E-05	3.19E-05
ENE	4.21E-04	1.47E-04	6.59E-05	3.75E-05	2.43E-05
E	2.74E-04	9.63E-05	4.16E-05	2.38E-05	1.52E-05
ESE	4.36E-04	1.57E-04	7.10E-05	4.11E-05	4.06E-05
SE	6.59E-04	2.33E-04	1.06E-04	6.09E-05	4.06E-05
SSE	6.09E-04	2.28E-04	1.01E-04	6.09E-05	3.90E-05

POPULATION INTEGRATED WHOLE BODY DOSES  
PERSON-REM/YEAR

	RADIAL DISTANCE, MILES				
	0.5	1.5	2.5	3.5	4.5
S	1.09E-04	3.67E-05	7.91E-05	6.52E-05	5.84E-05
SSW	4.06E-04	1.77E-05	4.87E-05	2.86E-05	5.74E-05
SW	4.23E-04	2.99E-04	6.39E-05	3.50E-05	6.11E-05
WSW	4.19E-04	1.17E-04	1.70E-05	3.67E-05	2.11E-05
W	1.26E-04	1.84E-05	2.01E-05	1.34E-05	1.66E-05
WNW	5.80E-05	4.54E-05	8.17E-06	1.83E-06	9.13E-06
NW	1.67E-05	6.58E-05	4.27E-05	1.41E-05	1.92E-05
NNW	0.00E+00	1.45E-05	3.43E-05	8.11E-06	0.00E+00
N	0.00E+00	9.13E-05	1.81E-04	2.56E-04	4.67E-04
NNE	0.00E+00	6.89E-04	6.62E-04	3.77E-04	1.10E-04
NE	0.00E+00	6.58E-04	2.28E-04	1.49E-04	8.92E-05
ENE	3.43E-04	2.23E-05	5.68E-04	1.50E-04	9.22E-05
E	4.56E-05	0.00E+00	2.19E-05	4.24E-04	7.55E-04
ESE	4.35E-04	4.40E-04	6.69E-05	1.01E-04	1.81E-03
SE	9.38E-05	7.18E-04	5.41E-04	1.18E-03	1.81E-03
SSE	1.83E-04	1.58E-04	8.35E-04	1.06E-03	3.18E-04

	RADIAL DISTANCE, MILES				
	7.5	15.0	25.0	35.0	45.0
S	3.78E-04	1.91E-04	1.64E-04	2.22E-04	1.14E-04
SSW	8.95E-05	2.57E-04	2.22E-04	9.39E-04	7.48E-05
SW	2.05E-04	7.66E-05	9.03E-05	1.63E-04	1.54E-04
WSW	1.25E-04	5.76E-05	1.80E-04	3.44E-05	1.36E-04
W	1.33E-05	3.28E-05	2.40E-05	1.36E-05	6.61E-06
WNW	1.44E-05	2.81E-05	4.74E-05	3.09E-05	7.25E-05
NW	7.12E-05	3.71E-05	6.42E-05	5.09E-05	5.89E-05
NNW	6.83E-05	8.24E-05	2.11E-04	1.19E-04	4.05E-04
N	4.73E-04	5.36E-04	8.43E-04	7.55E-04	3.19E-04
NNE	3.68E-04	3.71E-04	1.13E-03	6.55E-04	7.05E-04
NE	7.07E-04	5.40E-04	7.59E-04	5.33E-04	4.33E-04
ENE	5.33E-04	3.97E-04	9.61E-04	4.35E-04	4.19E-04
E	8.32E-04	2.52E-04	1.65E-04	1.91E-04	4.06E-04
ESE	5.78E-04	2.25E-03	2.49E-03	3.01E-04	4.24E-04
SE	1.57E-03	1.17E-03	3.47E-03	4.81E-04	4.24E-04
SSE	1.04E-03	1.43E-03	1.13E-03	6.17E-04	7.95E-04

TOTAL POPULATION INTEGRATED WHOLE BODY DOSE= 5.75E-02 PERSON-REM

POPULATION INTEGRATED INHALATION DOSE  
PERSON-REM/YEAR OR THYROID-REM/YEAR

	INFANT	CHILD	TEEN	ADULT
WHOLE BODY	7.60E-05	1.33E-03	1.20E-03	4.99E-03
THYROID	7.60E-05	1.33E-03	1.20E-03	4.99E-03



COPY

HBR

Form 244



Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina  
July 23, 1985

MEMORANDUM

TO: Mr. R. E. Morgan  
FROM: T. D. Drum  
SUBJECT: Meteorological Data - Semiannual Report

The attached information, described as follows, is provided for the July 1985 Effluent and Waste Disposal Report:

1. Attachments 1 and 2 - Summary report of meteorological data for each calendar quarter. The information may be reproduced and transmitted to the Nuclear Regulatory Commission as per Regulatory Guide 1.21, Section C.1 if this transmittal is required.
2. Attachment 3 - Estimates of relative concentration (X/Q) and deposition (D/Q) for the six-month period January 1, 1985 through June 30, 1985. The values presented are to be used for the dose evaluation from continuous gaseous releases.
3. Attachment 4 - Summary report of meteorological data used as input to the computer code for the X/Q and D/Q calculations.

TDD/krs (7530TDD)  
Attachments

cc: Mr. R. G. Black, Jr. (w/o attachment)  
Mr. A. Eaddy (w/attachment)

ATTACHMENT 1

JOINT FREQUENCY OF WIND DIRECTION AND SPEED  
 FIRST QUARTER 1985  
H. B. ROBINSON STEAM ELECTRIC PLANT

The attached tables present the number and frequency of wind direction occurrences by wind speed class as recorded at the on-site meteorological system during the period January 1 through March 31, 1985.

The frequencies are presented as a percent of total occurrences for each stability class as well as a summary for all classes of each sensor elevation. The first eight tables are for the upper sensor elevation (60 meter); the last eight tables are for the lower (10 meter) sensor elevation.

Pertinent information available from the tables is as follows:

1. Stability

Percent occurrence Pasquill Stability categories based on lower level (10m) wind distribution:

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
6.6	5.3	5.3	36.0	26.0	11.9	9.0

2. Wind Speed

10 Meter

60 Meter

Average Speed (mph)  
 Percent Calm  
 Percent Less than 3.5 mph

5.5  
 1.7  
 32.1

10.1  
 0.1  
 4.6

3. Wind Direction

10 Meter

60 Meter

Prevailing Direction  
 Percent Occurrence

SW  
 12.2

WSW  
 14.6

4. Data Recovery

10 Meter

60 Meter

Percent Good Hours

94.4

98.7

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST-QTR SUMMARY OVER ALL STAB

UPWNDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDSPD
N	0.1/ 0.00	5/ 0.23	45/ 2.11	103/ 4.83	41/ 1.92	7/ 0.33	/	201.1/ 9.44	10.15361
NNE	0.2/ 0.01	9/ 0.42	52/ 2.44	94/ 4.41	67/ 3.14	4/ 0.19	/	226.2/10.61	10.22363
NE	0.2/ 0.01	10/ 0.47	33/ 1.55	45/ 2.11	14/ 0.66	3/ 0.14	/	105.2/ 4.94	8.67979
ENE	0.1/ 0.00	5/ 0.23	21/ 0.99	31/ 1.45	11/ 0.52	/	/	68.1/ 3.20	8.87693
E	0.2/ 0.01	11/ 0.52	16/ 0.75	10/ 0.47	2/ 0.09	/	/	39.2/ 1.84	6.13657
ESE	0.2/ 0.01	9/ 0.42	37/ 1.74	13/ 0.61	/	/	/	59.2/ 2.78	5.89385
SE	0.1/ 0.00	6/ 0.28	33/ 1.55	22/ 1.03	4/ 0.19	6/ 0.28	/	71.1/ 3.34	8.40580
SSE	0.0/ 0.00	2/ 0.09	36/ 1.69	23/ 1.08	6/ 0.28	2/ 0.09	/	69.0/ 3.24	7.98781
S	0.3/ 0.01	12/ 0.56	26/ 1.22	61/ 2.86	19/ 0.89	3/ 0.14	/	121.3/ 5.69	9.23871
SSW	0.1/ 0.00	3/ 0.14	25/ 1.17	85/ 3.99	51/ 2.39	10/ 0.47	/	174.1/ 8.17	11.34767
SW	/	/	37/ 1.74	100/ 4.69	73/ 3.43	12/ 0.56	/	222.0/10.42	11.61649
WSW	0.1/ 0.00	3/ 0.14	57/ 2.67	158/ 7.41	64/ 3.00	28/ 1.31	/	310.1/14.55	11.15333
W	0.1/ 0.00	6/ 0.28	49/ 2.30	68/ 3.19	15/ 0.70	2/ 0.09	/	140.1/ 6.57	8.61902
WNW	0.1/ 0.00	6/ 0.28	30/ 1.41	25/ 1.17	19/ 0.89	1/ 0.05	/	81.1/ 3.81	9.13539
NW	0.1/ 0.00	5/ 0.23	16/ 0.75	53/ 2.49	33/ 1.55	8/ 0.38	1/ 0.05	116.1/ 5.45	11.06958
NNW	0.1/ 0.00	3/ 0.14	28/ 1.31	42/ 1.97	37/ 1.74	17/ 0.80	/	127.1/ 5.96	11.84676
TOTAL	2.0/ 0.09	95/ 4.46	541/25.39	933/43.78	456/21.40	103/ 4.83	1/ 0.05	2131/ 100	10.08141

NUMBER OF BAD RECORDS: 29

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

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SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=A

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	2/ 0.09	6/ 0.28	5/ 0.23	1/ 0.05	/	14.0/ 0.66	11.99766
NNE	/	/	/	4/ 0.19	2/ 0.09	1/ 0.05	/	7.0/ 0.33	13.52104
NE	/	/	/	5/ 0.23	1/ 0.05	/	/	6.0/ 0.28	9.88550
ENE	/	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	5.0/ 0.23	9.57145
E	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	7.13690
ESE	/	/	2/ 0.09	3/ 0.14	/	/	/	5.0/ 0.23	7.33033
SE	/	/	/	/	/	/	/	/	/
SSE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	5.50275
S	/	/	1/ 0.05	/	2/ 0.09	1/ 0.05	/	4.0/ 0.19	13.67766
SSW	/	/	/	1/ 0.05	3/ 0.14	2/ 0.09	/	6.0/ 0.28	16.95569
SW	/	/	/	3/ 0.14	14/ 0.66	2/ 0.09	/	19.0/ 0.89	15.21900
WSW	/	/	1/ 0.05	6/ 0.28	12/ 0.56	9/ 0.42	/	28.0/ 1.31	15.36541
W	/	/	1/ 0.05	9/ 0.42	2/ 0.09	1/ 0.05	/	13.0/ 0.61	11.32874
WNW	/	/	/	/	/	/	/	/	/
NW	/	/	1/ 0.05	3/ 0.14	12/ 0.56	3/ 0.14	/	19.0/ 0.89	14.65908
NNW	/	/	/	/	5/ 0.23	6/ 0.28	/	11.0/ 0.52	18.96704
TOTAL	/	/	11/ 0.52	44/ 2.06	59/ 2.77	26/ 1.22	/	140.0/ 6.57	13.83203

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS PD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

5

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=B

## UPWNDS PD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDS PD
N	/	/	2/ 0.09	6/ 0.28	/	1/ 0.05	/	9.0/ 0.42	10.45522
NNE	/	/	3/ 0.14	5/ 0.23	2/ 0.09	1/ 0.05	/	11.0/ 0.52	9.64573
NE	/	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	5.0/ 0.23	8.99783
ENE	/	1/ 0.05	2/ 0.09	3/ 0.14	1/ 0.05	/	/	7.0/ 0.33	7.55616
E	/	/	5/ 0.23	/	/	/	/	5.0/ 0.23	5.86626
ESE	/	1/ 0.05	3/ 0.14	/	/	/	/	4.0/ 0.19	4.78989
SE	/	/	3/ 0.14	/	/	/	/	3.0/ 0.14	5.69729
SSE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	4.71902
S	/	/	/	3/ 0.14	1/ 0.05	/	/	4.0/ 0.19	9.61731
SSW	/	/	1/ 0.05	1/ 0.05	2/ 0.09	1/ 0.05	/	5.0/ 0.23	13.96364
SW	/	/	1/ 0.05	4/ 0.19	5/ 0.23	1/ 0.05	/	11.0/ 0.52	12.23945
WSW	/	/	3/ 0.14	7/ 0.33	4/ 0.19	2/ 0.09	/	16.0/ 0.75	12.21965
W	/	/	3/ 0.14	8/ 0.38	5/ 0.23	/	/	16.0/ 0.75	10.26659
WNW	/	/	1/ 0.05	3/ 0.14	3/ 0.14	/	/	7.0/ 0.33	12.45860
NW	/	/	/	7/ 0.33	1/ 0.05	/	/	8.0/ 0.38	10.53651
NNW	/	/	/	3/ 0.14	/	2/ 0.09	/	5.0/ 0.23	13.98032
TOTAL	/	2/ 0.09	29/ 1.36	53/ 2.49	25/ 1.17	8/ 0.38	/	117.0/ 5.49	10.36315

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

7

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=C

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	3/ 0.14	3/ 0.14	1/ 0.05	/	/	7.0/ 0.33	8.13263
NNE	/	/	2/ 0.09	1/ 0.05	3/ 0.14	/	/	6.0/ 0.28	10.71091
NE	/	/	/	3/ 0.14	1/ 0.05	/	/	4.0/ 0.19	10.59279
ENE	/	/	5/ 0.23	1/ 0.05	/	/	/	6.0/ 0.28	5.34434
E	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.13640
ESE	/	1/ 0.05	1/ 0.05	/	/	/	/	2.0/ 0.09	3.63515
SE	/	1/ 0.05	/	1/ 0.05	/	/	/	2.0/ 0.09	5.75287
SSE	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.19	6.36985
S	/	/	1/ 0.05	5/ 0.23	1/ 0.05	/	/	7.0/ 0.33	9.26892
SSW	/	/	/	3/ 0.14	1/ 0.05	/	/	4.0/ 0.19	12.17692
SW	/	/	4/ 0.19	7/ 0.33	4/ 0.19	/	/	15.0/ 0.70	10.03724
WSW	/	/	5/ 0.23	6/ 0.28	3/ 0.14	/	/	14.0/ 0.66	10.16698
W	/	/	5/ 0.23	4/ 0.19	2/ 0.09	/	/	11.0/ 0.52	8.92416
WNW	/	/	4/ 0.19	2/ 0.09	1/ 0.05	/	/	7.0/ 0.33	8.11120
NW	/	/	1/ 0.05	10/ 0.47	5/ 0.23	1/ 0.05	/	17.0/ 0.80	11.14053
NNW	/	/	/	2/ 0.09	1/ 0.05	1/ 0.05	/	4.0/ 0.19	12.40203
TOTAL	/	2/ 0.09	36/ 1.69	50/ 2.35	23/ 1.08	2/ 0.09	/	113.0/ 5.30	9.36923

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:49 FRIDAY, JULY 19, 1985

9

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=D

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	2/ 0.09	19/ 0.89	30/ 1.41	24/ 1.13	5/ 0.23	/	80.0/ 3.75	10.95360
NNE	/	2/ 0.09	20/ 0.94	56/ 2.63	60/ 2.82	2/ 0.09	/	140.0/ 6.57	11.51174
NE	/	2/ 0.09	14/ 0.66	29/ 1.36	10/ 0.47	3/ 0.14	/	58.0/ 2.72	10.02829
ENE	/	3/ 0.14	7/ 0.33	8/ 0.38	8/ 0.38	/	/	26.0/ 1.22	9.72216
E	/	7/ 0.33	7/ 0.33	2/ 0.09	1/ 0.05	/	/	17.0/ 0.80	5.37622
ESE	/	2/ 0.09	9/ 0.42	6/ 0.28	/	/	/	17.0/ 0.80	6.79555
SE	/	3/ 0.14	8/ 0.38	6/ 0.28	4/ 0.19	/	/	21.0/ 0.99	8.07308
SSE	/	2/ 0.09	12/ 0.56	2/ 0.09	2/ 0.09	/	/	18.0/ 0.84	7.07946
S	/	1/ 0.05	8/ 0.38	12/ 0.56	5/ 0.23	/	/	26.0/ 1.22	9.15137
SSW	/	1/ 0.05	7/ 0.33	10/ 0.47	10/ 0.47	6/ 0.28	/	34.0/ 1.60	12.48140
SW	/	/	12/ 0.56	29/ 1.36	15/ 0.70	9/ 0.42	/	65.0/ 3.05	12.49325
WSW	/	2/ 0.09	23/ 1.08	45/ 2.11	25/ 1.17	16/ 0.75	/	111.0/ 5.21	11.75903
W	/	2/ 0.09	18/ 0.84	16/ 0.75	3/ 0.14	1/ 0.05	/	40.0/ 1.88	8.39294
WNW	/	5/ 0.23	8/ 0.38	3/ 0.14	5/ 0.23	1/ 0.05	/	22.0/ 1.03	8.44007
NW	/	2/ 0.09	5/ 0.23	18/ 0.84	9/ 0.42	4/ 0.19	1/ 0.05	39.0/ 1.83	11.41724
NNW	/	/	12/ 0.56	14/ 0.66	18/ 0.84	8/ 0.38	/	52.0/ 2.44	12.78042
TOTAL	/	36/ 1.69	189/ 8.87	286/ 13.42	199/ 9.34	55/ 2.58	1/ 0.05	766.0/ 35.95	10.75340

NUMBER OF BAD RECORDS: 27

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDSPO  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

11  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=E

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	11/ 0.52	27/ 1.27	8/ 0.38	/	/	46.0/ 2.16	9.76829
NNE	/	3/ 0.14	12/ 0.56	17/ 0.80	/	/	/	32.0/ 1.50	7.53137
NE	/	2/ 0.09	9/ 0.42	3/ 0.14	1/ 0.05	/	/	15.0/ 0.70	6.67445
ENE	/	/	4/ 0.19	15/ 0.70	1/ 0.05	/	/	20.0/ 0.94	9.77655
E	/	3/ 0.14	/	3/ 0.14	1/ 0.05	/	/	7.0/ 0.33	7.92301
ESE	/	2/ 0.09	6/ 0.28	2/ 0.09	/	/	/	10.0/ 0.47	5.97465
SE	/	/	18/ 0.84	7/ 0.33	/	6/ 0.28	/	31.0/ 1.45	9.39501
SSE	/	/	3/ 0.14	7/ 0.33	3/ 0.14	2/ 0.09	/	15.0/ 0.70	11.21338
S	/	/	8/ 0.38	18/ 0.84	10/ 0.47	2/ 0.09	/	38.0/ 1.78	11.18892
SSW	/	/	4/ 0.19	38/ 1.78	31/ 1.45	1/ 0.05	/	74.0/ 3.47	12.07135
SW	/	/	6/ 0.28	29/ 1.36	29/ 1.36	/	/	64.0/ 3.00	11.71679
WSW	/	/	16/ 0.75	50/ 2.35	8/ 0.38	1/ 0.05	/	75.0/ 3.52	9.63659
W	/	2/ 0.09	14/ 0.66	26/ 1.22	3/ 0.14	/	/	45.0/ 2.11	8.09219
WNW	/	/	10/ 0.47	15/ 0.70	9/ 0.42	/	/	34.0/ 1.60	10.02805
NW	/	2/ 0.09	2/ 0.09	5/ 0.23	3/ 0.14	/	/	12.0/ 0.56	8.65571
NNW	/	1/ 0.05	5/ 0.23	10/ 0.47	10/ 0.47	/	/	26.0/ 1.22	10.34491
TOTAL	/	15/ 0.70	128/ 6.01	272/ 12.76	117/ 5.49	12/ 0.56	/	544.0/ 25.53	9.98100

NUMBER OF BAD RECORDS: 2

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=F

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	1/ 0.05	4/ 0.19	23/ 1.08	2/ 0.09	/	/	30.0/ 1.41	9.36968
NNE	/	1/ 0.05	5/ 0.23	9/ 0.42	/	/	/	15.0/ 0.70	7.49819
NE	/	3/ 0.14	5/ 0.23	1/ 0.05	/	/	/	9.0/ 0.42	4.59859
ENE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	5.05252
E	/	1/ 0.05	/	1/ 0.05	/	/	/	2.0/ 0.09	4.94414
ESE	/	1/ 0.05	4/ 0.19	1/ 0.05	/	/	/	6.0/ 0.28	5.45828
SE	/	1/ 0.05	1/ 0.05	1/ 0.05	/	/	/	3.0/ 0.14	5.95853
SSE	/	/	7/ 0.33	10/ 0.47	1/ 0.05	/	/	18.0/ 0.84	8.09386
S	/	3/ 0.14	3/ 0.14	13/ 0.61	/	/	/	19.0/ 0.89	7.73369
SSW	/	/	7/ 0.33	20/ 0.94	2/ 0.09	/	/	29.0/ 1.36	8.71872
SW	/	/	7/ 0.33	17/ 0.80	5/ 0.23	/	/	29.0/ 1.36	9.85895
WSW	/	/	3/ 0.14	29/ 1.36	11/ 0.52	/	/	43.0/ 2.02	10.93492
W	/	/	5/ 0.23	4/ 0.19	/	/	/	9.0/ 0.42	7.51116
WNW	/	/	4/ 0.19	1/ 0.05	1/ 0.05	/	/	6.0/ 0.28	7.57879
NW	/	/	3/ 0.14	7/ 0.33	3/ 0.14	/	/	13.0/ 0.61	9.92675
NNW	/	/	6/ 0.28	8/ 0.38	3/ 0.14	/	/	17.0/ 0.80	9.42137
TOTAL	/	11/ 0.52	65/ 3.05	145/ 6.80	28/ 1.31	/	/	249.0/ 11.68	8.85295

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST-QTR STAB=G

UPWNSPD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNSPD
N	0.1/ 0.00	2/ 0.09	4/ 0.19	8/ 0.38	1/ 0.05	/	/	15.1/ 0.71	7.69148
NNE	0.2/ 0.01	3/ 0.14	10/ 0.47	2/ 0.09	/	/	/	15.2/ 0.71	5.41443
NE	0.2/ 0.01	3/ 0.14	4/ 0.19	1/ 0.05	/	/	/	8.2/ 0.38	5.26176
ENE	0.1/ 0.00	1/ 0.05	1/ 0.05	1/ 0.05	/	/	/	3.1/ 0.15	5.90481
E	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	7.16469
ESE	0.1/ 0.00	2/ 0.09	12/ 0.56	1/ 0.05	/	/	/	15.1/ 0.71	5.14578
SE	0.1/ 0.00	1/ 0.05	3/ 0.14	7/ 0.33	/	/	/	11.1/ 0.52	8.13732
SSE	/	/	9/ 0.42	3/ 0.14	/	/	/	12.0/ 0.56	6.17809
S	0.6/ 0.03	8/ 0.38	5/ 0.23	10/ 0.47	/	/	/	23.6/ 1.11	6.46826
SSW	0.1/ 0.00	2/ 0.09	6/ 0.28	12/ 0.56	2/ 0.09	/	/	22.1/ 1.04	8.36390
SW	/	/	7/ 0.33	11/ 0.52	1/ 0.05	/	/	19.0/ 0.89	8.24535
WSW	0.1/ 0.00	1/ 0.05	6/ 0.28	15/ 0.70	1/ 0.05	/	/	23.1/ 1.08	8.32595
W	0.1/ 0.00	2/ 0.09	3/ 0.14	1/ 0.05	/	/	/	6.1/ 0.29	4.96354
WNW	0.1/ 0.00	1/ 0.05	3/ 0.14	1/ 0.05	/	/	/	5.1/ 0.24	4.84473
NW	0.1/ 0.00	1/ 0.05	4/ 0.19	3/ 0.14	/	/	/	8.1/ 0.38	6.74976
NNW	0.1/ 0.00	2/ 0.09	5/ 0.23	5/ 0.23	/	/	/	12.1/ 0.57	6.92460
TOTAL	2.0/ 0.09	29/ 1.36	83/ 3.89	83/ 3.89	5/ 0.23	/	/	202.0/ 9.48	6.94792

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:48 FRIDAY, JULY 19, 1985

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SITE=ROBN YEAR=85 PERIOD=1ST QTR SUMMARY OVER ALL STAB

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	2.0/ 0.10	36/ 1.76	81/ 3.97	13/ 0.64	/	/	/	132.0/ 6.47	4.74289
NNE	0.9/ 0.04	16/ 0.78	85/ 4.17	69/ 3.38	2/ 0.10	/	/	172.9/ 8.48	6.83752
NE	1.0/ 0.05	18/ 0.88	54/ 2.65	18/ 0.88	/	/	/	91.0/ 4.46	5.61241
ENE	0.5/ 0.02	9/ 0.44	38/ 1.86	10/ 0.49	/	/	/	57.5/ 2.82	5.77382
E	0.8/ 0.04	14/ 0.69	15/ 0.74	/	/	/	/	29.8/ 1.46	3.54259
ESE	0.5/ 0.02	9/ 0.44	15/ 0.74	/	/	/	/	24.5/ 1.20	3.90818
SE	1.1/ 0.05	20/ 0.98	24/ 1.18	8/ 0.39	2/ 0.10	/	/	55.1/ 2.70	5.11960
SSE	1.8/ 0.09	32/ 1.57	38/ 1.86	4/ 0.20	1/ 0.05	/	/	76.8/ 3.76	4.39758
S	4.6/ 0.23	81/ 3.97	63/ 3.09	32/ 1.57	3/ 0.15	/	/	183.6/ 9.00	4.65584
SSW	2.9/ 0.14	51/ 2.50	84/ 4.12	46/ 2.25	11/ 0.54	/	/	194.9/ 9.55	5.87959
SW	3.0/ 0.15	53/ 2.60	99/ 4.85	74/ 3.63	20/ 0.98	/	/	249.0/12.21	6.69287
WSW	2.8/ 0.14	50/ 2.45	91/ 4.46	52/ 2.55	6/ 0.29	/	/	201.8/ 9.89	5.79170
W	2.4/ 0.12	43/ 2.11	42/ 2.06	27/ 1.32	2/ 0.10	/	/	116.4/ 5.71	4.98314
WNW	2.6/ 0.13	46/ 2.25	33/ 1.62	12/ 0.59	/	/	/	93.6/ 4.59	3.88936
NW	3.6/ 0.18	64/ 3.14	49/ 2.40	39/ 1.91	4/ 0.20	/	/	159.6/ 7.82	4.99775
NNW	4.4/ 0.22	77/ 3.77	72/ 3.53	37/ 1.81	11/ 0.54	/	/	201.4/ 9.87	5.32274
TOTAL	35.0/ 1.72	619/30.34	883/43.28	441/21.62	62/ 3.04	/	/	2040/ 100	5.45191

NUMBER OF BAD RECORDS: 120

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:48 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

3  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=A

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	1/ 0.05	4/ 0.20	/	/	/	5.0/ 0.25	8.20076
NNE	/	/	4/ 0.20	5/ 0.25	1/ 0.05	/	/	10.0/ 0.49	7.97565
NE	/	/	3/ 0.15	2/ 0.10	/	/	/	5.0/ 0.25	6.95014
ENE	/	/	6/ 0.29	1/ 0.05	/	/	/	7.0/ 0.34	6.47466
E	/	/	2/ 0.10	/	/	/	/	2.0/ 0.10	5.40270
ESE	/	/	2/ 0.10	/	/	/	/	2.0/ 0.10	5.25262
SE	/	/	4/ 0.20	/	/	/	/	4.0/ 0.20	5.63198
SSE	/	/	/	/	/	/	/	/	
S	/	/	1/ 0.05	2/ 0.10	1/ 0.05	/	/	4.0/ 0.20	10.21760
SSW	/	/	1/ 0.05	7/ 0.34	5/ 0.25	/	/	13.0/ 0.64	11.78538
SW	/	/	1/ 0.05	19/ 0.93	5/ 0.25	/	/	25.0/ 1.23	11.08421
WSW	/	/	2/ 0.10	12/ 0.59	3/ 0.15	/	/	17.0/ 0.83	10.13644
W	/	/	1/ 0.05	9/ 0.44	1/ 0.05	/	/	11.0/ 0.54	8.98479
WNW	/	/	/	/	/	/	/	/	
NW	/	/	1/ 0.05	15/ 0.74	2/ 0.10	/	/	18.0/ 0.88	9.50660
NNW	/	/	/	9/ 0.44	2/ 0.10	/	/	11.0/ 0.54	11.17680
TOTAL	/	/	29/ 1.42	85/ 4.17	20/ 0.98	/	/	134.0/ 6.57	9.56025

NUMBER OF BAD RECORDS: 6

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMD01#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:48 FRIDAY, JULY 19, 1985

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SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=B

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	7/ 0.34	2/ 0.10	/	/	/	9.0/ 0.44	7.32403
NNE	/	/	6/ 0.29	2/ 0.10	1/ 0.05	/	/	9.0/ 0.44	7.12208
NE	/	/	4/ 0.20	1/ 0.05	/	/	/	5.0/ 0.25	6.40653
ENE	/	1/ 0.05	4/ 0.20	1/ 0.05	/	/	/	6.0/ 0.29	5.90295
E	/	2/ 0.10	1/ 0.05	/	/	/	/	3.0/ 0.15	3.73520
ESE	/	/	4/ 0.20	/	/	/	/	4.0/ 0.20	4.48974
SE	/	/	3/ 0.15	/	/	/	/	3.0/ 0.15	4.31327
SSE	/	/	3/ 0.15	/	/	/	/	3.0/ 0.15	5.96965
S	/	/	1/ 0.05	2/ 0.10	/	/	/	3.0/ 0.15	9.43249
SSW	/	/	2/ 0.10	4/ 0.20	1/ 0.05	/	/	7.0/ 0.34	9.52142
SW	/	/	2/ 0.10	9/ 0.44	2/ 0.10	/	/	13.0/ 0.64	10.03065
WSW	/	/	7/ 0.34	5/ 0.25	/	/	/	12.0/ 0.59	7.30504
W	/	/	6/ 0.29	8/ 0.39	/	/	/	14.0/ 0.69	7.91586
WNW	/	/	3/ 0.15	5/ 0.25	/	/	/	8.0/ 0.39	8.12698
NW	/	/	3/ 0.15	3/ 0.15	/	/	/	6.0/ 0.29	7.23139
NNW	/	/	1/ 0.05	2/ 0.10	1/ 0.05	/	/	4.0/ 0.20	10.13423
TOTAL	/	3/ 0.15	57/ 2.79	44/ 2.16	5/ 0.25	/	/	109.0/ 5.34	7.61696

NUMBER OF BAD RECORDS: 8

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:48 FRIDAY, JULY 19, 1985

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SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=C

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	5/ 0.25	1/ 0.05	/	/	/	6.0/ 0.29	5.95575
NNE	/	/	2/ 0.10	3/ 0.15	/	/	/	5.0/ 0.25	7.68050
NE	/	1/ 0.05	4/ 0.20	1/ 0.05	/	/	/	6.0/ 0.29	6.24201
ENE	/	/	2/ 0.10	/	/	/	/	2.0/ 0.10	4.27714
E	/	2/ 0.10	3/ 0.15	/	/	/	/	5.0/ 0.25	4.28881
ESE	/	1/ 0.05	/	/	/	/	/	1.0/ 0.05	3.31277
SE	/	1/ 0.05	3/ 0.15	/	/	/	/	4.0/ 0.20	4.32299
SSE	/	1/ 0.05	5/ 0.25	/	/	/	/	6.0/ 0.29	5.37491
S	/	/	3/ 0.15	4/ 0.20	/	/	/	7.0/ 0.34	7.55139
SSW	/	/	2/ 0.10	6/ 0.29	/	/	/	8.0/ 0.39	7.99983
SW	/	1/ 0.05	4/ 0.20	8/ 0.39	/	/	/	13.0/ 0.64	7.76157
WSW	/	/	9/ 0.44	4/ 0.20	/	/	/	13.0/ 0.64	6.65204
W	/	/	3/ 0.15	5/ 0.25	/	/	/	8.0/ 0.39	7.25362
WNW	/	/	6/ 0.29	1/ 0.05	/	/	/	7.0/ 0.34	6.27456
NW	/	/	8/ 0.39	6/ 0.29	/	/	/	14.0/ 0.69	7.66653
NNW	/	/	1/ 0.05	2/ 0.10	/	/	/	3.0/ 0.15	8.12072
TOTAL	/	7/ 0.34	60/ 2.94	41/ 2.01	/	/	/	108.0/ 5.29	6.78075

NUMBER OF BAD RECORDS: 5

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:48 FRIDAY, JULY 19, 1985

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SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=D

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	8/ 0.39	47/ 2.30	4/ 0.20	/	/	/	59.0/ 2.89	5.15597
NNE	/	5/ 0.25	68/ 3.33	59/ 2.89	/	/	/	132.0/ 6.47	7.18048
NE	/	7/ 0.34	35/ 1.72	14/ 0.69	/	/	/	56.0/ 2.75	6.13461
ENE	/	4/ 0.20	15/ 0.74	8/ 0.39	/	/	/	27.0/ 1.32	6.52425
E	/	6/ 0.29	6/ 0.29	/	/	/	/	12.0/ 0.59	3.39058
ESE	/	5/ 0.25	9/ 0.44	/	/	/	/	14.0/ 0.69	4.10920
SE	/	6/ 0.29	10/ 0.49	4/ 0.20	/	/	/	20.0/ 0.98	5.19176
SSE	/	7/ 0.34	13/ 0.64	2/ 0.10	/	/	/	22.0/ 1.08	4.64474
S	/	4/ 0.20	16/ 0.78	14/ 0.69	/	/	/	34.0/ 1.67	6.66313
SSW	/	4/ 0.20	11/ 0.54	14/ 0.69	5/ 0.25	/	/	34.0/ 1.67	8.06579
SW	/	8/ 0.39	39/ 1.91	32/ 1.57	13/ 0.64	/	/	92.0/ 4.51	7.94310
WSW	/	8/ 0.39	39/ 1.91	29/ 1.42	3/ 0.15	/	/	79.0/ 3.87	7.03157
W	/	10/ 0.49	22/ 1.08	4/ 0.20	1/ 0.05	/	/	37.0/ 1.81	5.09399
WNW	/	5/ 0.25	8/ 0.39	6/ 0.29	/	/	/	19.0/ 0.93	5.41089
NW	/	4/ 0.20	21/ 1.03	12/ 0.59	1/ 0.05	/	/	38.0/ 1.86	6.31017
NNW	/	3/ 0.15	25/ 1.23	24/ 1.18	7/ 0.34	/	/	59.0/ 2.89	8.07861
TOTAL	/	94/ 4.61	384/18.82	226/11.08	30/ 1.47	/	/	734.0/35.98	6.63584

NUMBER OF BAD RECORDS: 59

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=E

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.2/ 0.01	12/ 0.59	20/ 0.98	2/ 0.10	/	/	/	34.2/ 1.68	4.21336
NNE	0.1/ 0.00	8/ 0.39	5/ 0.25	/	/	/	/	13.1/ 0.64	3.59658
NE	0.1/ 0.00	8/ 0.39	8/ 0.39	/	/	/	/	16.1/ 0.79	3.59444
ENE	0.1/ 0.00	4/ 0.20	11/ 0.54	/	/	/	/	15.1/ 0.74	4.37470
E	0.0/ 0.00	3/ 0.15	3/ 0.15	/	/	/	/	6.0/ 0.29	3.00706
ESE	0.0/ 0.00	3/ 0.15	/	/	/	/	/	3.0/ 0.15	2.02323
SE	0.2/ 0.01	12/ 0.59	4/ 0.20	4/ 0.20	2/ 0.10	/	/	22.2/ 1.09	5.54330
SSE	0.2/ 0.01	14/ 0.69	15/ 0.74	2/ 0.10	1/ 0.05	/	/	32.2/ 1.58	4.79069
S	0.3/ 0.01	18/ 0.88	36/ 1.76	10/ 0.49	2/ 0.10	/	/	66.3/ 3.25	5.27362
SSW	0.3/ 0.01	16/ 0.78	51/ 2.50	15/ 0.74	/	/	/	82.3/ 4.03	5.54798
SW	0.3/ 0.01	18/ 0.88	40/ 1.96	6/ 0.29	/	/	/	64.3/ 3.15	4.80962
WSW	0.3/ 0.01	21/ 1.03	27/ 1.32	2/ 0.10	/	/	/	50.3/ 2.47	3.95401
W	0.3/ 0.01	20/ 0.98	10/ 0.49	1/ 0.05	/	/	/	31.3/ 1.53	3.22059
WNW	0.2/ 0.01	14/ 0.69	15/ 0.74	/	/	/	/	29.2/ 1.43	3.44350
NW	0.2/ 0.01	11/ 0.54	11/ 0.54	3/ 0.15	1/ 0.05	/	/	26.2/ 1.28	4.73964
NNW	0.1/ 0.00	9/ 0.44	28/ 1.37	/	1/ 0.05	/	/	38.1/ 1.87	4.81944
TOTAL	3.0/ 0.15	191/ 9.36	284/13.92	45/ 2.21	7/ 0.34	/	/	530.0/25.98	4.60399

NUMBER OF BAD RECORDS: 16

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=F

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.5/ 0.02	11/ 0.54	1/ 0.05	/	/	/	/	12.5/ 0.61	2.12438
NNE	0.0/ 0.00	1/ 0.05	/	/	/	/	/	1.0/ 0.05	1.36735
NE	0.0/ 0.00	1/ 0.05	/	/	/	/	/	1.0/ 0.05	3.11822
ENE	/	/	/	/	/	/	/	/	
E	0.0/ 0.00	1/ 0.05	/	/	/	/	/	1.0/ 0.05	2.78472
ESE	/	/	/	/	/	/	/	/	
SE	0.0/ 0.00	1/ 0.05	/	/	/	/	/	1.0/ 0.05	1.08387
SSE	0.4/ 0.02	8/ 0.39	2/ 0.10	/	/	/	/	10.4/ 0.51	2.41786
S	1.7/ 0.08	36/ 1.76	5/ 0.25	/	/	/	/	42.7/ 2.09	2.47058
SSW	0.6/ 0.03	12/ 0.59	17/ 0.83	/	/	/	/	29.6/ 1.45	3.29781
SW	0.8/ 0.04	17/ 0.83	13/ 0.64	/	/	/	/	30.8/ 1.51	3.22076
WSW	0.5/ 0.02	11/ 0.54	7/ 0.34	/	/	/	/	18.5/ 0.91	2.46383
W	0.4/ 0.02	8/ 0.39	/	/	/	/	/	8.4/ 0.41	1.75087
WNW	0.7/ 0.03	15/ 0.74	1/ 0.05	/	/	/	/	16.7/ 0.82	2.05341
NW	0.7/ 0.03	15/ 0.74	5/ 0.25	/	/	/	/	20.7/ 1.01	2.74814
NNW	1.6/ 0.08	33/ 1.62	13/ 0.64	/	/	/	/	47.6/ 2.33	2.97942
TOTAL	8.0/ 0.39	170/ 8.33	64/ 3.14	/	/	/	/	242.0/11.86	2.70930

NUMBER OF BAD RECORDS: 7

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=1ST QTR STAB=G

LOWNDSPD

LOWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.8/ 0.04	5/ 0.25	/	/	/	/	/	5.8/ 0.28	1.24197
NNE	0.3/ 0.01	2/ 0.10	/	/	/	/	/	2.3/ 0.11	1.07841
NE	0.2/ 0.01	1/ 0.05	/	/	/	/	/	1.2/ 0.06	0.82677
ENE	/	/	/	/	/	/	/	/	/
E	/	/	/	/	/	/	/	/	/
ESE	/	/	/	/	/	/	/	/	/
SE	/	/	/	/	/	/	/	/	/
SSE	0.3/ 0.01	2/ 0.10	/	/	/	/	/	2.3/ 0.11	1.73816
S	3.6/ 0.18	23/ 1.13	1/ 0.05	/	/	/	/	27.6/ 1.35	1.76190
SSW	3.0/ 0.15	19/ 0.93	/	/	/	/	/	22.0/ 1.08	1.41748
SW	1.4/ 0.07	9/ 0.44	/	/	/	/	/	10.4/ 0.51	1.52504
WSW	1.6/ 0.08	10/ 0.49	/	/	/	/	/	11.6/ 0.57	1.67754
W	0.8/ 0.04	5/ 0.25	/	/	/	/	/	5.8/ 0.28	0.95735
WNW	1.9/ 0.09	12/ 0.59	/	/	/	/	/	13.9/ 0.68	1.14533
NW	5.3/ 0.26	34/ 1.67	/	/	/	/	/	39.3/ 1.93	1.33238
NNW	5.0/ 0.25	32/ 1.57	4/ 0.20	/	/	/	/	41.0/ 2.01	1.96435
TOTAL	24.0/ 1.18	154/ 7.55	5/ 0.25	/	/	/	/	183.0/ 8.97	1.55290

NUMBER OF BAD RECORDS: 19

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:48 FRIDAY, JULY 19, 1985

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ATTACHMENT 2

JOINT FREQUENCY OF WIND DIRECTION AND SPEED  
 SECOND QUARTER 1985  
H. B. ROBINSON STEAM ELECTRIC PLANT

The attached tables present the number and frequency of wind direction occurrences by wind speed class as recorded at the on-site meteorological system during the period April 1 through June 30, 1985.

The frequencies are presented as a percent of total occurrences for each stability class as well as a summary for all classes of each sensor elevation. The first eight tables are for the upper sensor elevation (60 meter); the last eight tables are for the lower (10 meter) sensor elevation.

Pertinent information available from the tables is as follows:

1.	<u>Stability</u>	Percent occurrence Pasquill Stability categories based on lower level (10m) wind distribution:					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
	16.3	6.4	5.6	29.3	21.5	12.0	8.8
2.	<u>Wind Speed</u>				<u>10 Meter</u>		<u>60 Meter</u>
	Average Speed (mph)				5.2		9.0
	Percent Calm				1.8		0.0
	Percent Less than 3.5 mph				32.3		5.9
3.	<u>Wind Direction</u>				<u>10 Meter</u>		<u>60 Meter</u>
	Prevailing Direction				SSW		SW
	Percent Occurrence				12.9		11.6
4.	<u>Data Recovery</u>				<u>10 Meter</u>		<u>60 Meter</u>
	Percent Good Hours				98.0		97.9

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS PD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

17  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR SUMMARY OVER ALL STAB

UPWNDS PD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDS PD
N	/	7/ 0.33	23/ 1.08	44/ 2.06	31/ 1.45	1/ 0.05	/	106.0/ 4.96	9.98151
NNE	/	8/ 0.37	32/ 1.50	49/ 2.29	22/ 1.03	8/ 0.37	/	119.0/ 5.56	10.02363
NE	/	5/ 0.23	23/ 1.08	55/ 2.57	21/ 0.98	/	/	104.0/ 4.86	9.51314
ENE	/	5/ 0.23	32/ 1.50	32/ 1.50	5/ 0.23	/	/	74.0/ 3.46	7.80232
E	/	13/ 0.61	40/ 1.87	24/ 1.12	3/ 0.14	/	/	80.0/ 3.74	6.39590
ESE	/	6/ 0.28	46/ 2.15	25/ 1.17	3/ 0.14	/	/	80.0/ 3.74	6.89407
SE	/	13/ 0.61	55/ 2.57	45/ 2.10	7/ 0.33	1/ 0.05	/	121.0/ 5.66	7.30172
SSE	/	9/ 0.42	56/ 2.62	70/ 3.27	16/ 0.75	/	/	151.0/ 7.06	8.22254
S	/	5/ 0.23	49/ 2.29	98/ 4.58	18/ 0.84	7/ 0.33	1/ 0.05	178.0/ 8.32	9.36020
SSW	/	6/ 0.28	51/ 2.38	125/ 5.84	34/ 1.59	11/ 0.51	1/ 0.05	228.0/10.66	9.98084
SW	/	4/ 0.19	39/ 1.82	119/ 5.56	76/ 3.55	10/ 0.47	/	248.0/11.59	10.83828
WSW	/	8/ 0.37	67/ 3.13	76/ 3.55	48/ 2.24	4/ 0.19	/	203.0/ 9.49	9.67593
W	/	19/ 0.89	85/ 3.97	50/ 2.34	10/ 0.47	/	/	164.0/ 7.67	7.06003
WNW	/	5/ 0.23	37/ 1.73	38/ 1.78	15/ 0.70	/	/	95.0/ 4.44	8.51654
NW	/	4/ 0.19	29/ 1.36	42/ 1.96	26/ 1.22	1/ 0.05	/	102.0/ 4.77	9.61570
NNW	/	9/ 0.42	26/ 1.22	42/ 1.96	6/ 0.28	3/ 0.14	/	86.0/ 4.02	8.66324
TOTAL	/	126/ 5.89	690/32.26	934/43.67	341/15.94	46/ 2.15	2/ 0.09	2139/ 100	9.01941

NUMBER OF BAD RECORDS: 45

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS PD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

19  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=A

UPWNDS PD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDS PD
N	/	/	4/ 0.19	11/ 0.51	2/ 0.09	/	/	17.0/ 0.79	9.93830
NNE	/	1/ 0.05	3/ 0.14	7/ 0.33	1/ 0.05	/	/	12.0/ 0.56	9.31716
NE	/	/	2/ 0.09	1/ 0.05	2/ 0.09	/	/	5.0/ 0.23	9.42582
ENE	/	/	10/ 0.47	4/ 0.19	/	/	/	14.0/ 0.65	6.90583
E	/	1/ 0.05	5/ 0.23	5/ 0.23	/	/	/	11.0/ 0.51	6.80037
ESE	/	1/ 0.05	7/ 0.33	7/ 0.33	/	/	/	15.0/ 0.70	7.26919
SE	/	1/ 0.05	22/ 1.03	14/ 0.65	1/ 0.05	/	/	38.0/ 1.78	7.16147
SSE	/	/	17/ 0.79	9/ 0.42	/	/	/	26.0/ 1.22	6.70143
S	/	/	9/ 0.42	23/ 1.08	4/ 0.19	/	/	36.0/ 1.68	8.80162
SSW	/	/	5/ 0.23	23/ 1.08	7/ 0.33	7/ 0.33	1/ 0.05	43.0/ 2.01	12.65386
SW	/	/	6/ 0.28	11/ 0.51	15/ 0.70	5/ 0.23	/	37.0/ 1.73	12.12858
WSW	/	/	5/ 0.23	9/ 0.42	8/ 0.37	/	/	22.0/ 1.03	11.22758
W	/	1/ 0.05	7/ 0.33	10/ 0.47	3/ 0.14	/	/	21.0/ 0.98	9.21889
WNW	/	/	1/ 0.05	9/ 0.42	1/ 0.05	/	/	11.0/ 0.51	10.37892
NW	/	/	3/ 0.14	17/ 0.79	12/ 0.56	1/ 0.05	/	33.0/ 1.54	11.86738
NNW	/	/	1/ 0.05	3/ 0.14	3/ 0.14	/	/	7.0/ 0.33	11.23895
TOTAL	/	5/ 0.23	107/ 5.00	163/ 7.62	59/ 2.76	13/ 0.61	1/ 0.05	348.0/16.27	9.74018

NUMBER OF BAD RECORDS: 2

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

21  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=B

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	1/ 0.05	6/ 0.28	1/ 0.05	/	/	8.0/ 0.37	10.29612
NNE	/	/	4/ 0.19	2/ 0.09	3/ 0.14	2/ 0.09	/	11.0/ 0.51	12.12272
NE	/	1/ 0.05	2/ 0.09	2/ 0.09	1/ 0.05	/	/	6.0/ 0.28	7.87060
ENE	/	1/ 0.05	4/ 0.19	2/ 0.09	1/ 0.05	/	/	8.0/ 0.37	7.64340
E	/	2/ 0.09	2/ 0.09	2/ 0.09	/	/	/	6.0/ 0.28	6.64499
ESE	/	1/ 0.05	5/ 0.23	1/ 0.05	/	/	/	7.0/ 0.33	5.91962
SE	/	/	3/ 0.14	4/ 0.19	/	/	/	7.0/ 0.33	7.66573
SSE	/	2/ 0.09	8/ 0.37	4/ 0.19	1/ 0.05	/	/	15.0/ 0.70	6.87232
S	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	7.81224
SSW	/	/	6/ 0.28	3/ 0.14	/	/	/	9.0/ 0.42	6.99794
SW	/	/	2/ 0.09	5/ 0.23	3/ 0.14	1/ 0.05	/	11.0/ 0.51	11.55274
WSW	/	/	4/ 0.19	2/ 0.09	8/ 0.37	/	/	14.0/ 0.65	12.22634
W	/	/	6/ 0.28	2/ 0.09	/	/	/	8.0/ 0.37	6.35943
WNW	/	/	4/ 0.19	7/ 0.33	1/ 0.05	/	/	12.0/ 0.56	8.89194
NW	/	/	1/ 0.05	5/ 0.23	1/ 0.05	/	/	7.0/ 0.33	9.96212
NNW	/	/	/	5/ 0.23	/	1/ 0.05	/	6.0/ 0.28	12.01711
TOTAL	/	7/ 0.33	53/ 2.48	53/ 2.48	20/ 0.94	4/ 0.19	/	137.0/ 6.40	9.03951

NUMBER OF BAD RECORDS: 2



ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=C

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	2/ 0.09	/	2/ 0.09	/	/	4.0/ 0.19	10.00917
NNE	/	/	3/ 0.14	1/ 0.05	1/ 0.05	3/ 0.14	/	8.0/ 0.37	12.96897
NE	/	1/ 0.05	/	3/ 0.14	/	/	/	4.0/ 0.19	8.28331
ENE	/	1/ 0.05	3/ 0.14	3/ 0.14	/	/	/	7.0/ 0.33	7.49184
E	/	3/ 0.14	4/ 0.19	1/ 0.05	1/ 0.05	/	/	9.0/ 0.42	6.10861
ESE	/	/	2/ 0.09	3/ 0.14	/	/	/	5.0/ 0.23	7.96398
SE	/	/	1/ 0.05	2/ 0.09	1/ 0.05	/	/	4.0/ 0.19	9.70902
SSE	/	1/ 0.05	5/ 0.23	2/ 0.09	/	/	/	8.0/ 0.37	6.50950
S	/	/	2/ 0.09	6/ 0.28	/	/	/	8.0/ 0.37	8.85026
SSW	/	/	1/ 0.05	5/ 0.23	3/ 0.14	1/ 0.05	/	10.0/ 0.47	11.70751
SW	/	/	3/ 0.14	4/ 0.19	1/ 0.05	/	/	8.0/ 0.37	9.42971
WSW	/	/	2/ 0.09	2/ 0.09	4/ 0.19	2/ 0.09	/	10.0/ 0.47	13.39836
W	/	/	13/ 0.61	6/ 0.28	1/ 0.05	/	/	20.0/ 0.94	7.32699
WNW	/	/	4/ 0.19	5/ 0.23	2/ 0.09	/	/	11.0/ 0.51	8.40571
NW	/	/	3/ 0.14	/	1/ 0.05	/	/	4.0/ 0.19	8.09988
NNW	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	7.95397
TOTAL	/	6/ 0.28	49/ 2.29	45/ 2.10	17/ 0.79	6/ 0.28	/	123.0/ 5.75	9.00518

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNODEG AND UPWNOspd  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=D

UPWNSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNSPD
N	/	1/ 0.05	6/ 0.28	12/ 0.56	21/ 0.98	1/ 0.05	/	41.0/ 1.92	11.72700
NNE	/	1/ 0.05	13/ 0.61	32/ 1.50	17/ 0.79	3/ 0.14	/	66.0/ 3.09	10.88043
NE	/	1/ 0.05	12/ 0.56	39/ 1.82	17/ 0.79	/	/	69.0/ 3.23	10.19205
ENE	/	2/ 0.09	10/ 0.47	14/ 0.65	3/ 0.14	/	/	29.0/ 1.36	8.02527
E	/	4/ 0.19	17/ 0.79	13/ 0.61	2/ 0.09	/	/	36.0/ 1.68	6.95903
ESE	/	3/ 0.14	18/ 0.84	10/ 0.47	3/ 0.14	/	/	34.0/ 1.59	7.21047
SE	/	5/ 0.23	9/ 0.42	15/ 0.70	5/ 0.23	1/ 0.05	/	35.0/ 1.64	8.44041
SSE	/	2/ 0.09	9/ 0.42	23/ 1.08	13/ 0.61	/	/	47.0/ 2.20	10.00287
S	/	3/ 0.14	4/ 0.19	10/ 0.47	6/ 0.28	6/ 0.28	1/ 0.05	30.0/ 1.40	12.65410
SSW	/	3/ 0.14	9/ 0.42	19/ 0.89	11/ 0.51	2/ 0.09	/	44.0/ 2.06	10.11831
SW	/	1/ 0.05	5/ 0.23	21/ 0.98	31/ 1.45	4/ 0.19	/	62.0/ 2.90	12.85696
WSW	/	4/ 0.19	16/ 0.75	10/ 0.47	10/ 0.47	2/ 0.09	/	42.0/ 1.96	9.35864
W	/	8/ 0.37	16/ 0.75	5/ 0.23	2/ 0.09	/	/	31.0/ 1.45	5.93630
WNW	/	1/ 0.05	9/ 0.42	7/ 0.33	/	/	/	17.0/ 0.79	6.99892
NW	/	1/ 0.05	7/ 0.33	4/ 0.19	4/ 0.19	/	/	16.0/ 0.75	8.76688
NNW	/	1/ 0.05	7/ 0.33	16/ 0.75	2/ 0.09	1/ 0.05	/	27.0/ 1.26	9.66038
TOTAL	/	41/ 1.92	167/ 7.81	250/ 11.69	147/ 6.87	20/ 0.94	1/ 0.05	626.0/ 29.27	9.76879

NUMBER OF BAD RECORDS: 1

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS PD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

27  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=E

UPWNDS PD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDS PD
N	/	1/ 0.05	1/ 0.05	8/ 0.37	3/ 0.14	/	/	13.0/ 0.61	9.74974
NNE	/	1/ 0.05	2/ 0.09	4/ 0.19	/	/	/	7.0/ 0.33	7.39655
NE	/	2/ 0.09	5/ 0.23	9/ 0.42	1/ 0.05	/	/	17.0/ 0.79	8.04814
ENE	/	1/ 0.05	1/ 0.05	5/ 0.23	/	/	/	7.0/ 0.33	8.02544
E	/	2/ 0.09	2/ 0.09	3/ 0.14	/	/	/	7.0/ 0.33	6.20548
ESE	/	/	6/ 0.28	3/ 0.14	/	/	/	9.0/ 0.42	7.28883
SE	/	2/ 0.09	11/ 0.51	10/ 0.47	/	/	/	23.0/ 1.08	6.75192
SSE	/	1/ 0.05	8/ 0.37	21/ 0.98	1/ 0.05	/	/	31.0/ 1.45	8.55750
S	/	2/ 0.09	15/ 0.70	28/ 1.31	7/ 0.33	1/ 0.05	/	53.0/ 2.48	9.14451
SSW	/	2/ 0.09	5/ 0.23	38/ 1.78	9/ 0.42	1/ 0.05	/	55.0/ 2.57	9.99894
SW	/	2/ 0.09	11/ 0.51	39/ 1.82	21/ 0.98	/	/	73.0/ 3.41	10.10231
WSW	/	1/ 0.05	15/ 0.70	32/ 1.50	14/ 0.65	/	/	62.0/ 2.90	9.69624
W	/	1/ 0.05	23/ 1.08	18/ 0.84	2/ 0.09	/	/	44.0/ 2.06	7.80238
WNW	/	2/ 0.09	7/ 0.33	6/ 0.28	5/ 0.23	/	/	20.0/ 0.94	9.02868
NW	/	1/ 0.05	3/ 0.14	8/ 0.37	6/ 0.28	/	/	18.0/ 0.84	9.70022
NNW	/	4/ 0.19	4/ 0.19	11/ 0.51	/	1/ 0.05	/	20.0/ 0.94	8.31666
TOTAL	/	25/ 1.17	119/ 5.56	243/ 11.36	69/ 3.23	3/ 0.14	/	459.0/ 21.46	9.01783

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

29  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=F

## UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	1/ 0.05	5/ 0.23	3/ 0.14	1/ 0.05	/	/	10.0/ 0.47	8.06403
NNE	/	3/ 0.14	5/ 0.23	3/ 0.14	/	/	/	11.0/ 0.51	5.41937
NE	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	8.92112
ENE	/	/	3/ 0.14	4/ 0.19	1/ 0.05	/	/	8.0/ 0.37	9.11289
E	/	/	5/ 0.23	/	/	/	/	5.0/ 0.23	5.08254
ESE	/	1/ 0.05	6/ 0.28	1/ 0.05	/	/	/	8.0/ 0.37	5.13798
SE	/	2/ 0.09	4/ 0.19	/	/	/	/	6.0/ 0.28	4.74404
SSE	/	/	7/ 0.33	8/ 0.37	1/ 0.05	/	/	16.0/ 0.75	7.93417
S	/	/	13/ 0.61	19/ 0.89	1/ 0.05	/	/	33.0/ 1.54	7.94538
SSW	/	/	14/ 0.65	25/ 1.17	1/ 0.05	/	/	40.0/ 1.87	8.31040
SW	/	/	5/ 0.23	25/ 1.17	4/ 0.19	/	/	34.0/ 1.59	9.36988
WSW	/	1/ 0.05	12/ 0.56	12/ 0.56	3/ 0.14	/	/	28.0/ 1.31	8.43576
W	/	2/ 0.09	8/ 0.37	9/ 0.42	2/ 0.09	/	/	21.0/ 0.98	7.52757
WNW	/	/	7/ 0.33	3/ 0.14	6/ 0.28	/	/	16.0/ 0.75	9.69338
NW	/	/	4/ 0.19	6/ 0.28	2/ 0.09	/	/	12.0/ 0.56	8.79467
NNW	/	1/ 0.05	3/ 0.14	2/ 0.09	1/ 0.05	/	/	7.0/ 0.33	7.29650
TOTAL	/	11/ 0.51	102/ 4.77	121/ 5.66	23/ 1.08	/	/	257.0/12.01	8.06265

NUMBER OF BAD RECORDS: 0



ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNOSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

31  
 15:49 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=G

UPWINDSPD

UPWNDDEG

	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	4/ 0.19	4/ 0.19	4/ 0.19	1/ 0.05	/	/	13.0/ 0.61	6.03763
NNE	/	2/ 0.09	2/ 0.09	/	/	/	/	4.0/ 0.19	3.60180
NE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	3.96865
ENE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	5.28597
E	/	1/ 0.05	5/ 0.23	/	/	/	/	6.0/ 0.28	3.77411
ESE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	4.68567
SE	/	3/ 0.14	5/ 0.23	/	/	/	/	8.0/ 0.37	4.96290
SSE	/	3/ 0.14	2/ 0.09	3/ 0.14	/	/	/	8.0/ 0.37	6.23020
S	/	/	5/ 0.23	11/ 0.51	/	/	/	16.0/ 0.75	8.52197
SSW	/	1/ 0.05	11/ 0.51	12/ 0.56	3/ 0.14	/	/	27.0/ 1.26	8.29241
SW	/	1/ 0.05	7/ 0.33	14/ 0.65	1/ 0.05	/	/	23.0/ 1.08	7.97572
WSW	/	2/ 0.09	13/ 0.61	9/ 0.42	1/ 0.05	/	/	25.0/ 1.17	7.26496
W	/	7/ 0.33	12/ 0.56	/	/	/	/	19.0/ 0.89	4.28547
WNW	/	2/ 0.09	5/ 0.23	1/ 0.05	/	/	/	8.0/ 0.37	5.13590
NW	/	2/ 0.09	8/ 0.37	2/ 0.09	/	/	/	12.0/ 0.56	5.55277
NNW	/	3/ 0.14	10/ 0.47	3/ 0.14	/	/	/	16.0/ 0.75	5.76017
TOTAL	/	31/ 1.45	93/ 4.35	59/ 2.76	6/ 0.28	/	/	189.0/ 8.84	6.50969

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:49 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

17  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR SUMMARY OVER ALL STAB

LOWNDSPD

LOWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.8/ 0.04	13/ 0.61	28/ 1.31	25/ 1.17	/	/	/	66.8/ 3.12	5.74039
NNE	0.8/ 0.04	13/ 0.61	66/ 3.08	38/ 1.78	4/ 0.19	/	/	121.8/ 5.69	6.69053
NE	1.0/ 0.05	16/ 0.75	62/ 2.90	25/ 1.17	1/ 0.05	/	/	105.0/ 4.91	5.97615
ENE	1.0/ 0.05	16/ 0.75	51/ 2.38	10/ 0.47	/	/	/	78.0/ 3.64	5.13450
E	0.6/ 0.03	10/ 0.47	39/ 1.82	4/ 0.19	/	/	/	53.6/ 2.50	4.90372
ESE	1.2/ 0.06	20/ 0.93	43/ 2.01	1/ 0.05	/	/	/	65.2/ 3.05	4.30301
SE	0.9/ 0.04	15/ 0.70	82/ 3.83	23/ 1.07	/	/	/	120.9/ 5.65	5.67512
SSE	2.4/ 0.11	41/ 1.92	93/ 4.35	18/ 0.84	/	/	/	154.4/ 7.21	4.91566
S	6.5/ 0.30	108/ 5.05	102/ 4.77	36/ 1.68	9/ 0.42	/	/	261.5/12.22	4.86232
SSW	6.0/ 0.28	100/ 4.67	93/ 4.35	66/ 3.08	10/ 0.47	1/ 0.05	/	276.0/12.90	5.52349
SW	4.0/ 0.19	67/ 3.13	97/ 4.53	61/ 2.85	10/ 0.47	/	/	239.0/11.17	5.83833
WSW	3.3/ 0.15	55/ 2.57	58/ 2.71	25/ 1.17	/	/	/	141.3/ 6.60	4.75569
W	2.9/ 0.14	49/ 2.29	57/ 2.66	15/ 0.70	/	/	/	123.9/ 5.79	4.36493
WNW	3.0/ 0.14	50/ 2.34	41/ 1.92	15/ 0.70	/	/	/	109.0/ 5.09	4.01685
NW	2.7/ 0.13	45/ 2.10	45/ 2.10	28/ 1.31	/	/	/	120.7/ 5.64	4.85525
NNW	2.1/ 0.10	35/ 1.64	50/ 2.34	16/ 0.75	/	/	/	103.1/ 4.82	4.94428
TOTAL	39.0/ 1.82	653/30.51	1007/47.06	406/18.97	34/ 1.59	1/ 0.05	/	2140/ 100	5.21150

NUMBER OF BAD RECORDS: 44

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:48.FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

19  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=A

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	3/ 0.14	7/ 0.33	/	/	/	10.0/ 0.47	7.32866
NNE	/	1/ 0.05	8/ 0.37	7/ 0.33	/	/	/	16.0/ 0.75	6.92534
NE	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.19	5.76538
ENE	/	/	12/ 0.56	2/ 0.09	/	/	/	14.0/ 0.65	5.93273
E	/	1/ 0.05	10/ 0.47	1/ 0.05	/	/	/	12.0/ 0.56	5.80985
ESE	/	1/ 0.05	13/ 0.61	/	/	/	/	14.0/ 0.65	5.10255
SE	/	1/ 0.05	43/ 2.01	3/ 0.14	/	/	/	47.0/ 2.20	5.85825
SSE	/	1/ 0.05	23/ 1.07	1/ 0.05	/	/	/	25.0/ 1.17	5.62014
S	/	/	23/ 1.07	15/ 0.70	1/ 0.05	/	/	39.0/ 1.82	7.58584
SSW	/	/	20/ 0.93	18/ 0.84	8/ 0.37	1/ 0.05	/	47.0/ 2.20	9.43083
SW	/	/	10/ 0.47	20/ 0.93	3/ 0.14	/	/	33.0/ 1.54	9.06615
WSW	/	/	6/ 0.28	11/ 0.51	/	/	/	17.0/ 0.79	7.59988
W	/	1/ 0.05	5/ 0.23	10/ 0.47	/	/	/	16.0/ 0.75	7.44956
WNW	/	/	7/ 0.33	8/ 0.37	/	/	/	15.0/ 0.70	7.28438
NW	/	/	7/ 0.33	22/ 1.03	/	/	/	29.0/ 1.36	8.48182
NNW	/	/	4/ 0.19	6/ 0.28	/	/	/	10.0/ 0.47	7.51709
TOTAL	/	6/ 0.28	197/ 9.21	132/ 6.17	12/ 0.56	1/ 0.05	/	348.0/16.26	7.36864

NUMBER OF BAD RECORDS: 2

JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD

RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

21  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=B

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	4/ 0.19	6/ 0.28	/	/	/	10.0/ 0.47	7.08854
NNE	/	/	5/ 0.23	3/ 0.14	2/ 0.09	/	/	10.0/ 0.47	8.87110
NE	/	/	6/ 0.28	1/ 0.05	/	/	/	7.0/ 0.33	6.03158
ENE	/	1/ 0.05	6/ 0.28	2/ 0.09	/	/	/	9.0/ 0.42	5.64541
E	/	1/ 0.05	2/ 0.09	1/ 0.05	/	/	/	4.0/ 0.19	4.65232
ESE	/	2/ 0.09	7/ 0.33	/	/	/	/	9.0/ 0.42	4.37255
SE	/	/	5/ 0.23	4/ 0.19	/	/	/	9.0/ 0.42	6.51251
SSE	/	2/ 0.09	8/ 0.37	1/ 0.05	/	/	/	11.0/ 0.51	5.34206
S	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	/	5.0/ 0.23	5.19926
SSW	/	/	6/ 0.28	2/ 0.09	/	/	/	8.0/ 0.37	6.29064
SW	/	/	5/ 0.23	7/ 0.33	2/ 0.09	/	/	14.0/ 0.65	8.77939
WSW	/	/	5/ 0.23	5/ 0.23	/	/	/	10.0/ 0.47	8.14240
W	/	1/ 0.05	10/ 0.47	1/ 0.05	/	/	/	12.0/ 0.56	5.41382
WNW	/	1/ 0.05	4/ 0.19	3/ 0.14	/	/	/	8.0/ 0.37	6.60121
NW	/	/	4/ 0.19	3/ 0.14	/	/	/	7.0/ 0.33	6.94395
NNW	/	/	1/ 0.05	3/ 0.14	/	/	/	4.0/ 0.19	8.74187
TOTAL	/	9/ 0.42	81/ 3.79	43/ 2.01	4/ 0.19	/	/	137.0/ 6.40	6.64213

NUMBER OF BAD RECORDS: 2



ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

23  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=C

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	3.92696
NNE	/	/	5/ 0.23	5/ 0.23	1/ 0.05	/	/	11.0/ 0.51	8.42845
NE	/	1/ 0.05	3/ 0.14	/	/	/	/	4.0/ 0.19	5.45272
ENE	/	/	5/ 0.23	1/ 0.05	/	/	/	6.0/ 0.28	6.30871
E	/	3/ 0.14	4/ 0.19	1/ 0.05	/	/	/	8.0/ 0.37	4.57729
ESE	/	2/ 0.09	5/ 0.23	/	/	/	/	7.0/ 0.33	4.59515
SE	/	/	6/ 0.28	2/ 0.09	/	/	/	8.0/ 0.37	6.31149
SSE	/	/	4/ 0.19	/	/	/	/	4.0/ 0.19	6.41987
S	/	/	8/ 0.37	4/ 0.19	/	/	/	12.0/ 0.56	6.82007
SSW	/	/	5/ 0.23	6/ 0.28	1/ 0.05	/	/	12.0/ 0.56	8.36251
SW	/	/	2/ 0.09	1/ 0.05	2/ 0.09	/	/	5.0/ 0.23	10.44855
WSW	/	/	9/ 0.42	3/ 0.14	/	/	/	12.0/ 0.56	6.62831
W	/	2/ 0.09	11/ 0.51	1/ 0.05	/	/	/	14.0/ 0.65	5.28478
WNW	/	/	8/ 0.37	4/ 0.19	/	/	/	12.0/ 0.56	6.13918
NW	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.19	5.80707
NNW	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	6.70335
TOTAL	/	8/ 0.37	82/ 3.83	29/ 1.36	4/ 0.19	/	/	123.0/ 5.75	6.53213

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT. EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

25  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=D

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	1/ 0.05	13/ 0.61	11/ 0.51	/	/	/	25.0/ 1.17	6.82141
NNE	/	6/ 0.28	45/ 2.10	23/ 1.07	1/ 0.05	/	/	75.0/ 3.50	6.57506
NE	/	7/ 0.33	37/ 1.73	23/ 1.07	1/ 0.05	/	/	68.0/ 3.18	6.67245
ENE	/	10/ 0.47	25/ 1.17	5/ 0.23	/	/	/	40.0/ 1.87	5.10880
E	/	5/ 0.23	21/ 0.98	1/ 0.05	/	/	/	27.0/ 1.26	4.73879
ESE	/	10/ 0.47	15/ 0.70	1/ 0.05	/	/	/	26.0/ 1.21	4.35731
SE	/	7/ 0.33	23/ 1.07	14/ 0.65	/	/	/	44.0/ 2.06	6.01399
SSE	/	4/ 0.19	25/ 1.17	16/ 0.75	/	/	/	45.0/ 2.10	6.42284
S	/	7/ 0.33	20/ 0.93	7/ 0.33	8/ 0.37	/	/	42.0/ 1.96	7.65859
SSW	/	3/ 0.14	19/ 0.89	33/ 1.54	1/ 0.05	/	/	56.0/ 2.62	7.72052
SW	/	8/ 0.37	29/ 1.36	20/ 0.93	3/ 0.14	/	/	60.0/ 2.80	6.79840
WSW	/	6/ 0.28	14/ 0.65	6/ 0.28	/	/	/	26.0/ 1.21	5.32317
W	/	12/ 0.56	11/ 0.51	2/ 0.09	/	/	/	25.0/ 1.17	3.92396
WNW	/	8/ 0.37	12/ 0.56	/	/	/	/	20.0/ 0.93	4.03201
NW	/	1/ 0.05	10/ 0.47	2/ 0.09	/	/	/	13.0/ 0.61	5.61691
NNW	/	3/ 0.14	26/ 1.21	6/ 0.28	/	/	/	35.0/ 1.64	6.16514
TOTAL	/	98/ 4.58	345/16.12	170/ 7.94	14/ 0.65	/	/	627.0/29.30	6.19534

NUMBER OF BAD RECORDS: 0

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

27  
 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=E

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.0/ 0.00	5/ 0.23	6/ 0.28	1/ 0.05	/	/	/	12.0/ 0.56	4.08676
NNE	0.0/ 0.00	4/ 0.19	3/ 0.14	/	/	/	/	7.0/ 0.33	3.49460
NE	0.0/ 0.00	5/ 0.23	10/ 0.47	/	/	/	/	15.0/ 0.70	4.33661
ENE	0.0/ 0.00	2/ 0.09	3/ 0.14	/	/	/	/	5.0/ 0.23	3.32833
E	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	4.63565
ESE	0.0/ 0.00	3/ 0.14	3/ 0.14	/	/	/	/	6.0/ 0.28	3.15991
SE	0.0/ 0.00	5/ 0.23	5/ 0.23	/	/	/	/	10.0/ 0.47	3.39169
SSE	0.1/ 0.00	12/ 0.56	28/ 1.31	/	/	/	/	40.1/ 1.87	4.17062
S	0.1/ 0.00	23/ 1.07	44/ 2.06	9/ 0.42	/	/	/	76.1/ 3.56	4.65886
SSW	0.2/ 0.01	36/ 1.68	36/ 1.68	7/ 0.33	/	/	/	79.2/ 3.70	4.10064
SW	0.2/ 0.01	27/ 1.26	35/ 1.64	13/ 0.61	/	/	/	75.2/ 3.51	4.86979
WSW	0.1/ 0.00	22/ 1.03	20/ 0.93	/	/	/	/	42.1/ 1.97	4.00418
W	0.1/ 0.00	18/ 0.84	16/ 0.75	1/ 0.05	/	/	/	35.1/ 1.64	3.87551
WNW	0.0/ 0.00	5/ 0.23	7/ 0.33	/	/	/	/	12.0/ 0.56	3.61014
NW	0.0/ 0.00	5/ 0.23	18/ 0.84	/	/	/	/	23.0/ 1.07	4.33985
NNW	0.0/ 0.00	8/ 0.37	10/ 0.47	1/ 0.05	/	/	/	19.0/ 0.89	4.26178
TOTAL	1.0/ 0.05	180/ 8.41	246/11.50	32/ 1.50	/	/	/	459.0/21.45	4.26758

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=F

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.2/ 0.01	3/ 0.14	/	/	/	/	/	3.2/ 0.15	1.69094
NNE	0.1/ 0.00	1/ 0.05	/	/	/	/	/	1.1/ 0.05	2.61114
NE	0.2/ 0.01	3/ 0.14	3/ 0.14	/	/	/	/	6.2/ 0.29	3.27044
ENE	0.2/ 0.01	3/ 0.14	/	/	/	/	/	3.2/ 0.15	2.10260
E	/	/	/	/	/	/	/	/	
ESE	/	/	/	/	/	/	/	/	
SE	0.1/ 0.00	1/ 0.05	/	/	/	/	/	1.1/ 0.05	1.26198
SSE	0.9/ 0.04	17/ 0.79	5/ 0.23	/	/	/	/	22.9/ 1.07	2.95379
S	2.4/ 0.11	43/ 2.01	2/ 0.09	/	/	/	/	47.4/ 2.21	2.38795
SSW	2.1/ 0.10	38/ 1.78	7/ 0.33	/	/	/	/	47.1/ 2.20	2.45963
SW	0.9/ 0.04	17/ 0.79	14/ 0.65	/	/	/	/	31.9/ 1.49	3.54016
WSW	1.1/ 0.05	19/ 0.89	4/ 0.19	/	/	/	/	24.1/ 1.13	2.48428
W	0.6/ 0.03	11/ 0.51	3/ 0.14	/	/	/	/	14.6/ 0.68	2.41900
WNW	0.9/ 0.04	16/ 0.75	3/ 0.14	/	/	/	/	19.9/ 0.93	2.38350
NW	0.8/ 0.04	15/ 0.70	3/ 0.14	/	/	/	/	18.8/ 0.88	2.43382
NNW	0.6/ 0.03	10/ 0.47	5/ 0.23	/	/	/	/	15.6/ 0.73	3.19389
TOTAL	11.0/ 0.51	197/ 9.21	49/ 2.29	/	/	/	/	257.0/12.01	2.66338

NUMBER OF BAD RECORDS: 0



ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:48 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=2ND-QTR STAB=G

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.7/ 0.03	4/ 0.19	/	/	/	/	/	4.7/ 0.22	1.25148
NNE	0.2/ 0.01	1/ 0.05	/	/	/	/	/	1.2/ 0.06	0.93794
NE	/	/	/	/	/	/	/	/	
ENE	/	/	/	/	/	/	/	/	
E	/	/	/	/	/	/	/	/	
ESE	0.3/ 0.01	2/ 0.09	/	/	/	/	/	2.3/ 0.11	1.78891
SE	0.2/ 0.01	1/ 0.05	/	/	/	/	/	1.2/ 0.06	0.71560
SSE	0.9/ 0.04	5/ 0.23	/	/	/	/	/	5.9/ 0.28	1.44208
S	5.9/ 0.28	34/ 1.59	2/ 0.09	/	/	/	/	41.9/ 1.96	1.79022
SSW	4.0/ 0.19	23/ 1.07	/	/	/	/	/	27.0/ 1.26	1.83854
SW	2.6/ 0.12	15/ 0.70	2/ 0.09	/	/	/	/	19.6/ 0.92	1.57302
WSW	1.4/ 0.07	8/ 0.37	/	/	/	/	/	9.4/ 0.44	1.34905
W	0.7/ 0.03	4/ 0.19	1/ 0.05	/	/	/	/	5.7/ 0.27	1.93806
WNW	3.5/ 0.16	20/ 0.93	/	/	/	/	/	23.5/ 1.10	1.24723
NW	4.2/ 0.20	24/ 1.12	/	/	/	/	/	28.2/ 1.32	1.72926
NNW	2.4/ 0.11	14/ 0.65	2/ 0.09	/	/	/	/	18.4/ 0.86	2.14776
TOTAL	27.0/ 1.26	155/ 7.24	7/ 0.33	/	/	/	/	189.0/ 8.83	1.67880

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ATTACHMENT 3

DIFFUSION ANALYSIS  
GROUND LEVEL RELEASE  
JANUARY 1 - JUNE 30, 1985  
H. B. ROBINSON STEAM ELECTRIC PLANT

Description of Attachment

The attached tables provide estimates of relative ground-level concentration (X/Q) and deposition (D/Q) for the period January 1 through June 30, 1985 for a ground-level release.

A description of the tables is as follows:

- Table 1 - Undecayed, undepleted X/Q for standard distances.
- Table 2 - 2.26-day decay undepleted X/Q for standard distances.
- Table 3 - 8.0-day decay, depleted X/Q for standard distances.
- Table 4 - Deposition estimates for standard distances.
- Table 5 - X/Q and D/Q estimates for site boundary locations and special points of interest

Method of Calculation

The ground-level release calculations represent sector averaged concentrations at the given distances from the center of the reactor buildings. The computer code used (XOQDOQ) was received from the U. S. Nuclear Regulatory Commission (NRC), Hydrology Meteorology Branch.<sup>(1)</sup>

Input variables included:

1. Wake correction factor from RG 1.111.
2. Building height for wake correction = 59.0 meters.
3. Joint wind frequency from the ten-meter level on-site meteorological tower.
4. Sigma Z limited to 1000 meters.
5. Calm winds included with joint frequency are distributed according to the occurrence in the lowest non-calm speed class.

The adjustment factors to account for the straight-line flow model limitations (RG 1.111, Section C.1.c) were not applied. The code was modified to incorporate the revised curves for estimating plume depletion and ground deposition (XOQDOQ - ERRATA, November 8, 1976).

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<sup>(1)</sup>Program for the Meteorological Evaluation of Routine Effluent Release at Nuclear Power Stations, J. F. Sagendorf and J. T. Goll, August 29, 1976.

Relative Concentration Estimates

The site boundary distances used for the calculations are as prepared for the June 4, 1976, Appendix I submittal to the NRC. Special point distances were obtained from the December 1978 site survey.

The maximum undepleted, undecayed X/Q value at the site boundary is 2.4E-05 in the SSE sector. Site boundary maximums for previous six-month periods are as follows:

JUL - DEC 1983	3.1E-05	SSE SECTOR
JAN - JUN 1984	4.3E-05	SSE SECTOR
JUL - DEC 1984	7.5E-05	SSE SECTOR



1	11	70.	73.	69.	69.	73.	78.	73.	71.	70.	76.	72.	84.	74.	76.	69.	69.
2	10	1207.	1207.	805.	966.	966.	1207.	1207.	1207.	1207.	2012.	1625.	1448.	1207.	966.	483.	483.
3	11	72.	76.	70.	71.	74.	81.	82.	75.	79.	82.	73.	87.	86.	78.	69.	69.
4	10	2012.	2012.	1207.	1207.	1207.	1448.	2012.	2012.	2012.	2253.	2012.	2012.	1448.	1207.	1207.	1207.
5	11	74.	81.	72.	73.	75.	84.	91.	79.	74.	83.	74.	104.	89.	80.	69.	69.
6	10	2816.	2816.	2012.	2012.	2012.	2012.	2816.	2816.	2816.	2655.	2816.	2816.	2012.	2012.	2012.	2012.
7	11	76.	87.	77.	77.	80.	88.	92.	83.	77.	86.	76.	114.	98.	88.	69.	69.
8	10	3621.	3347.	2816.	2816.	2816.	2816.	3621.	3042.	3122.	2816.	3621.	3541.	2816.	2816.	2816.	2816.
9	11	79.	90.	81.	82.	85.	89.	102.	84.	78.	87.	78.	115.	109.	91.	69.	69.
10	10	4426.	3621.	3621.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	3621.	3621.
11	11	81.	92.	86.	87.	88.	90.	111.	87.	79.	92.	81.	122.	120.	91.	69.	69.
12	10	5230.	4426.	4426.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	4426.	4426.
13	11	83.	95.	91.	91.	88.	90.	121.	91.	82.	99.	83.	122.	120.	91.	69.	69.
14	10	6035.	5230.	5230.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	5230.	5230.
15	11	85.	95.	95.	91.	88.	91.	127.	96.	84.	109.	85.	122.	120.	91.	69.	69.
16	10	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.
17	11	87.	95.	95.	91.	88.	122.	133.	96.	91.	118.	101.	122.	120.	91.	69.	69.
18	12	16	2	14	16	16											
19	13	SITE BOUNDARY															
20	14	1	0.28	2	0.29	3	0.36	4	0.36	5	0.50	6	0.55	7	1.23	8	1.89
21	9	1.94	10	1.26	11	1.01	12	0.86	13	0.61	14	0.50	15	0.29	16	0.26	
22	13	MILK COW															
23	14	1	1.30	13	4.20												
24	13	MEAT ANIMAL															
25	14	1	2.32	2	2.08	3	2.27	4	2.69	5	3.97	6	4.07	7	1.60	8	2.84
26	9	2.93	10	1.65	11	1.16	12	2.41	13	3.12	14	1.99					
27	13	RESIDENT															
28	14	1	0.30	2	0.30	3	0.40	4	0.40	5	0.60	6	0.70	7	1.30	8	2.90
29	9	2.90	10	1.30	11	1.20	12	0.90	13	0.80	14	0.60	15	0.30	16	0.30	
30	13	GARDEN															
31	14	1	0.40	2	0.50	3	0.50	4	0.60	5	0.60	6	0.90	7	1.30	8	3.00
32	9	2.90	10	1.40	11	1.30	12	2.20	13	2.80	14	0.60	15	0.30	16	0.30	
33	15	EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85															
34	16	0.0	0.0	0.0	59.000	1370.0	11.0	0.0									
35	17	A	0	0	0												
36	15	EXIT TWO MIXED-MODE RELEASE JAN-JUN 85															
37	16	20.100	1.400	60.700	59.000	1370.0	11.0	0.0									
38	17	B	0	0	0												
39																	
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1 XOODQ - ROBINSON GROUND AND MIXED MODE RELEASES JAN-JUN 85																	
2																	
3 THE JOINT FREQUENCY DISTRIBUTION, I=WIND SPEED CLASS, J= STABILITY CLASS																	
4 DIRECTION = N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW																	
5	I= 1,J= 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	I= 2,J= 1	0.0	0.02	0.0	0.0	0.02	0.02	0.02	0.02	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0
7	I= 3,J= 1	0.10	0.29	0.14	0.43	0.29	0.36	1.12	0.55	0.57	0.50	0.26	0.19	0.14	0.17	0.19	0.10
8	I= 4,J= 1	0.26	0.29	0.07	0.07	0.02	0.0	0.07	0.02	0.41	0.60	0.93	0.55	0.45	0.19	0.89	0.36
9	I= 5,J= 1	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.31	0.19	0.07	0.02	0.0	0.05	0.05
10	I= 6,J= 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	I= 7,J= 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	I= 1,J= 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	I= 2,J= 2	0.0	0.0	0.0	0.05	0.07	0.05	0.0	0.05	0.02	0.0	0.0	0.0	0.02	0.02	0.0	0.0
14	I= 3,J= 2	0.26	0.26	0.24	0.24	0.07	0.26	0.19	0.26	0.10	0.19	0.17	0.29	0.38	0.17	0.17	0.05
15	I= 4,J= 2	0.19	0.12	0.05	0.07	0.02	0.0	0.10	0.02	0.07	0.14	0.38	0.24	0.22	0.19	0.14	0.12
16	I= 5,J= 2	0.0	0.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.10	0.0	0.0	0.0	0.0	0.02
17	I= 6,J= 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	I= 7,J= 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	I= 1,J= 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	I= 2,J= 3	0.0	0.0	0.05	0.0	0.12	0.07	0.02	0.02	0.0	0.0	0.02	0.0	0.05	0.0	0.0	0.0
21	I= 3,J= 3	0.17	0.17	0.17	0.17	0.17	0.12	0.22	0.22	0.26	0.17	0.14	0.43	0.33	0.33	0.26	0.07
22	I= 4,J= 3	0.02	0.19	0.02	0.02	0.02	0.0	0.05	0.0	0.19	0.29	0.22	0.17	0.14	0.12	0.17	0.05
23	I= 5,J= 3	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.05	0.0	0.0	0.0	0.0	0.0
24	I= 6,J= 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	I= 7,J= 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	I= 1,J= 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	I= 2,J= 4	0.22	0.26	0.33	0.33	0.26	0.36	0.31	0.26	0.26	0.17	0.38	0.33	0.53	0.31	0.12	0.14
28	I= 3,J= 4	1.44	2.70	1.72	0.96	0.65	0.57	0.79	0.91	0.86	0.72	1.63	1.27	0.79	0.48	0.74	1.22
29	I= 4,J= 4	0.36	1.96	0.89	0.31	0.02	0.02	0.43	0.43	0.50	1.12	1.24	0.84	0.14	0.14	0.33	0.72
30	I= 5,J= 4	0.0	0.02	0.02	0.0	0.0	0.0	0.0	0.0	0.19	0.14	0.38	0.07	0.02	0.0	0.02	0.17
31	I= 6,J= 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	I= 7,J= 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	I= 1,J= 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
34	I= 2,J= 5	0.41	0.29	0.31	0.14	0.07	0.14	0.41	0.62	0.98	1.24	1.08	1.03	0.91	0.45	0.38	0.41
35	I= 3,J= 5	0.62	0.19	0.43	0.33	0.12	0.07	0.22	1.03	1.91	2.08	1.79	1.12	0.62	0.53	0.69	0.91
36	I= 4,J= 5	0.07	0.0	0.0	0.0	0.0	0.0	0.10	0.05	0.45	0.53	0.45	0.05	0.05	0.0	0.07	0.02
37	I= 5,J= 5	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.02	0.05	0.0	0.0	0.0	0.0	0.0	0.02	0.02
38	I= 6,J= 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	I= 7,J= 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	I= 1,J= 6	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.06	0.04	0.04	0.02	0.04	0.04	0.05
41	I= 2,J= 6	0.33	0.05	0.10	0.07	0.02	0.0	0.05	0.60	1.89	1.20	0.81	0.72	0.45	0.74	0.72	1.03
42	I= 3,J= 6	0.02	0.0	0.07	0.0	0.0	0.0	0.0	0.17	0.17	0.57	0.65	0.26	0.07	0.10	0.19	0.43
43	I= 4,J= 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	I= 5,J= 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	I= 6,J= 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	I= 7,J= 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	I= 1,J= 7	0.04	0.01	0.00	0.0	0.0	0.01	0.00	0.03	0.22	0.17	0.10	0.07	0.04	0.13	0.23	0.18
48	I= 2,J= 7	0.22	0.07	0.02	0.0	0.0	0.05	0.02	0.17	1.36	1.00	0.57	0.43	0.22	0.77	1.39	1.10
49	I= 3,J= 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.0	0.05	0.0	0.02	0.0	0.0	0.14
50	I= 4,J= 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	I= 5,J= 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	I= 6,J= 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	I= 7,J= 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54																	
55	TOTAL	4.75	7.03	4.65	3.21	1.96	2.11	4.17	5.50	10.72	11.29	11.66	8.18	5.69	4.88	6.83	7.37
56	TOTAL HOURS CONSIDERED ARE	4180															
57																	
58	WIND MEASURED AT 11.0 METERS.																
59	THE MAXIMUM WIND SPEED (METERS/SEC) IN EACH CLASS IS: 0.335 1.565 3.353 5.588 8.270 11.176 11.623																
60	THE CONVERSION FACTOR APPLIED TO THE WIND SPEED CLASSES IS 0.447																



DIRECTION =	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE
DISTANCE	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.
ELEVATION	69.	71.	68.	68.	71.	73.	73.	70.	69.	71.	69.	73.	74.	72.	69.	69.
DISTANCE	451.	805.	579.	579.	805.	885.	418.	418.	418.	207.	207.	207.	418.	805.	418.	418.
ELEVATION	70.	73.	69.	69.	73.	78.	73.	71.	70.	76.	72.	84.	74.	76.	69.	69.
DISTANCE	1207.	1207.	805.	966.	966.	1207.	1207.	1207.	1207.	2012.	1625.	1448.	1207.	966.	483.	483.
ELEVATION	72.	76.	70.	71.	74.	81.	82.	75.	79.	82.	73.	87.	86.	78.	69.	69.
DISTANCE	2012.	2012.	1207.	1207.	1207.	1448.	2012.	2012.	2012.	2253.	2012.	2012.	1448.	1207.	1207.	1207.
ELEVATION	74.	81.	72.	73.	75.	84.	91.	79.	74.	83.	74.	104.	89.	80.	69.	69.
DISTANCE	2816.	2816.	2012.	2012.	2012.	2012.	2816.	2816.	2816.	2655.	2816.	2816.	2012.	2012.	2012.	2012.
ELEVATION	76.	87.	77.	77.	80.	88.	92.	83.	77.	86.	76.	114.	98.	88.	69.	69.
DISTANCE	3621.	3347.	2816.	2816.	2816.	2816.	3621.	3042.	3122.	2816.	3621.	3541.	2816.	2816.	2816.	2816.
ELEVATION	79.	90.	81.	82.	85.	89.	102.	84.	78.	87.	78.	115.	109.	91.	69.	69.
DISTANCE	4426.	3621.	3621.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	3621.	3621.
ELEVATION	81.	92.	86.	87.	88.	90.	111.	87.	79.	92.	81.	122.	120.	91.	69.	69.
DISTANCE	5230.	4426.	4426.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	4426.	4426.
ELEVATION	83.	95.	91.	91.	88.	90.	121.	91.	82.	99.	83.	122.	120.	91.	69.	69.
DISTANCE	6035.	5230.	5230.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	5230.	5230.
ELEVATION	85.	95.	95.	91.	88.	91.	127.	96.	84.	109.	85.	122.	120.	91.	69.	69.
DISTANCE	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.
ELEVATION	87.	95.	95.	91.	88.	122.	133.	96.	91.	118.	101.	122.	120.	91.	69.	69.

1 EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85  
 2 NO DECAY, UNDEPLETED

3

4 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

5 SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
6 S	8.828E-06	2.752E-06	1.429E-06	9.300E-07	5.155E-07	3.462E-07	2.558E-07	1.999E-07	1.624E-07	1.357E-07	1.159E-07
7 SSW	6.172E-06	2.099E-06	1.129E-06	7.301E-07	3.955E-07	2.579E-07	1.857E-07	1.420E-07	1.133E-07	9.324E-08	7.853E-08
8 SW	5.100E-06	1.721E-06	9.343E-07	6.102E-07	3.346E-07	2.189E-07	1.578E-07	1.208E-07	9.643E-08	7.937E-08	6.687E-08
9 WSW	3.160E-06	1.056E-06	5.708E-07	3.720E-07	2.036E-07	1.326E-07	9.511E-08	7.254E-08	5.772E-08	4.738E-08	3.983E-08
10 W	2.011E-06	6.756E-07	3.599E-07	2.311E-07	1.239E-07	7.956E-08	5.647E-08	4.271E-08	3.375E-08	2.754E-08	2.303E-08
11 WNW	2.748E-06	8.978E-07	4.744E-07	3.032E-07	1.625E-07	1.059E-07	7.634E-08	5.851E-08	4.677E-08	3.855E-08	3.253E-08
12 NW	4.126E-06	1.324E-06	7.153E-07	4.653E-07	2.557E-07	1.679E-07	1.214E-07	9.319E-08	7.460E-08	6.155E-08	5.198E-08
13 NNW	1.093E-05	3.366E-06	1.754E-06	1.155E-06	6.506E-07	4.381E-07	3.237E-07	2.529E-07	2.053E-07	1.715E-07	1.464E-07
14 N	3.712E-05	1.102E-05	5.503E-06	3.572E-06	1.997E-06	1.368E-06	1.030E-06	8.165E-07	6.712E-07	5.665E-07	4.879E-07
15 NNE	2.973E-05	8.892E-06	4.512E-06	2.936E-06	1.641E-06	1.119E-06	8.385E-07	6.626E-07	5.431E-07	4.574E-07	3.931E-07
16 NE	2.242E-05	6.861E-06	3.543E-06	2.314E-06	1.292E-06	8.736E-07	6.491E-07	5.094E-07	4.153E-07	3.480E-07	2.979E-07
17 ENE	1.743E-05	5.342E-06	2.761E-06	1.804E-06	1.007E-06	6.798E-07	5.044E-07	3.954E-07	3.221E-07	2.697E-07	2.308E-07
18 E	1.153E-05	3.582E-06	1.876E-06	1.227E-06	6.829E-07	4.577E-07	3.373E-07	2.630E-07	2.133E-07	1.779E-07	1.517E-07
19 ESE	1.829E-05	5.434E-06	2.697E-06	1.736E-06	9.608E-07	6.573E-07	4.951E-07	3.928E-07	3.231E-07	2.729E-07	2.352E-07
20 SE	2.682E-05	7.868E-06	3.854E-06	2.455E-06	1.346E-06	9.262E-07	7.027E-07	5.608E-07	4.635E-07	3.931E-07	3.399E-07
21 SSE	2.602E-05	7.722E-06	3.820E-06	2.461E-06	1.365E-06	9.365E-07	7.070E-07	5.619E-07	4.628E-07	3.913E-07	3.376E-07

24

25 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

26 BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
27 S	1.006E-07	5.878E-08	4.027E-08	2.374E-08	1.638E-08	1.230E-08	9.750E-09	8.016E-09	6.769E-09	5.834E-09	5.109E-09
28 SSW	6.740E-08	3.761E-08	2.495E-08	1.408E-08	9.430E-09	6.926E-09	5.390E-09	4.365E-09	3.639E-09	3.102E-09	2.690E-09
29 SW	5.741E-08	3.204E-08	2.125E-08	1.198E-08	8.018E-09	5.883E-09	4.574E-09	3.700E-09	3.082E-09	2.624E-09	2.273E-09
30 WSW	3.413E-08	1.895E-08	1.252E-08	7.025E-09	4.684E-09	3.428E-09	2.659E-09	2.147E-09	1.785E-09	1.518E-09	1.313E-09
31 W	1.965E-08	1.074E-08	7.025E-09	3.900E-09	2.599E-09	1.902E-09	1.476E-09	1.192E-09	9.918E-10	8.438E-10	7.306E-10
32 WNW	2.799E-08	1.580E-08	1.058E-08	6.063E-09	4.116E-09	3.055E-09	2.399E-09	1.958E-09	1.643E-09	1.409E-09	1.228E-09
33 NW	4.472E-08	2.519E-08	1.682E-08	9.589E-09	6.472E-09	4.782E-09	3.739E-09	3.040E-09	2.543E-09	2.174E-09	1.890E-09
34 NNW	1.271E-07	7.407E-08	5.064E-08	2.977E-08	2.049E-08	1.536E-08	1.215E-08	9.976E-09	8.413E-09	7.241E-09	6.334E-09
35 N	4.270E-07	2.561E-07	1.785E-07	1.077E-07	7.548E-08	5.735E-08	4.586E-08	3.798E-08	3.228E-08	2.797E-08	2.461E-08
36 NNE	3.435E-07	2.047E-07	1.422E-07	8.533E-08	5.957E-08	4.514E-08	3.602E-08	2.978E-08	2.527E-08	2.187E-08	1.922E-08
37 NE	2.594E-07	1.526E-07	1.050E-07	6.230E-08	4.315E-08	3.251E-08	2.582E-08	2.127E-08	1.799E-08	1.552E-08	1.361E-08
38 ENE	2.008E-07	1.179E-07	8.108E-08	4.804E-08	3.325E-08	2.504E-08	1.988E-08	1.637E-08	1.384E-08	1.194E-08	1.047E-08
39 E	1.317E-07	7.658E-08	5.230E-08	3.072E-08	2.115E-08	1.586E-08	1.255E-08	1.030E-08	8.690E-09	7.482E-09	6.547E-09
40 ESE	2.060E-07	1.239E-07	8.656E-08	5.241E-08	3.682E-08	2.803E-08	2.245E-08	1.862E-08	1.584E-08	1.374E-08	1.211E-08
41 SE	2.985E-07	1.815E-07	1.277E-07	7.807E-08	5.518E-08	4.202E-08	3.393E-08	2.823E-08	2.408E-08	2.093E-08	1.847E-08
42 SSE	2.958E-07	1.783E-07	1.247E-07	7.563E-08	5.315E-08	4.048E-08	3.244E-08	2.691E-08	2.290E-08	1.987E-08	1.750E-08

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44

45 CHI/Q (SEC/METER CUBED) FOR EACH SEGMENT

46 DIRECTION FROM SITE	47 SEGMENT BOUNDARIES IN MILES									
48	5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
49 S	1.501E-06	5.324E-07	2.575E-07	1.629E-07	1.161E-07	5.986E-08	2.414E-08	1.237E-08	8.036E-09	5.842E-09
50 SSW	1.167E-06	4.087E-07	1.875E-07	1.139E-07	7.877E-08	3.860E-08	1.443E-08	6.979E-09	4.382E-09	3.109E-09
51 SW	9.652E-07	3.444E-07	1.593E-07	9.689E-08	6.707E-08	3.288E-08	1.228E-08	5.929E-09	3.714E-09	2.630E-09
52 WSW	5.903E-07	2.095E-07	9.608E-08	5.802E-08	3.996E-08	1.947E-08	7.207E-09	3.455E-09	2.156E-09	1.521E-09
53 W	3.728E-07	1.280E-07	5.712E-08	3.394E-08	2.312E-08	1.107E-08	4.016E-09	1.917E-09	1.197E-09	8.457E-10
54 WNW	4.924E-07	1.686E-07	7.708E-08	4.699E-08	3.263E-08	1.619E-08	6.202E-09	3.075E-09	1.964E-09	1.411E-09
55 NW	7.394E-07	2.632E-07	1.225E-07	7.494E-08	5.213E-08	2.581E-08	9.811E-09	4.816E-09	3.051E-09	2.178E-09
56 NNW	1.846E-06	6.684E-07	3.259E-07	2.060E-07	1.467E-07	7.544E-08	3.028E-08	1.545E-08	1.000E-08	7.253E-09
57 N	5.870E-06	2.068E-06	1.035E-06	6.728E-07	4.886E-07	2.596E-07	1.091E-07	5.759E-08	3.806E-08	2.800E-08
58 NNE	4.785E-06	1.697E-06	8.429E-07	5.446E-07	3.988E-07	2.077E-07	8.651E-08	4.534E-08	2.984E-08	2.189E-08
59 NE	3.734E-06	1.333E-06	6.531E-07	4.165E-07	2.985E-07	1.552E-07	6.329E-08	3.267E-08	2.132E-08	1.555E-08
60 ENE	2.909E-06	1.039E-06	5.076E-07	3.231E-07	2.312E-07	1.200E-07	4.881E-08	2.517E-08	1.641E-08	1.196E-08

1	E	1.967E-06	7.037E-07	3.397E-07	2.140E-07	1.521E-07	7.803E-08	3.126E-08	1.594E-08	1.033E-08	7.494E-09
2	ESE	2.878E-06	9.981E-07	4.974E-07	3.239E-07	2.356E-07	1.255E-07	5.307E-08	2.814E-08	1.866E-08	1.376E-08
3	SE	4.124E-06	1.406E-06	7.056E-07	4.645E-07	3.403E-07	1.836E-07	7.893E-08	4.235E-08	2.827E-08	2.095E-08
4	SSE	4.083E-06	1.418E-06	7.102E-07	4.639E-07	3.380E-07	1.806E-07	7.655E-08	4.064E-08	2.696E-08	1.989E-08

6	VENT AND BUILDING PARAMETERS:										
7	RELEASE HEIGHT (METERS)	0.0	REP. WIND HEIGHT (METERS)	11.0							
8	DIAMETER (METERS)	0.0	BUILDING HEIGHT (METERS)	59.0							
9	EXIT VELOCITY (METERS)	0.0	BLDG. MIN. CRS. SEC. AREA (SQ. METERS)	1370.0							
10			HEAT EMISSION RATE (CAL/SEC)	0.0							

12	AT THE RELEASE HEIGHT:				AT THE MEASURED WIND HEIGHT ( 11.0 METERS):			
13	VENT RELEASE MODE	WIND SPEED (METERS/SEC)		VENT RELEASE MODE	WIND SPEED (METERS/SEC)		WIND SPEED (METERS/SEC)	
14							STABLE CONDITIONS	
15	ELEVATED	LESS THAN	0.0	ELEVATED	LESS THAN	0.0	UNSTABLE/NEUTRAL CONDITIONS	
16	MIXED	BETWEEN	0.0 AND 0.0	MIXED	BETWEEN	0.0 AND 0.0	LESS THAN 0.0	
17	GROUND LEVEL	ABOVE	0.0	GROUND LEVEL	ABOVE	0.0	BETWEEN 0.0 AND 0.0	
18							ABOVE 0.0	

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1 EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85  
 2 2.260 DAY DECAY, UNDEPLETED

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4 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

5 SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
6											
7 S	8.804E-06	2.738E-06	1.418E-06	9.208E-07	5.078E-07	3.392E-07	2.493E-07	1.937E-07	1.565E-07	1.300E-07	1.104E-07
8 SSW	6.162E-06	2.093E-06	1.125E-06	7.261E-07	3.922E-07	2.550E-07	1.830E-07	1.395E-07	1.109E-07	9.096E-08	7.635E-08
9 SW	5.093E-06	1.717E-06	9.305E-07	6.069E-07	3.318E-07	2.165E-07	1.555E-07	1.187E-07	9.447E-08	7.751E-08	6.510E-08
10 WSW	3.155E-06	1.053E-06	5.685E-07	3.700E-07	2.019E-07	1.311E-07	9.378E-08	7.132E-08	5.658E-08	4.631E-08	3.881E-08
11 W	2.008E-06	6.738E-07	3.585E-07	2.299E-07	1.229E-07	7.872E-08	5.572E-08	4.202E-08	3.312E-08	2.695E-08	2.247E-08
12 WNW	2.742E-06	8.943E-07	4.716E-07	3.009E-07	1.607E-07	1.042E-07	7.483E-08	5.710E-08	4.544E-08	3.729E-08	3.133E-08
13 NW	4.119E-06	1.319E-06	7.118E-07	4.623E-07	2.532E-07	1.657E-07	1.194E-07	9.132E-08	7.284E-08	5.989E-08	5.039E-08
14 NNW	1.091E-05	3.349E-06	1.741E-06	1.144E-06	6.414E-07	4.298E-07	3.159E-07	2.455E-07	1.983E-07	1.648E-07	1.399E-07
15 N	3.699E-05	1.094E-05	5.447E-06	3.524E-06	1.958E-06	1.332E-06	9.956E-07	7.839E-07	6.399E-07	5.364E-07	4.587E-07
16 NNE	2.964E-05	8.835E-06	4.470E-06	2.900E-06	1.611E-06	1.092E-06	8.130E-07	6.383E-07	5.199E-07	4.350E-07	3.715E-07
17 NE	2.235E-05	6.824E-06	3.515E-06	2.290E-06	1.272E-06	8.557E-07	6.322E-07	4.934E-07	4.000E-07	3.333E-07	2.838E-07
18 ENE	1.737E-05	5.312E-06	2.739E-06	1.785E-06	9.909E-07	6.653E-07	4.908E-07	3.826E-07	3.098E-07	2.579E-07	2.194E-07
19 E	1.150E-05	3.563E-06	1.862E-06	1.215E-06	6.729E-07	4.487E-07	3.289E-07	2.551E-07	2.057E-07	1.707E-07	1.448E-07
20 ESE	1.822E-05	5.394E-06	2.668E-06	1.711E-06	9.407E-07	6.389E-07	4.777E-07	3.762E-07	3.072E-07	2.576E-07	2.203E-07
21 SE	2.671E-05	7.805E-06	3.809E-06	2.416E-06	1.315E-06	8.978E-07	6.758E-07	5.350E-07	4.386E-07	3.690E-07	3.166E-07
22 SSE	2.592E-05	7.666E-06	3.780E-06	2.427E-06	1.337E-06	9.109E-07	6.827E-07	5.388E-07	4.406E-07	3.698E-07	3.167E-07

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25 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

26 BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
27											
28 S	9.536E-08	5.415E-08	3.607E-08	2.014E-08	1.319E-08	9.427E-09	7.124E-09	5.597E-09	4.526E-09	3.742E-09	3.150E-09
29 SSW	6.531E-08	3.580E-08	2.334E-08	1.271E-08	8.224E-09	5.841E-09	4.400E-09	3.454E-09	2.793E-09	2.311E-09	1.948E-09
30 SW	5.571E-08	3.060E-08	1.997E-08	1.091E-08	7.080E-09	5.041E-09	3.806E-09	2.993E-09	2.424E-09	2.009E-09	1.696E-09
31 WSW	3.316E-08	1.814E-08	1.181E-08	6.437E-09	4.174E-09	2.972E-09	2.246E-09	1.768E-09	1.433E-09	1.189E-09	1.005E-09
32 W	1.912E-08	1.031E-08	6.647E-09	3.589E-09	2.328E-09	1.659E-09	1.255E-09	9.882E-10	8.019E-10	6.658E-10	5.628E-10
33 WNW	2.683E-08	1.481E-08	9.691E-09	5.309E-09	3.451E-09	2.456E-09	1.852E-09	1.454E-09	1.176E-09	9.721E-10	8.184E-10
34 NW	4.320E-08	2.389E-08	1.568E-08	8.625E-09	5.627E-09	4.023E-09	3.047E-09	2.402E-09	1.950E-09	1.619E-09	1.369E-09
35 NNW	1.209E-07	6.866E-08	4.577E-08	2.561E-08	1.682E-08	1.205E-08	9.134E-09	7.195E-09	5.833E-09	4.834E-09	4.077E-09
36 N	3.987E-07	2.310E-07	1.557E-07	8.807E-08	5.801E-08	4.156E-08	3.144E-08	2.470E-08	1.996E-08	1.649E-08	1.386E-08
37 NNE	3.225E-07	1.862E-07	1.253E-07	7.077E-08	4.663E-08	3.345E-08	2.534E-08	1.994E-08	1.614E-08	1.336E-08	1.125E-08
38 NE	2.456E-07	1.405E-07	9.410E-08	5.291E-08	3.483E-08	2.499E-08	1.895E-08	1.494E-08	1.211E-08	1.004E-08	8.473E-09
39 ENE	1.898E-07	1.083E-07	7.235E-08	4.055E-08	2.662E-08	1.906E-08	1.442E-08	1.134E-08	9.177E-09	7.593E-09	6.393E-09
40 E	1.250E-07	7.076E-08	4.706E-08	2.625E-08	1.719E-08	1.230E-08	9.299E-09	7.310E-09	5.915E-09	4.893E-09	4.119E-09
41 ESE	1.915E-07	1.111E-07	7.488E-08	4.231E-08	2.784E-08	1.991E-08	1.504E-08	1.179E-08	9.513E-09	7.845E-09	6.584E-09
42 SE	2.758E-07	1.612E-07	1.092E-07	6.198E-08	4.084E-08	2.923E-08	2.207E-08	1.730E-08	1.395E-08	1.150E-08	9.650E-09
43 SSE	2.756E-07	1.603E-07	1.083E-07	6.142E-08	4.051E-08	2.905E-08	2.198E-08	1.728E-08	1.397E-08	1.154E-08	9.709E-09

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45 CHI/Q (SEC/METER CUBED) FOR EACH SEGMENT

46	47 SEGMENT BOUNDARIES IN MILES									
48 DIRECTION FROM SITE	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
49 S	1.490E-06	5.247E-07	2.510E-07	1.570E-07	1.106E-07	5.527E-08	2.059E-08	9.509E-09	5.625E-09	3.755E-09
50 SSW	1.163E-06	4.054E-07	1.848E-07	1.115E-07	7.659E-08	3.682E-08	1.308E-08	5.900E-09	3.472E-09	2.320E-09
51 SW	9.613E-07	3.417E-07	1.571E-07	9.493E-08	6.530E-08	3.146E-08	1.122E-08	5.091E-09	3.009E-09	2.016E-09
52 WSW	5.880E-07	2.078E-07	9.476E-08	5.688E-08	3.894E-08	1.867E-08	6.626E-09	3.002E-09	1.777E-09	1.193E-09
53 W	3.714E-07	1.270E-07	5.638E-08	3.331E-08	2.256E-08	1.064E-08	3.708E-09	1.676E-09	9.934E-10	6.680E-10
54 WNW	4.897E-07	1.667E-07	7.558E-08	4.567E-08	3.143E-08	1.520E-08	5.457E-09	2.480E-09	1.462E-09	9.754E-10
55 NW	7.360E-07	2.608E-07	1.205E-07	7.319E-08	5.054E-08	2.453E-08	8.859E-09	4.060E-09	2.414E-09	1.625E-09
56 NNW	1.833E-06	6.591E-07	3.181E-07	1.990E-07	1.402E-07	7.009E-08	2.618E-08	1.216E-08	7.230E-09	4.850E-09
57 N	5.813E-06	2.028E-06	1.001E-06	6.416E-07	4.595E-07	2.348E-07	8.975E-08	4.190E-08	2.482E-08	1.654E-08
58 NNE	4.742E-06	1.667E-06	8.175E-07	5.214E-07	3.722E-07	1.894E-07	7.216E-08	3.372E-08	2.004E-08	1.340E-08
59 NE	3.706E-06	1.313E-06	6.363E-07	4.013E-07	2.843E-07	1.433E-07	5.403E-08	2.520E-08	1.501E-08	1.007E-08
60 ENE	2.887E-06	1.023E-06	4.940E-07	3.108E-07	2.199E-07	1.104E-07	4.143E-08	1.922E-08	1.140E-08	7.618E-09

1	E	1.953E-06	6.937E-07	3.313E-07	2.065E-07	1.451E-07	7.228E-08	2.685E-08	1.240E-08	7.347E-09	4.909E-09
2	ESE	2.849E-06	9.778E-07	4.801E-07	3.080E-07	2.207E-07	1.129E-07	4.312E-08	2.008E-08	1.185E-08	7.872E-09
3	SE	4.078E-06	1.374E-06	6.787E-07	4.396E-07	3.170E-07	1.636E-07	6.308E-08	2.947E-08	1.739E-08	1.154E-08
4	SSE	4.042E-06	1.390E-06	6.860E-07	4.417E-07	3.172E-07	1.628E-07	6.255E-08	2.928E-08	1.736E-08	1.158E-08

6	VENT AND BUILDING PARAMETERS:										
7	RELEASE HEIGHT	(METERS)	0.0	REP. WIND HEIGHT	(METERS)	11.0					
8	DIAMETER	(METERS)	0.0	BUILDING HEIGHT	(METERS)	59.0					
9	EXIT VELOCITY	(METERS)	0.0	BLDG. MIN. CRS. SEC. AREA	(SQ. METERS)	1370.0					
10				HEAT EMISSION RATE	(CAL/SEC)	0.0					

12	AT THE RELEASE HEIGHT:			AT THE MEASURED WIND HEIGHT ( 11.0 METERS):							
13	VENT RELEASE MODE	WIND SPEED (METERS/SEC)		VENT RELEASE MODE	WIND SPEED (METERS/SEC)			WIND SPEED (METERS/SEC)			
14					STABLE CONDITIONS			UNSTABLE/NEUTRAL CONDITIONS			
15	ELEVATED	LESS THAN	0.0	ELEVATED	LESS THAN	0.0	LESS THAN		0.0		
16	MIXED	BETWEEN	0.0 AND 0.0	MIXED	BETWEEN	0.0 AND 0.0	BETWEEN		0.0 AND 0.0		
17	GROUND LEVEL	ABOVE	0.0	GROUND LEVEL	ABOVE	0.0	ABOVE		0.0		

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1 EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85  
 2 8.000 DAY DECAY, DEPLETED

4 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

5 SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
6 S	8.349E-06	2.510E-06	1.270E-06	8.118E-07	4.359E-07	2.850E-07	2.057E-07	1.573E-07	1.254E-07	1.029E-07	8.638E-08
7 SSW	5.839E-06	1.916E-06	1.005E-06	6.381E-07	3.351E-07	2.129E-07	1.498E-07	1.122E-07	8.789E-08	7.107E-08	5.890E-08
8 SW	4.825E-06	1.571E-06	8.316E-07	5.333E-07	2.835E-07	1.807E-07	1.273E-07	9.547E-08	7.480E-08	6.052E-08	5.017E-08
9 WSW	2.989E-06	9.638E-07	5.080E-07	3.251E-07	1.725E-07	1.095E-07	7.674E-08	5.734E-08	4.479E-08	3.613E-08	2.989E-08
10 W	1.902E-06	6.165E-07	3.204E-07	2.020E-07	1.050E-07	6.568E-08	4.557E-08	3.377E-08	2.619E-08	2.101E-08	1.729E-08
11 WNW	2.599E-06	8.190E-07	4.220E-07	2.648E-07	1.376E-07	8.729E-08	6.149E-08	4.615E-08	3.619E-08	2.931E-08	2.433E-08
12 NW	3.903E-06	1.208E-06	6.365E-07	4.066E-07	2.165E-07	1.385E-07	9.784E-08	7.360E-08	5.781E-08	4.688E-08	3.895E-08
13 NNW	1.034E-05	3.069E-06	1.560E-06	1.009E-06	5.503E-07	3.608E-07	2.604E-07	1.992E-07	1.586E-07	1.301E-07	1.092E-07
14 N	3.510E-05	1.004E-05	4.889E-06	3.115E-06	1.687E-06	1.124E-06	8.262E-07	6.410E-07	5.166E-07	4.281E-07	3.624E-07
15 NNE	2.811E-05	8.106E-06	4.011E-06	2.561E-06	1.386E-06	9.201E-07	6.732E-07	5.207E-07	4.185E-07	3.461E-07	2.924E-07
16 NE	2.120E-05	6.256E-06	3.150E-06	2.019E-06	1.093E-06	7.191E-07	5.218E-07	4.010E-07	3.206E-07	2.639E-07	2.221E-07
17 ENE	1.648E-05	4.870E-06	2.455E-06	1.574E-06	8.512E-07	5.594E-07	4.054E-07	3.111E-07	2.485E-07	2.044E-07	1.720E-07
18 E	1.091E-05	3.266E-06	1.669E-06	1.071E-06	5.775E-07	3.769E-07	2.713E-07	2.071E-07	1.647E-07	1.350E-07	1.132E-07
19 ESE	1.729E-05	4.952E-06	2.396E-06	1.513E-06	8.111E-07	5.399E-07	3.970E-07	3.082E-07	2.485E-07	2.060E-07	1.745E-07
20 SE	2.535E-05	7.169E-06	3.423E-06	2.139E-06	1.136E-06	7.602E-07	5.629E-07	4.395E-07	3.560E-07	2.963E-07	2.518E-07
21 SSE	2.460E-05	7.037E-06	3.394E-06	2.146E-06	1.153E-06	7.694E-07	5.670E-07	4.410E-07	3.561E-07	2.956E-07	2.506E-07

25 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

26 BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
28 S	7.386E-08	4.046E-08	2.619E-08	1.405E-08	8.946E-09	6.260E-09	4.649E-09	3.598E-09	2.870E-09	2.343E-09	1.948E-09
29 SSW	4.979E-08	2.613E-08	1.643E-08	8.488E-09	5.279E-09	3.632E-09	2.664E-09	2.041E-09	1.616E-09	1.311E-09	1.085E-09
30 SW	4.243E-08	2.229E-08	1.402E-08	7.245E-09	4.509E-09	3.104E-09	2.278E-09	1.747E-09	1.383E-09	1.123E-09	9.300E-10
31 WSW	2.523E-08	1.319E-08	8.272E-09	4.257E-09	2.643E-09	1.816E-09	1.331E-09	1.020E-09	8.081E-10	6.560E-10	5.432E-10
32 W	1.454E-08	7.483E-09	4.645E-09	2.367E-09	1.469E-09	1.010E-09	7.411E-10	5.685E-10	4.506E-10	3.662E-10	3.036E-10
33 WNW	2.061E-08	1.093E-08	6.928E-09	3.623E-09	2.277E-09	1.579E-09	1.166E-09	8.981E-10	7.140E-10	5.815E-10	4.826E-10
34 NW	3.300E-08	1.749E-08	1.107E-08	5.777E-09	3.623E-09	2.509E-09	1.850E-09	1.425E-09	1.133E-09	9.226E-10	7.661E-10
35 NNW	9.338E-08	5.107E-08	3.302E-08	1.769E-08	1.126E-08	7.878E-09	5.851E-09	4.529E-09	3.614E-09	2.952E-09	2.456E-09
36 N	3.120E-07	1.752E-07	1.152E-07	6.304E-08	4.065E-08	2.868E-08	2.143E-08	1.666E-08	1.334E-08	1.092E-08	9.100E-09
37 NNE	2.514E-07	1.404E-07	9.200E-08	5.014E-08	3.226E-08	2.273E-08	1.697E-08	1.318E-08	1.055E-08	8.635E-09	7.195E-09
38 NE	1.903E-07	1.050E-07	6.830E-08	3.687E-08	2.358E-08	1.655E-08	1.233E-08	9.560E-09	7.641E-09	6.248E-09	5.204E-09
39 ENE	1.473E-07	8.109E-08	5.267E-08	2.838E-08	1.813E-08	1.272E-08	9.460E-09	7.331E-09	5.855E-09	4.784E-09	3.981E-09
40 E	9.668E-08	5.276E-08	3.406E-08	1.822E-08	1.159E-08	8.104E-09	6.016E-09	4.655E-09	3.713E-09	3.031E-09	2.521E-09
41 ESE	1.503E-07	8.460E-08	5.572E-08	3.056E-08	1.973E-08	1.393E-08	1.042E-08	8.102E-09	6.486E-09	5.310E-09	4.425E-09
42 SE	2.175E-07	1.236E-07	8.194E-08	4.529E-08	2.938E-08	2.081E-08	1.560E-08	1.215E-08	9.739E-09	7.981E-09	6.655E-09
43 SSE	2.160E-07	1.218E-07	8.038E-08	4.417E-08	2.855E-08	2.018E-08	1.510E-08	1.175E-08	9.414E-09	7.712E-09	6.430E-09

45 CHI/Q (SEC/METER CUBED) FOR EACH SEGMENT

46 DIRECTION	47 SEGMENT BOUNDARIES IN MILES									
48 FROM SITE	5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
49 S	1.342E-06	4.524E-07	2.075E-07	1.259E-07	8.663E-08	4.154E-08	1.448E-08	6.332E-09	3.621E-09	2.353E-09
50 SSW	1.044E-06	3.481E-07	1.516E-07	8.844E-08	5.913E-08	2.708E-08	8.828E-09	3.684E-09	2.057E-09	1.318E-09
51 SW	8.633E-07	2.933E-07	1.288E-07	7.527E-08	5.037E-08	2.309E-08	7.535E-09	3.148E-09	1.760E-09	1.129E-09
52 WSW	5.280E-07	1.784E-07	7.770E-08	4.508E-08	3.001E-08	1.368E-08	4.432E-09	1.843E-09	1.028E-09	6.593E-10
53 W	3.335E-07	1.091E-07	4.621E-08	2.638E-08	1.737E-08	7.789E-09	2.474E-09	1.025E-09	5.729E-10	3.680E-10
54 WNW	4.404E-07	1.435E-07	6.223E-08	3.642E-08	2.443E-08	1.130E-08	3.759E-09	1.600E-09	9.044E-10	5.841E-10
55 NW	6.613E-07	2.241E-07	9.898E-08	5.816E-08	3.910E-08	1.808E-08	5.996E-09	2.543E-09	1.435E-09	9.268E-10
56 NNW	1.650E-06	5.679E-07	2.627E-07	1.594E-07	1.096E-07	5.245E-08	1.824E-08	7.969E-09	4.558E-09	2.965E-09
57 N	5.245E-06	1.754E-06	8.316E-07	5.184E-07	3.632E-07	1.789E-07	6.468E-08	2.897E-08	1.676E-08	1.096E-08
58 NNE	4.276E-06	1.440E-06	6.780E-07	4.201E-07	2.931E-07	1.435E-07	5.149E-08	2.296E-08	1.326E-08	8.669E-09
59 NE	3.338E-06	1.133E-06	5.261E-07	3.219E-07	2.227E-07	1.076E-07	3.795E-08	1.674E-08	9.619E-09	6.274E-09
60 ENE	2.600E-06	8.822E-07	4.088E-07	2.496E-07	1.724E-07	8.316E-08	2.922E-08	1.286E-08	7.377E-09	4.804E-09

1	E	1.758E-06	5.980E-07	2.738E-07	1.655E-07	1.135E-07	5.421E-08	1.879E-08	8.198E-09	4.685E-09	3.044E-09
2	ESE	2.572E-06	8.466E-07	3.996E-07	2.494E-07	1.749E-07	8.638E-08	3.134E-08	1.407E-08	8.148E-09	5.331E-09
3	SE	3.685E-06	1.192E-06	5.661E-07	3.571E-07	2.523E-07	1.260E-07	4.636E-08	2.101E-08	1.222E-08	8.011E-09
4	SSE	3.649E-06	1.203E-06	5.706E-07	3.573E-07	2.511E-07	1.243E-07	4.527E-08	2.038E-08	1.182E-08	7.742E-09

5  
6 VENT AND BUILDING PARAMETERS:

7	RELEASE HEIGHT (METERS)	0.0	REP. WIND HEIGHT (METERS)	11.0
8	DIAMETER (METERS)	0.0	BUILDING HEIGHT (METERS)	59.0
9	EXIT VELOCITY (METERS)	0.0	BLDG. MIN. CRS. SEC. AREA (SQ. METERS)	1370.0
10			HEAT EMISSION RATE (CAL/SEC)	0.0

11  
12 AT THE RELEASE HEIGHT:

13	VENT RELEASE MODE	WIND SPEED (METERS/SEC)
14		
15	ELEVATED	LESS THAN 0.0
16	MIXED	BETWEEN 0.0 AND 0.0
17	GROUND LEVEL	ABOVE 0.0

12 AT THE MEASURED WIND HEIGHT ( 11.0 METERS):

13	VENT RELEASE MODE	WIND SPEED (METERS/SEC)	WIND SPEED (METERS/SEC)
14			STABLE CONDITIONS
15	ELEVATED	LESS THAN 0.0	UNSTABLE/NEUTRAL CONDITIONS
16	MIXED	BETWEEN 0.0 AND 0.0	LESS THAN 0.0
17	GROUND LEVEL	ABOVE 0.0	BETWEEN 0.0 AND 0.0

1 EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85  
 2 \*\*\*\*\* RELATIVE DEPOSITION PER UNIT AREA (M\*\*<sup>-2</sup>) AT FIXED POINTS BY DOWNWIND SECTORS \*\*\*\*\*

3 DIRECTION	DISTANCES IN MILES											
4 FROM SITE	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	
5 S	2.748E-08	9.293E-09	4.772E-09	2.930E-09	1.461E-09	8.859E-10	5.990E-10	4.340E-10	3.300E-10	2.600E-10	2.105E-10	
6 SSW	4.068E-08	1.376E-08	7.064E-09	4.337E-09	2.162E-09	1.311E-09	8.867E-10	6.425E-10	4.886E-10	3.849E-10	3.116E-10	
7 SW	2.694E-08	9.111E-09	4.678E-09	2.872E-09	1.432E-09	8.685E-10	5.872E-10	4.255E-10	3.236E-10	2.549E-10	2.064E-10	
8 WSW	1.860E-08	6.291E-09	3.230E-09	1.983E-09	9.888E-10	5.997E-10	4.055E-10	2.938E-10	2.234E-10	1.760E-10	1.425E-10	
9 W	1.137E-08	3.846E-09	1.975E-09	1.212E-09	6.045E-10	3.666E-10	2.479E-10	1.796E-10	1.366E-10	1.076E-10	8.711E-11	
10 WNW	1.225E-08	4.141E-09	2.126E-09	1.305E-09	6.508E-10	3.947E-10	2.669E-10	1.934E-10	1.471E-10	1.159E-10	9.379E-11	
11 NW	2.417E-08	8.174E-09	4.197E-09	2.577E-09	1.285E-09	7.792E-10	5.268E-10	3.818E-10	2.903E-10	2.287E-10	1.851E-10	
12 NNW	3.183E-08	1.076E-08	5.527E-09	3.394E-09	1.692E-09	1.026E-09	6.938E-10	5.027E-10	3.823E-10	3.012E-10	2.438E-10	
13 N	6.204E-08	2.098E-08	1.077E-08	6.615E-09	3.298E-09	2.000E-09	1.352E-09	9.799E-10	7.451E-10	5.870E-10	4.752E-10	
14 NNE	6.539E-08	2.211E-08	1.135E-08	6.972E-09	3.476E-09	2.108E-09	1.425E-09	1.033E-09	7.853E-10	6.187E-10	5.009E-10	
15 NE	6.750E-08	2.283E-08	1.172E-08	7.196E-09	3.588E-09	2.176E-09	1.471E-09	1.066E-09	8.106E-10	6.386E-10	5.170E-10	
16 ENE	4.739E-08	1.602E-08	8.228E-09	5.052E-09	2.519E-09	1.528E-09	1.033E-09	7.484E-10	5.691E-10	4.483E-10	3.630E-10	
17 E	3.295E-08	1.114E-08	5.722E-09	3.513E-09	1.752E-09	1.062E-09	7.182E-10	5.205E-10	3.957E-10	3.118E-10	2.524E-10	
18 ESE	2.827E-08	9.560E-09	4.909E-09	3.014E-09	1.503E-09	9.114E-10	6.162E-10	4.465E-10	3.395E-10	2.675E-10	2.165E-10	
19 SE	3.953E-08	1.337E-08	6.864E-09	4.215E-09	2.101E-09	1.274E-09	8.616E-10	6.244E-10	4.748E-10	3.740E-10	3.028E-10	
20 SSE	4.266E-08	1.443E-08	7.408E-09	4.549E-09	2.268E-09	1.375E-09	9.299E-10	6.738E-10	5.124E-10	4.037E-10	3.268E-10	

22 DIRECTION	DISTANCES IN MILES											
23 FROM SITE	5.00	7.50	10.00	15.00	20.00	25.00	30.00	35.00	40.00	45.00	50.00	
24 S	1.741E-10	8.533E-11	5.354E-11	2.706E-11	1.638E-11	1.098E-11	7.869E-12	5.909E-12	4.594E-12	3.670E-12	2.995E-12	
25 SSW	2.578E-10	1.263E-10	7.926E-11	4.006E-11	2.425E-11	1.626E-11	1.165E-11	8.747E-12	6.801E-12	5.433E-12	4.434E-12	
26 SW	1.707E-10	8.365E-11	5.249E-11	2.653E-11	1.606E-11	1.077E-11	7.714E-12	5.793E-12	4.504E-12	3.598E-12	2.937E-12	
27 WSW	1.179E-10	5.776E-11	3.624E-11	1.832E-11	1.109E-11	7.434E-12	5.327E-12	4.000E-12	3.110E-12	2.484E-12	2.028E-12	
28 W	7.205E-11	3.531E-11	2.216E-11	1.120E-11	6.778E-12	4.544E-12	3.256E-12	2.445E-12	1.901E-12	1.519E-12	1.240E-12	
29 WNW	7.758E-11	3.802E-11	2.386E-11	1.206E-11	7.298E-12	4.893E-12	3.506E-12	2.633E-12	2.047E-12	1.635E-12	1.335E-12	
30 NW	1.531E-10	7.505E-11	4.709E-11	2.380E-11	1.441E-11	9.659E-12	6.921E-12	5.197E-12	4.041E-12	3.228E-12	2.635E-12	
31 NNW	2.017E-10	9.883E-11	6.201E-11	3.134E-11	1.897E-11	1.272E-11	9.114E-12	6.844E-12	5.321E-12	4.251E-12	3.470E-12	
32 N	3.931E-10	1.926E-10	1.209E-10	6.109E-11	3.698E-11	2.479E-11	1.776E-11	1.334E-11	1.037E-11	8.285E-12	6.762E-12	
33 NNE	4.143E-10	2.030E-10	1.274E-10	6.439E-11	3.897E-11	2.613E-11	1.872E-11	1.406E-11	1.093E-11	8.733E-12	7.128E-12	
34 NE	4.277E-10	2.096E-10	1.315E-10	6.647E-11	4.023E-11	2.697E-11	1.933E-11	1.451E-11	1.128E-11	9.014E-12	7.357E-12	
35 ENE	3.002E-10	1.471E-10	9.232E-11	4.666E-11	2.824E-11	1.894E-11	1.357E-11	1.019E-11	7.922E-12	6.328E-12	5.165E-12	
36 E	2.088E-10	1.023E-10	6.420E-11	3.245E-11	1.964E-11	1.317E-11	9.436E-12	7.085E-12	5.509E-12	4.401E-12	3.592E-12	
37 ESE	1.791E-10	8.778E-11	5.508E-11	2.784E-11	1.685E-11	1.130E-11	8.095E-12	6.078E-12	4.726E-12	3.775E-12	3.081E-12	
38 SE	2.505E-10	1.227E-10	7.702E-11	3.893E-11	2.356E-11	1.580E-11	1.132E-11	8.500E-12	6.609E-12	5.279E-12	4.309E-12	
39 SSE	2.703E-10	1.325E-10	8.312E-11	4.201E-11	2.543E-11	1.705E-11	1.222E-11	9.173E-12	7.132E-12	5.697E-12	4.650E-12	

41 \*\*\*\*\* RELATIVE DEPOSITION PER UNIT AREA (M\*\*<sup>-2</sup>) BY DOWNWIND SECTORS \*\*\*\*\*

42 DIRECTION	SEGMENT BOUNDARIES IN MILES									
43 FROM SITE	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
44 S	4.958E-09	1.532E-09	6.095E-10	3.331E-10	2.117E-10	9.093E-11	2.820E-11	1.118E-11	5.968E-12	3.694E-12
45 SSW	7.339E-09	2.268E-09	9.023E-10	4.931E-10	3.134E-10	1.346E-10	4.174E-11	1.654E-11	8.835E-12	5.468E-12
46 SW	4.860E-09	1.502E-09	5.975E-10	3.265E-10	2.075E-10	8.914E-11	2.764E-11	1.096E-11	5.851E-12	3.621E-12
47 WSW	3.356E-09	1.037E-09	4.126E-10	2.255E-10	1.433E-10	6.155E-11	1.909E-11	7.565E-12	4.040E-12	2.500E-12
48 W	2.052E-09	6.339E-10	2.522E-10	1.378E-10	8.760E-11	3.763E-11	1.167E-11	4.625E-12	2.470E-12	1.529E-12
49 WNW	2.209E-09	6.825E-10	2.716E-10	1.484E-10	9.432E-11	4.052E-11	1.256E-11	4.980E-12	2.659E-12	1.646E-12
50 NW	4.361E-09	1.347E-09	5.361E-10	2.930E-10	1.862E-10	7.998E-11	2.480E-11	9.830E-12	5.249E-12	3.249E-12
51 NNW	5.743E-09	1.774E-09	7.060E-10	3.858E-10	2.452E-10	1.053E-10	3.266E-11	1.294E-11	6.913E-12	4.279E-12
52 N	1.119E-08	3.458E-09	1.376E-09	7.519E-10	4.779E-10	2.053E-10	6.366E-11	2.523E-11	1.347E-11	8.339E-12
53 NNE	1.180E-08	3.645E-09	1.450E-09	7.926E-10	5.037E-10	2.164E-10	6.710E-11	2.659E-11	1.420E-11	8.790E-12
54 NE	1.218E-08	3.762E-09	1.497E-09	8.181E-10	5.200E-10	2.233E-10	6.926E-11	2.745E-11	1.466E-11	9.073E-12
55 ENE	8.549E-09	2.641E-09	1.051E-09	5.743E-10	3.650E-10	1.568E-10	4.862E-11	1.927E-11	1.029E-11	6.369E-12
56 E	5.945E-09	1.837E-09	7.309E-10	3.994E-10	2.538E-10	1.090E-10	3.381E-11	1.340E-11	7.156E-12	4.429E-12
57 ESE	5.100E-09	1.576E-09	6.270E-10	3.426E-10	2.178E-10	9.354E-11	2.901E-11	1.150E-11	6.139E-12	3.800E-12
58 SE	7.132E-09	2.203E-09	8.768E-10	4.791E-10	3.045E-10	1.308E-10	4.056E-11	1.608E-11	8.585E-12	5.314E-12
59 SSE	7.697E-09	2.378E-09	9.462E-10	5.171E-10	3.286E-10	1.412E-10	4.377E-11	1.735E-11	9.265E-12	5.735E-12



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VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT (METERS)	0.0	REP. WIND HEIGHT (METERS)	11.0
DIAMETER (METERS)	0.0	BUILDING HEIGHT (METERS)	59.0
EXIT VELOCITY (METERS)	0.0	BLDG. MIN. CRS. SEC. AREA (SQ. METERS)	1370.0
		HEAT EMISSION RATE (CAL/SEC)	0.0

AT THE RELEASE HEIGHT:

VENT RELEASE MODE	WIND SPEED (METERS/SEC)		
ELEVATED	LESS THAN	0.0	
MIXED	BETWEEN	0.0	AND 0.0
GROUND LEVEL	ABOVE	0.0	

AT THE MEASURED WIND HEIGHT ( 11.0 METERS):

VENT RELEASE MODE	WIND SPEED (METERS/SEC)			WIND SPEED (METERS/SEC)		
	STABLE CONDITIONS			UNSTABLE/NEUTRAL CONDITIONS		
ELEVATED	LESS THAN	0.0		LESS THAN	0.0	
MIXED	BETWEEN	0.0	AND 0.0	BETWEEN	0.0	AND 0.0
GROUND LEVEL	ABOVE	0.0		ABOVE	0.0	

1 EXIT ONE GROUND LEVEL RELEASE JAN-JUN 85  
 2 SPECIFIC POINTS OF INTEREST

3	4	5	6	7	8	9	10	11	12
RELEASE	TYPE OF	DIRECTION	DISTANCE	X/Q	X/Q	X/Q	D/Q		
ID	LOCATION		(MILES)	(METERS)	(SEC/CUB.METER)	(SEC/CUB.METER)	(SEC/CUB.METER)	(PER SQ.METER)	
NO DECAY 2.260 DAY DECAY									
					UNDEPLETED	UNDEPLETED	DEPLETED		
A	SITE BOUNDARY	S	0.28	451.	7.2E-06	7.2E-06	6.8E-06		2.3E-08
A	SITE BOUNDARY	SSW	0.29	467.	4.8E-06	4.8E-06	4.5E-06		3.2E-08
A	SITE BOUNDARY	SW	0.36	579.	2.8E-06	2.8E-06	2.6E-06		1.5E-08
A	SITE BOUNDARY	WSW	0.36	579.	1.7E-06	1.7E-06	1.6E-06		1.1E-08
A	SITE BOUNDARY	W	0.50	805.	6.7E-07	6.7E-07	6.1E-07		3.8E-09
A	SITE BOUNDARY	WNW	0.55	885.	7.7E-07	7.7E-07	7.0E-07		3.5E-09
A	SITE BOUNDARY	NW	1.23	1979.	3.4E-07	3.4E-07	2.9E-07		1.8E-09
A	SITE BOUNDARY	NNW	1.89	3042.	4.7E-07	4.6E-07	3.9E-07		1.1E-09
A	SITE BOUNDARY	N	1.94	3122.	1.4E-06	1.4E-06	1.2E-06		2.1E-09
A	SITE BOUNDARY	NNE	1.26	2028.	2.1E-06	2.1E-06	1.8E-06		4.7E-09
A	SITE BOUNDARY	NE	1.01	1625.	2.3E-06	2.3E-06	2.0E-06		7.1E-09
A	SITE BOUNDARY	ENE	0.86	1384.	2.2E-06	2.2E-06	2.0E-06		6.5E-09
A	SITE BOUNDARY	E	0.61	982.	2.6E-06	2.6E-06	2.4E-06		8.1E-09
A	SITE BOUNDARY	ESE	0.50	805.	5.4E-06	5.4E-06	5.0E-06		9.6E-09
A	SITE BOUNDARY	SE	0.29	467.	2.1E-05	2.0E-05	1.9E-05		3.2E-08
A	SITE BOUNDARY	SSE	0.26	418.	2.4E-05	2.4E-05	2.3E-05		4.0E-08
A	MILK COW	NE	1.30	2092.	1.6E-06	1.6E-06	1.4E-06		4.6E-09
A	MILK COW	E	4.20	6759.	1.7E-07	1.6E-07	1.3E-07		2.9E-10
A	MEAT ANIMAL	S	2.32	3734.	2.8E-07	2.8E-07	2.3E-07		6.8E-10
A	MEAT ANIMAL	SSW	2.08	3347.	2.4E-07	2.4E-07	2.0E-07		1.2E-09
A	MEAT ANIMAL	SW	2.27	3653.	1.8E-07	1.8E-07	1.5E-07		7.0E-10
A	MEAT ANIMAL	WSW	2.69	4329.	8.5E-08	8.4E-08	6.8E-08		3.6E-10
A	MEAT ANIMAL	W	3.97	6389.	2.8E-08	2.7E-08	2.1E-08		1.1E-10
A	MEAT ANIMAL	WNW	4.07	6550.	3.8E-08	3.6E-08	2.9E-08		1.1E-10
A	MEAT ANIMAL	NW	1.60	2575.	2.3E-07	2.3E-07	2.0E-07		1.1E-09
A	MEAT ANIMAL	NNW	2.84	4571.	2.7E-07	2.6E-07	2.2E-07		5.5E-10
A	MEAT ANIMAL	N	2.93	4715.	8.4E-07	8.1E-07	6.6E-07		1.0E-09
A	MEAT ANIMAL	NNE	1.65	2655.	1.4E-06	1.4E-06	1.2E-06		2.9E-09
A	MEAT ANIMAL	NE	1.16	1867.	1.9E-06	1.8E-06	1.6E-06		5.6E-09
A	MEAT ANIMAL	ENE	2.41	3879.	5.3E-07	5.2E-07	4.3E-07		1.1E-09
A	MEAT ANIMAL	E	3.12	5021.	2.5E-07	2.4E-07	2.0E-07		4.9E-10
A	MEAT ANIMAL	ESE	1.99	3203.	6.6E-07	6.4E-07	5.4E-07		9.2E-10
A	RESIDENT	S	0.30	483.	6.4E-06	6.4E-06	6.0E-06		2.1E-08
A	RESIDENT	SSW	0.30	483.	4.5E-06	4.5E-06	4.3E-06		3.1E-08
A	RESIDENT	SW	0.40	644.	2.4E-06	2.4E-06	2.2E-06		1.3E-08
A	RESIDENT	WSW	0.40	644.	1.5E-06	1.5E-06	1.4E-06		9.0E-09
A	RESIDENT	W	0.60	966.	5.1E-07	5.1E-07	4.6E-07		2.9E-09
A	RESIDENT	WNW	0.70	1127.	5.3E-07	5.2E-07	4.7E-07		2.4E-09
A	RESIDENT	NW	1.30	2092.	3.2E-07	3.1E-07	2.7E-07		1.6E-09
A	RESIDENT	NNW	2.90	4667.	2.6E-07	2.6E-07	2.1E-07		5.3E-10
A	RESIDENT	N	2.90	4667.	8.5E-07	8.2E-07	6.7E-07		1.0E-09
A	RESIDENT	NNE	1.30	2092.	2.0E-06	2.0E-06	1.7E-06		4.4E-09
A	RESIDENT	NE	1.20	1931.	1.8E-06	1.8E-06	1.5E-06		5.3E-09
A	RESIDENT	ENE	0.90	1448.	2.1E-06	2.1E-06	1.8E-06		6.0E-09
A	RESIDENT	E	0.80	1287.	1.7E-06	1.7E-06	1.5E-06		5.1E-09
A	RESIDENT	ESE	0.60	966.	4.0E-06	3.9E-06	3.6E-06		7.1E-09
A	RESIDENT	SE	0.30	483.	1.9E-05	1.9E-05	1.8E-05		3.0E-08
A	RESIDENT	SSE	0.30	483.	1.9E-05	1.9E-05	1.8E-05		3.2E-08
A	GARDEN	S	0.40	644.	4.0E-06	3.9E-06	3.7E-06		1.3E-08
A	GARDEN	SSW	0.50	805.	2.1E-06	2.1E-06	1.9E-06		1.4E-08
A	GARDEN	SW	0.50	805.	1.7E-06	1.7E-06	1.6E-06		9.1E-09
A	GARDEN	WSW	0.60	966.	8.0E-07	8.0E-07	7.2E-07		4.7E-09
A	GARDEN	W	0.60	966.	5.1E-07	5.1E-07	4.6E-07		2.9E-09

1	A	GARDEN	WNW	0.90	1448.	3.6E-07	3.5E-07	3.1E-07	1.6E-09
2	A	GARDEN	NW	1.30	2092.	3.2E-07	3.1E-07	2.7E-07	1.6E-09
3	A	GARDEN	NNW	3.00	4828.	2.5E-07	2.5E-07	2.0E-07	5.0E-10
4	A	GARDEN	N	2.90	4667.	8.5E-07	8.2E-07	6.7E-07	1.0E-09
5	A	GARDEN	NNE	1.40	2253.	1.8E-06	1.8E-06	1.5E-06	3.9E-09
6	A	GARDEN	NE	1.30	2092.	1.6E-06	1.6E-06	1.4E-06	4.6E-09
7	A	GARDEN	ENE	2.20	3541.	6.0E-07	5.8E-07	4.9E-07	1.3E-09
8	A	GARDEN	E	2.80	4506.	2.9E-07	2.8E-07	2.3E-07	5.9E-10
9	A	GARDEN	ESE	0.60	966.	4.0E-06	3.9E-06	3.6E-06	7.1E-09
10	A	GARDEN	SE	0.30	483.	1.9E-05	1.9E-05	1.8E-05	3.0E-08
11	A	GARDEN	SSE	0.30	483.	1.9E-05	1.9E-05	1.8E-05	3.2E-08
12									
13	VENT AND BUILDING PARAMETERS:								
14	RELEASE HEIGHT (METERS)	0.0		REP. WIND HEIGHT (METERS)	11.0				
15	DIAMETER (METERS)	0.0		BUILDING HEIGHT (METERS)	59.0				
16	EXIT VELOCITY (METERS)	0.0		BLDG. MIN. CRS. SEC. AREA (SQ. METERS)	1370.0				
17					HEAT EMISSION RATE (CAL/SEC)	0.0			
18									
19	AT THE RELEASE HEIGHT:			AT THE MEASURED WIND HEIGHT ( 11.0 METERS):					
20	VENT RELEASE MODE	WIND SPEED (METERS/SEC)		VENT RELEASE MODE	WIND SPEED (METERS/SEC)		WIND SPEED (METERS/SEC)		
21					STABLE CONDITIONS		UNSTABLE/NEUTRAL CONDITIONS		
22	ELEVATED	LESS THAN	0.0	ELEVATED	LESS THAN	0.0	LESS THAN	0.0	
23	MIXED	BETWEEN	0.0 AND 0.0	MIXED	BETWEEN	0.0 AND 0.0	BETWEEN	0.0 AND 0.0	
24	GROUND LEVEL	ABOVE	0.0	GROUND LEVEL	ABOVE	0.0	ABOVE	0.0	
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ATTACHMENT 4

METEOROLOGICAL DATA FOR  
 DIFFUSION ANALYSIS  
 JANUARY 1 - JUNE 30, 1985  
H. B. ROBINSON STEAM ELECTRIC PLANT

The attached tables present the number and frequency of wind direction occurrences by wind speed class as recorded at the on-site meteorological system during the period January 1 through June 30, 1985.

The frequencies are presented as a percent of total occurrences for each stability class as well as a summary for all classes of each sensor elevation. The first eight tables are for the upper sensor elevation (60 meter); the last eight tables are for the lower (10 meter) sensor elevation.

Pertinent information available from the tables is as follows:

1.	<u>Stability</u>	Percent occurrence Pasquill Stability categories based on lower level (10m) wind distribution.					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
	11.5	5.9	5.5	32.6	23.7	11.9	8.9
2.	<u>Wind Speed</u>				<u>10 Meter</u>	<u>60 Meter</u>	
	Average Speed (mph)				5.3	9.5	
	Percent Calm				1.8	0.1	
	Percent Less than 3.5 mph				32.2	5.2	
3.	<u>Wind Direction</u>				<u>10 Meter</u>	<u>60 Meter</u>	
	Prevailing Direction				SW	WSW	
	Percent Occurrence				11.7	12.0	
4.	<u>Data Recovery</u>				<u>10 Meter</u>	<u>60 Meter</u>	
	Percent Good Hours				96.2	98.3	

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

1

SITE=ROBN YEAR=85 PERIOD=JAN-JUN SUMMARY OVER ALL STAB

UPWNSPD

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNSPD
N	0.1/ 0.00	12/ 0.28	68/ 1.59	147/ 3.44	72/ 1.69	8/ 0.19	/	307.1/ 7.19	10.09421
NNE	0.2/ 0.00	17/ 0.40	84/ 1.97	143/ 3.35	89/ 2.08	12/ 0.28	/	345.2/ 8.08	10.15469
NE	0.1/ 0.00	15/ 0.35	56/ 1.31	100/ 2.34	35/ 0.82	3/ 0.07	/	209.1/ 4.90	9.09753
ENE	0.1/ 0.00	10/ 0.23	53/ 1.24	63/ 1.48	16/ 0.37	/	/	142.1/ 3.33	8.31731
E	0.2/ 0.00	24/ 0.56	56/ 1.31	34/ 0.80	5/ 0.12	/	/	119.2/ 2.79	6.31062
ESE	0.1/ 0.00	15/ 0.35	83/ 1.94	38/ 0.89	3/ 0.07	/	/	139.1/ 3.26	6.47280
SE	0.2/ 0.00	19/ 0.44	88/ 2.06	67/ 1.57	11/ 0.26	7/ 0.16	/	192.2/ 4.50	7.70733
SSE	0.1/ 0.00	11/ 0.26	92/ 2.15	93/ 2.18	22/ 0.52	2/ 0.05	/	220.1/ 5.15	8.14607
S	0.2/ 0.00	17/ 0.40	75/ 1.76	159/ 3.72	37/ 0.87	10/ 0.23	1/ 0.02	299.2/ 7.01	9.31370
SSW	0.1/ 0.00	9/ 0.21	76/ 1.78	210/ 4.92	85/ 1.99	21/ 0.49	1/ 0.02	402.1/ 9.42	10.57274
SW	0.0/ 0.00	4/ 0.09	76/ 1.78	219/ 5.13	149/ 3.49	22/ 0.52	/	470.0/11.01	11.20586
WSW	0.1/ 0.00	11/ 0.26	124/ 2.90	234/ 5.48	112/ 2.62	32/ 0.75	/	513.1/12.02	10.56882
W	0.2/ 0.00	25/ 0.59	134/ 3.14	118/ 2.76	25/ 0.59	2/ 0.05	/	304.2/ 7.12	7.77632
WNW	0.1/ 0.00	11/ 0.26	67/ 1.57	63/ 1.48	34/ 0.80	1/ 0.02	/	176.1/ 4.12	8.80154
NW	0.1/ 0.00	9/ 0.21	45/ 1.05	95/ 2.22	59/ 1.38	9/ 0.21	1/ 0.02	218.1/ 5.11	10.38963
NNW	0.1/ 0.00	12/ 0.28	54/ 1.26	84/ 1.97	43/ 1.01	20/ 0.47	/	213.1/ 4.99	10.56200
TOTAL	2.0/ 0.05	221/ 5.18	1231/28.83	1867/43.72	797/18.67	149/ 3.49	3/ 0.07	4270/ 100	9.54947

NUMBER OF BAD RECORDS: 74

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

3

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=A

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	6/ 0.14	17/ 0.40	7/ 0.16	1/ 0.02	/	31.0/ 0.73	10.86833
NNE	/	1/ 0.02	3/ 0.07	11/ 0.26	3/ 0.07	1/ 0.02	/	19.0/ 0.44	10.86595
NE	/	/	2/ 0.05	6/ 0.14	3/ 0.07	/	/	11.0/ 0.26	9.67655
ENE	/	/	11/ 0.26	7/ 0.16	1/ 0.02	/	/	19.0/ 0.44	7.60731
E	/	1/ 0.02	6/ 0.14	6/ 0.14	/	/	/	13.0/ 0.30	6.85214
ESE	/	1/ 0.02	9/ 0.21	10/ 0.23	/	/	/	20.0/ 0.47	7.28447
SE	/	1/ 0.02	22/ 0.52	14/ 0.33	1/ 0.02	/	/	38.0/ 0.89	7.16147
SSE	/	/	18/ 0.42	9/ 0.21	/	/	/	27.0/ 0.63	6.65703
S	/	/	10/ 0.23	23/ 0.54	6/ 0.14	1/ 0.02	/	40.0/ 0.94	9.28922
SSW	/	/	5/ 0.12	24/ 0.56	10/ 0.23	9/ 0.21	1/ 0.02	49.0/ 1.15	13.18062
SW	/	/	6/ 0.14	14/ 0.33	29/ 0.68	7/ 0.16	/	56.0/ 1.31	13.17712
WSW	/	/	6/ 0.14	15/ 0.35	20/ 0.47	9/ 0.21	/	50.0/ 1.17	13.54476
W	/	1/ 0.02	8/ 0.19	19/ 0.44	5/ 0.12	1/ 0.02	/	34.0/ 0.80	10.02560
WNW	/	/	1/ 0.02	9/ 0.21	1/ 0.02	/	/	11.0/ 0.26	10.37892
NW	/	/	4/ 0.09	20/ 0.47	24/ 0.56	4/ 0.09	/	52.0/ 1.22	12.88742
NNW	/	/	1/ 0.02	3/ 0.07	8/ 0.19	6/ 0.14	/	18.0/ 0.42	15.96167
TOTAL	/	5/ 0.12	118/ 2.76	207/ 4.85	118/ 2.76	39/ 0.91	1/ 0.02	488.0/11.43	10.91407

NUMBER OF BAD RECORDS: 2

JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD

RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

5

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=B

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	3/ 0.07	12/ 0.28	1/ 0.02	1/ 0.02	/	17.0/ 0.40	10.38035
NNE	/	/	7/ 0.16	7/ 0.16	5/ 0.12	3/ 0.07	/	22.0/ 0.52	10.88422
NE	/	1/ 0.02	3/ 0.07	5/ 0.12	2/ 0.05	/	/	11.0/ 0.26	8.38298
ENE	/	2/ 0.05	6/ 0.14	5/ 0.12	2/ 0.05	/	/	15.0/ 0.35	7.60269
E	/	2/ 0.05	7/ 0.16	2/ 0.05	/	/	/	11.0/ 0.26	6.29102
ESE	/	2/ 0.05	8/ 0.19	1/ 0.02	/	/	/	11.0/ 0.26	5.50881
SE	/	/	6/ 0.14	4/ 0.09	/	/	/	10.0/ 0.23	7.07520
SSE	/	2/ 0.05	9/ 0.21	4/ 0.09	1/ 0.02	/	/	16.0/ 0.37	6.73774
S	/	/	1/ 0.02	4/ 0.09	1/ 0.02	/	/	6.0/ 0.14	9.01562
SSW	/	/	7/ 0.16	4/ 0.09	2/ 0.05	1/ 0.02	/	14.0/ 0.33	9.48569
SW	/	/	3/ 0.07	9/ 0.21	8/ 0.19	2/ 0.05	/	22.0/ 0.52	11.89609
WSW	/	/	7/ 0.16	9/ 0.21	12/ 0.28	2/ 0.05	/	30.0/ 0.70	12.22277
W	/	/	9/ 0.21	10/ 0.23	5/ 0.12	/	/	24.0/ 0.56	8.96420
WNW	/	/	5/ 0.12	10/ 0.23	4/ 0.09	/	/	19.0/ 0.44	10.20598
NW	/	/	1/ 0.02	12/ 0.28	2/ 0.05	/	/	15.0/ 0.35	10.26846
NNW	/	/	/	8/ 0.19	/	3/ 0.07	/	11.0/ 0.26	12.90948
TOTAL	/	9/ 0.21	82/ 1.92	106/ 2.48	45/ 1.05	12/ 0.28	/	254.0/ 5.95	9.64922

NUMBER OF BAD RECORDS: 2

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

7

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=C

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	/	5/ 0.12	3/ 0.07	3/ 0.07	/	/	11.0/ 0.26	8.81501
NNE	/	/	5/ 0.12	2/ 0.05	4/ 0.09	3/ 0.07	/	14.0/ 0.33	12.00123
NE	/	1/ 0.02	/	6/ 0.14	1/ 0.02	/	/	8.0/ 0.19	9.43805
ENE	/	1/ 0.02	8/ 0.19	4/ 0.09	/	/	/	13.0/ 0.30	6.50068
E	/	3/ 0.07	6/ 0.14	2/ 0.05	1/ 0.02	/	/	12.0/ 0.28	6.11556
ESE	/	1/ 0.02	3/ 0.07	3/ 0.07	/	/	/	7.0/ 0.16	6.72717
SE	/	1/ 0.02	1/ 0.02	3/ 0.07	1/ 0.02	/	/	6.0/ 0.14	8.39030
SSE	/	1/ 0.02	8/ 0.19	3/ 0.07	/	/	/	12.0/ 0.28	6.46295
S	/	/	3/ 0.07	11/ 0.26	1/ 0.02	/	/	15.0/ 0.35	9.04563
SSW	/	/	1/ 0.02	8/ 0.19	4/ 0.09	1/ 0.02	/	14.0/ 0.33	11.84163
SW	/	/	7/ 0.16	11/ 0.26	5/ 0.12	/	/	23.0/ 0.54	9.82592
WSW	/	/	7/ 0.16	8/ 0.19	7/ 0.16	2/ 0.05	/	24.0/ 0.56	11.51339
W	/	/	18/ 0.42	10/ 0.23	3/ 0.07	/	/	31.0/ 0.73	7.89373
WNW	/	/	8/ 0.19	7/ 0.16	3/ 0.07	/	/	18.0/ 0.42	8.29118
NW	/	/	4/ 0.09	10/ 0.23	6/ 0.14	1/ 0.02	/	21.0/ 0.49	10.56136
NNW	/	/	1/ 0.02	4/ 0.09	1/ 0.02	1/ 0.02	/	7.0/ 0.16	10.49572
TOTAL	/	8/ 0.19	85/ 1.99	95/ 2.22	40/ 0.94	8/ 0.19	/	236.0/ 5.53	9.17949

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:51 FRIDAY, JULY 19, 1985

9

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=D

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	3/ 0.07	25/ 0.59	42/ 0.98	45/ 1.05	6/ 0.14	/	121.0/ 2.83	11.21566
NNE	/	3/ 0.07	33/ 0.77	88/ 2.06	77/ 1.80	5/ 0.12	/	206.0/ 4.82	11.30948
NE	/	3/ 0.07	26/ 0.61	68/ 1.59	27/ 0.63	3/ 0.07	/	127.0/ 2.97	10.11726
ENE	/	5/ 0.12	17/ 0.40	22/ 0.52	11/ 0.26	/	/	55.0/ 1.29	8.82744
E	/	11/ 0.26	24/ 0.56	15/ 0.35	3/ 0.07	/	/	53.0/ 1.24	6.45134
ESE	/	5/ 0.12	27/ 0.63	16/ 0.37	3/ 0.07	/	/	51.0/ 1.19	7.07216
SE	/	8/ 0.19	17/ 0.40	21/ 0.49	9/ 0.21	1/ 0.02	/	56.0/ 1.31	8.30266
SSE	/	4/ 0.09	21/ 0.49	25/ 0.59	15/ 0.35	/	/	65.0/ 1.52	9.19331
S	/	4/ 0.09	12/ 0.28	22/ 0.52	11/ 0.26	6/ 0.14	1/ 0.02	56.0/ 1.31	11.02783
SSW	/	4/ 0.09	16/ 0.37	29/ 0.68	21/ 0.49	8/ 0.19	/	78.0/ 1.83	11.14837
SW	/	1/ 0.02	17/ 0.40	50/ 1.17	46/ 1.08	13/ 0.30	/	127.0/ 2.97	12.67081
WSW	/	6/ 0.14	39/ 0.91	55/ 1.29	35/ 0.82	18/ 0.42	/	153.0/ 3.58	11.10010
W	/	10/ 0.23	34/ 0.80	21/ 0.49	5/ 0.12	1/ 0.02	/	71.0/ 1.66	7.32032
WNW	/	6/ 0.14	17/ 0.40	10/ 0.23	5/ 0.12	1/ 0.02	/	39.0/ 0.91	7.81188
NW	/	3/ 0.07	12/ 0.28	22/ 0.52	13/ 0.30	4/ 0.09	1/ 0.02	55.0/ 1.29	10.64623
NNW	/	1/ 0.02	19/ 0.44	30/ 0.70	20/ 0.47	9/ 0.21	/	79.0/ 1.85	11.71408
TOTAL	/	77/ 1.80	356/ 8.34	536/ 12.55	346/ 8.10	75/ 1.76	2/ 0.05	1392/ 32.60	10.31061

NUMBER OF BAD RECORDS: 28

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:51 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDSPP  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

11  
 15:51 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=E

UPWNDSPP

UPWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDSPP
N	/	1/ 0.02	12/ 0.28	35/ 0.82	11/ 0.26	/	/	59.0/ 1.38	9.76420
NNE	/	4/ 0.09	14/ 0.33	21/ 0.49	/	/	/	39.0/ 0.91	7.50717
NE	/	4/ 0.09	14/ 0.33	12/ 0.28	2/ 0.05	/	/	32.0/ 0.75	7.40422
ENE	/	1/ 0.02	5/ 0.12	20/ 0.47	1/ 0.02	/	/	27.0/ 0.63	9.32256
E	/	5/ 0.12	2/ 0.05	6/ 0.14	1/ 0.02	/	/	14.0/ 0.33	7.06424
ESE	/	2/ 0.05	12/ 0.28	5/ 0.12	/	/	/	19.0/ 0.44	6.59716
SE	/	2/ 0.05	29/ 0.68	17/ 0.40	/	6/ 0.14	/	54.0/ 1.26	8.26925
SSE	/	1/ 0.02	11/ 0.26	28/ 0.66	4/ 0.09	2/ 0.05	/	46.0/ 1.08	9.42355
S	/	2/ 0.05	23/ 0.54	46/ 1.08	17/ 0.40	3/ 0.07	/	91.0/ 2.13	9.99822
SSW	/	2/ 0.05	9/ 0.21	76/ 1.78	40/ 0.94	2/ 0.05	/	129.0/ 3.02	11.18776
SW	/	2/ 0.05	17/ 0.40	68/ 1.59	50/ 1.17	/	/	137.0/ 3.21	10.85652
WSW	/	1/ 0.02	31/ 0.73	82/ 1.92	22/ 0.52	1/ 0.02	/	137.0/ 3.21	9.66359
W	/	3/ 0.07	37/ 0.87	44/ 1.03	5/ 0.12	/	/	89.0/ 2.08	7.94892
WNW	/	2/ 0.05	17/ 0.40	21/ 0.49	14/ 0.33	/	/	54.0/ 1.26	9.65791
NW	/	3/ 0.07	5/ 0.12	13/ 0.30	9/ 0.21	/	/	30.0/ 0.70	9.28242
NNW	/	5/ 0.12	9/ 0.21	21/ 0.49	10/ 0.23	1/ 0.02	/	46.0/ 1.08	9.46306
TOTAL	/	40/ 0.94	247/ 5.78	515/ 12.06	186/ 4.36	15/ 0.35	/	1003/ 23.49	9.54023

NUMBER OF BAD RECORDS: 2

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:51 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:51 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=F

UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	/	2/ 0.05	9/ 0.21	26/ 0.61	3/ 0.07	/	/	40.0/ 0.94	9.04327
NNE	/	4/ 0.09	10/ 0.23	12/ 0.28	/	/	/	26.0/ 0.61	6.61869
NE	/	3/ 0.07	6/ 0.14	2/ 0.05	/	/	/	11.0/ 0.26	5.38451
ENE	/	/	4/ 0.09	4/ 0.09	1/ 0.02	/	/	9.0/ 0.21	8.66174
E	/	1/ 0.02	5/ 0.12	1/ 0.02	/	/	/	7.0/ 0.16	5.04300
ESE	/	2/ 0.05	10/ 0.23	2/ 0.05	/	/	/	14.0/ 0.33	5.27525
SE	/	3/ 0.07	5/ 0.12	1/ 0.02	/	/	/	9.0/ 0.21	5.14887
SSE	/	/	14/ 0.33	18/ 0.42	2/ 0.05	/	/	34.0/ 0.80	8.01871
S	/	3/ 0.07	16/ 0.37	32/ 0.75	1/ 0.02	/	/	52.0/ 1.22	7.86803
SSW	/	/	21/ 0.49	45/ 1.05	3/ 0.07	/	/	69.0/ 1.62	8.48202
SW	/	/	12/ 0.28	42/ 0.98	9/ 0.21	/	/	63.0/ 1.48	9.59501
WSW	/	1/ 0.02	15/ 0.35	41/ 0.96	14/ 0.33	/	/	71.0/ 1.66	9.94934
W	/	2/ 0.05	13/ 0.30	13/ 0.30	2/ 0.05	/	/	30.0/ 0.70	7.52265
WNW	/	/	11/ 0.26	4/ 0.09	7/ 0.16	/	/	22.0/ 0.52	9.11668
NW	/	/	7/ 0.16	13/ 0.30	5/ 0.12	/	/	25.0/ 0.59	9.38336
NNW	/	1/ 0.02	9/ 0.21	10/ 0.23	4/ 0.09	/	/	24.0/ 0.56	8.80162
TOTAL	/	22/ 0.52	167/ 3.91	266/ 6.23	51/ 1.19	/	/	506.0/11.85	8.45155

NUMBER OF BAD RECORDS: 0

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:51 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=G

## UPWINDSPD

UPWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWINDSPD
N	0.2/ 0.00	6/ 0.14	8/ 0.19	12/ 0.28	2/ 0.05	/	/	28.2/ 0.66	6.90711
NNE	0.2/ 0.00	5/ 0.12	12/ 0.28	2/ 0.05	/	/	/	19.2/ 0.45	5.03680
NE	0.1/ 0.00	3/ 0.07	5/ 0.12	1/ 0.02	/	/	/	9.1/ 0.21	5.16512
ENE	0.0/ 0.00	1/ 0.02	2/ 0.05	1/ 0.02	/	/	/	4.0/ 0.09	5.86960
E	0.0/ 0.00	1/ 0.02	6/ 0.14	2/ 0.05	/	/	/	9.0/ 0.21	4.90430
ESE	0.1/ 0.00	2/ 0.05	14/ 0.33	1/ 0.02	/	/	/	17.1/ 0.40	5.09197
SE	0.1/ 0.00	4/ 0.09	8/ 0.19	7/ 0.16	/	/	/	19.1/ 0.45	6.80772
SSE	0.1/ 0.00	3/ 0.07	11/ 0.26	6/ 0.14	/	/	/	20.1/ 0.47	6.17369
S	0.3/ 0.01	8/ 0.19	10/ 0.23	21/ 0.49	/	/	/	39.3/ 0.92	7.34516
SSW	0.1/ 0.00	3/ 0.07	17/ 0.40	24/ 0.56	5/ 0.12	/	/	49.1/ 1.15	8.32459
SW	0.0/ 0.00	1/ 0.02	14/ 0.33	25/ 0.59	2/ 0.05	/	/	42.0/ 0.98	8.09770
WSW	0.1/ 0.00	3/ 0.07	19/ 0.44	24/ 0.56	2/ 0.05	/	/	48.1/ 1.13	7.77450
W	0.3/ 0.01	9/ 0.21	15/ 0.35	1/ 0.02	/	/	/	25.3/ 0.59	4.42398
WNW	0.1/ 0.00	3/ 0.07	8/ 0.19	2/ 0.05	/	/	/	13.1/ 0.31	5.02254
NW	0.1/ 0.00	3/ 0.07	12/ 0.28	5/ 0.12	/	/	/	20.1/ 0.47	6.03514
NNW	0.2/ 0.00	5/ 0.12	15/ 0.35	8/ 0.19	/	/	/	28.2/ 0.66	6.24336
TOTAL	2.0/ 0.05	60/ 1.41	176/ 4.12	142/ 3.33	11/ 0.26	/	/	391.0/ 9.16	6.73618

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN SUMMARY OVER ALL STAB

LOWNDSPD

LOWNDDEG

	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	2.9/ 0.07	49/ 1.17	109/ 2.61	38/ 0.91	/	/	/	198.9/ 4.76	5.07608
NNE	1.7/ 0.04	29/ 0.69	151/ 3.61	107/ 2.56	6/ 0.14	/	/	294.7/ 7.05	6.77677
NE	2.0/ 0.05	34/ 0.81	116/ 2.78	43/ 1.03	1/ 0.02	/	/	196.0/ 4.69	5.80919
ENE	1.5/ 0.04	25/ 0.60	89/ 2.13	20/ 0.48	/	/	/	135.5/ 3.24	5.40580
E	1.4/ 0.03	24/ 0.57	54/ 1.29	4/ 0.10	/	/	/	83.4/ 2.00	4.42096
ESE	1.7/ 0.04	29/ 0.69	58/ 1.39	1/ 0.02	/	/	/	89.7/ 2.15	4.19726
SE	2.0/ 0.05	35/ 0.84	106/ 2.54	31/ 0.74	2/ 0.05	/	/	176.0/ 4.21	5.50312
SSE	4.2/ 0.10	73/ 1.75	131/ 3.13	22/ 0.53	1/ 0.02	/	/	231.2/ 5.53	4.74746
S	11.0/ 0.26	189/ 4.52	165/ 3.95	68/ 1.63	12/ 0.29	/	/	445.0/10.65	4.77789
SSW	8.8/ 0.21	151/ 3.61	177/ 4.23	112/ 2.68	21/ 0.50	1/ 0.02	/	470.8/11.26	5.67399
SW	7.0/ 0.17	120/ 2.87	196/ 4.69	135/ 3.23	30/ 0.72	/	/	488.0/11.67	6.27436
WSW	6.1/ 0.15	105/ 2.51	149/ 3.56	77/ 1.84	6/ 0.14	/	/	343.1/ 8.21	5.36865
W	5.4/ 0.13	92/ 2.20	99/ 2.37	42/ 1.00	2/ 0.05	/	/	240.4/ 5.75	4.66760
WNW	5.6/ 0.13	96/ 2.30	74/ 1.77	27/ 0.65	/	/	/	202.6/ 4.85	3.95795
NW	6.3/ 0.15	109/ 2.61	94/ 2.25	67/ 1.60	4/ 0.10	/	/	280.3/ 6.71	4.94000
NNW	6.5/ 0.16	112/ 2.68	122/ 2.92	53/ 1.27	11/ 0.26	/	/	304.5/ 7.28	5.19718
TOTAL	74.0/ 1.77	1272/30.43	1890/45.22	847/20.26	96/ 2.30	1/ 0.02	/	4180/ 100	5.33056

NUMBER OF BAD RECORDS: 164

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

3

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=A

LOWNDSPD

LOWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	4/ 0.10	11/ 0.26	/	/	/	15.0/ 0.36	7.61936
NNE	/	1/ 0.02	12/ 0.29	12/ 0.29	1/ 0.02	/	/	26.0/ 0.62	7.32930
NE	/	/	6/ 0.14	3/ 0.07	/	/	/	9.0/ 0.22	6.42358
ENE	/	/	18/ 0.43	3/ 0.07	/	/	/	21.0/ 0.50	6.11337
E	/	1/ 0.02	12/ 0.29	1/ 0.02	/	/	/	14.0/ 0.33	5.75168
ESE	/	1/ 0.02	15/ 0.36	/	/	/	/	16.0/ 0.38	5.12131
SE	/	1/ 0.02	47/ 1.12	3/ 0.07	/	/	/	51.0/ 1.22	5.84050
SSE	/	1/ 0.02	23/ 0.55	1/ 0.02	/	/	/	25.0/ 0.60	5.62014
S	/	/	24/ 0.57	17/ 0.41	2/ 0.05	/	/	43.0/ 1.03	7.83066
SSW	/	/	21/ 0.50	25/ 0.60	13/ 0.31	1/ 0.02	/	60.0/ 1.44	9.94098
SW	/	/	11/ 0.26	39/ 0.93	8/ 0.19	/	/	58.0/ 1.39	9.93600
WSW	/	/	8/ 0.19	23/ 0.55	3/ 0.07	/	/	34.0/ 0.81	8.86816
W	/	1/ 0.02	6/ 0.14	19/ 0.45	1/ 0.02	/	/	27.0/ 0.65	8.07502
WNW	/	/	7/ 0.17	8/ 0.19	/	/	/	15.0/ 0.36	7.28438
NW	/	/	8/ 0.19	37/ 0.89	2/ 0.05	/	/	47.0/ 1.12	8.87429
NNW	/	/	4/ 0.10	15/ 0.36	2/ 0.05	/	/	21.0/ 0.50	9.43408
TOTAL	/	6/ 0.14	226/ 5.41	217/ 5.19	32/ 0.77	1/ 0.02	/	482.0/11.53	7.97793

NUMBER OF BAD RECORDS: 8

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

5

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=B

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	11/ 0.26	8/ 0.19	/	/	/	19.0/ 0.45	7.20009
NNE	/	/	11/ 0.26	5/ 0.12	3/ 0.07	/	/	19.0/ 0.45	8.04262
NE	/	/	10/ 0.24	2/ 0.05	/	/	/	12.0/ 0.29	6.18781
ENE	/	2/ 0.05	10/ 0.24	3/ 0.07	/	/	/	15.0/ 0.36	5.74843
E	/	3/ 0.07	3/ 0.07	1/ 0.02	/	/	/	7.0/ 0.17	4.25927
ESE	/	2/ 0.05	11/ 0.26	/	/	/	/	13.0/ 0.31	4.40861
SE	/	/	8/ 0.19	4/ 0.10	/	/	/	12.0/ 0.29	5.96270
SSE	/	2/ 0.05	11/ 0.26	1/ 0.02	/	/	/	14.0/ 0.33	5.47655
S	/	1/ 0.02	4/ 0.10	3/ 0.07	/	/	/	8.0/ 0.19	6.78672
SSW	/	/	8/ 0.19	6/ 0.14	1/ 0.02	/	/	15.0/ 0.36	7.79834
SW	/	/	7/ 0.17	16/ 0.38	4/ 0.10	/	/	27.0/ 0.65	9.38185
WSW	/	/	12/ 0.29	10/ 0.24	/	/	/	22.0/ 0.53	7.68566
W	/	1/ 0.02	16/ 0.38	9/ 0.22	/	/	/	26.0/ 0.62	6.76107
WNW	/	1/ 0.02	7/ 0.17	8/ 0.19	/	/	/	16.0/ 0.38	7.36410
NW	/	/	7/ 0.17	6/ 0.14	/	/	/	13.0/ 0.31	7.07661
NNW	/	/	2/ 0.05	5/ 0.12	1/ 0.02	/	/	8.0/ 0.19	9.43805
TOTAL	/	12/ 0.29	138/ 3.30	87/ 2.08	9/ 0.22	/	/	246.0/ 5.89	7.07406

NUMBER OF BAD RECORDS: 10

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=C

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	/	7/ 0.17	1/ 0.02	/	/	/	8.0/ 0.19	5.44856
NNE	/	/	7/ 0.17	8/ 0.19	1/ 0.02	/	/	16.0/ 0.38	8.19472
NE	/	2/ 0.05	7/ 0.17	1/ 0.02	/	/	/	10.0/ 0.24	5.92629
ENE	/	/	7/ 0.17	1/ 0.02	/	/	/	8.0/ 0.19	5.80082
E	/	5/ 0.12	7/ 0.17	1/ 0.02	/	/	/	13.0/ 0.31	4.46633
ESE	/	3/ 0.07	5/ 0.12	/	/	/	/	8.0/ 0.19	4.43485
SE	/	1/ 0.02	9/ 0.22	2/ 0.05	/	/	/	12.0/ 0.29	5.64866
SSE	/	1/ 0.02	9/ 0.22	/	/	/	/	10.0/ 0.24	5.79289
S	/	/	11/ 0.26	8/ 0.19	/	/	/	19.0/ 0.45	7.08951
SSW	/	/	7/ 0.17	12/ 0.29	1/ 0.02	/	/	20.0/ 0.48	8.21744
SW	/	1/ 0.02	6/ 0.14	9/ 0.22	2/ 0.05	/	/	18.0/ 0.43	8.50795
WSW	/	/	18/ 0.43	7/ 0.17	/	/	/	25.0/ 0.60	6.64065
W	/	2/ 0.05	14/ 0.33	6/ 0.14	/	/	/	22.0/ 0.53	6.00073
WNW	/	/	14/ 0.33	5/ 0.12	/	/	/	19.0/ 0.45	6.18906
NW	/	/	11/ 0.26	7/ 0.17	/	/	/	18.0/ 0.43	7.25332
NNW	/	/	3/ 0.07	2/ 0.05	/	/	/	5.0/ 0.12	7.55377
TOTAL	/	15/ 0.36	142/ 3.40	70/ 1.67	4/ 0.10	/	/	231.0/ 5.53	6.64837

NUMBER OF BAD RECORDS: 5

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=D

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	/	9/ 0.22	60/ 1.44	15/ 0.36	/	/	/	84.0/ 2.01	5.65163
NNE	/	11/ 0.26	113/ 2.70	82/ 1.96	1/ 0.02	/	/	207.0/ 4.95	6.96113
NE	/	14/ 0.33	72/ 1.72	37/ 0.89	1/ 0.02	/	/	124.0/ 2.97	6.42956
ENE	/	14/ 0.33	40/ 0.96	13/ 0.31	/	/	/	67.0/ 1.60	5.67921
E	/	11/ 0.26	27/ 0.65	1/ 0.02	/	/	/	39.0/ 0.93	4.32396
ESE	/	15/ 0.36	24/ 0.57	1/ 0.02	/	/	/	40.0/ 0.96	4.27047
SE	/	13/ 0.31	33/ 0.79	18/ 0.43	/	/	/	64.0/ 1.53	5.75704
SSE	/	11/ 0.26	38/ 0.91	18/ 0.43	/	/	/	67.0/ 1.60	5.83899
S	/	11/ 0.26	36/ 0.86	21/ 0.50	8/ 0.19	/	/	76.0/ 1.82	7.21325
SSW	/	7/ 0.17	30/ 0.72	47/ 1.12	6/ 0.14	/	/	90.0/ 2.15	7.85096
SW	/	16/ 0.38	68/ 1.63	52/ 1.24	16/ 0.38	/	/	152.0/ 3.64	7.49124
WSW	/	14/ 0.33	53/ 1.27	35/ 0.84	3/ 0.07	/	/	105.0/ 2.51	6.60854
W	/	22/ 0.53	33/ 0.79	6/ 0.14	1/ 0.02	/	/	62.0/ 1.48	4.62220
WNW	/	13/ 0.31	20/ 0.48	6/ 0.14	/	/	/	39.0/ 0.93	4.70377
NW	/	5/ 0.12	31/ 0.74	14/ 0.33	1/ 0.02	/	/	51.0/ 1.22	6.13346
NNW	/	6/ 0.14	51/ 1.22	30/ 0.72	7/ 0.17	/	/	94.0/ 2.25	7.36615
TOTAL	/	192/ 4.59	729/17.44	396/ 9.47	44/ 1.05	/	/	1361/32.56	6.43291

NUMBER OF BAD RECORDS: 59

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=E

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.2/ 0.00	17/ 0.41	26/ 0.62	3/ 0.07	/	/	/	46.2/ 1.11	4.18048
NNE	0.1/ 0.00	12/ 0.29	8/ 0.19	/	/	/	/	20.1/ 0.48	3.56106
NE	0.1/ 0.00	13/ 0.31	18/ 0.43	/	/	/	/	31.1/ 0.74	3.95240
ENE	0.1/ 0.00	6/ 0.14	14/ 0.33	/	/	/	/	20.1/ 0.48	4.11441
E	0.0/ 0.00	3/ 0.07	5/ 0.12	/	/	/	/	8.0/ 0.19	3.41421
ESE	0.1/ 0.00	6/ 0.14	3/ 0.07	/	/	/	/	9.1/ 0.22	2.75870
SE	0.2/ 0.00	17/ 0.41	9/ 0.22	4/ 0.10	2/ 0.05	/	/	32.2/ 0.77	4.87510
SSE	0.3/ 0.01	26/ 0.62	43/ 1.03	2/ 0.05	1/ 0.02	/	/	72.3/ 1.73	4.44782
S	0.4/ 0.01	41/ 0.98	80/ 1.91	19/ 0.45	2/ 0.05	/	/	142.4/ 3.41	4.94535
SSW	0.6/ 0.01	52/ 1.24	87/ 2.08	22/ 0.53	/	/	/	161.6/ 3.87	4.83590
SW	0.5/ 0.01	45/ 1.08	75/ 1.79	19/ 0.45	/	/	/	139.5/ 3.34	4.84205
WSW	0.5/ 0.01	43/ 1.03	47/ 1.12	2/ 0.05	/	/	/	92.5/ 2.21	3.97419
W	0.4/ 0.01	38/ 0.91	26/ 0.62	2/ 0.05	/	/	/	66.4/ 1.59	3.56679
WNW	0.2/ 0.00	19/ 0.45	22/ 0.53	/	/	/	/	41.2/ 0.99	3.49203
NW	0.2/ 0.00	16/ 0.38	29/ 0.69	3/ 0.07	1/ 0.02	/	/	49.2/ 1.18	4.55275
NNW	0.2/ 0.00	17/ 0.41	38/ 0.91	1/ 0.02	1/ 0.02	/	/	57.2/ 1.37	4.62906
TOTAL	4.0/ 0.10	371/ 8.88	530/ 12.68	77/ 1.84	7/ 0.17	/	/	989.0/ 23.66	4.44850

NUMBER OF BAD RECORDS: 16

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:50 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=F

LOWNDSPD

LOWNDDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	0.7/ 0.02	14/ 0.33	1/ 0.02	/	/	/	/	15.7/ 0.38	2.04081
NNE	0.1/ 0.00	2/ 0.05	/	/	/	/	/	2.1/ 0.05	2.01886
NE	0.2/ 0.00	4/ 0.10	3/ 0.07	/	/	/	/	7.2/ 0.17	3.24930
ENE	0.2/ 0.00	3/ 0.07	/	/	/	/	/	3.2/ 0.08	2.10260
E	0.1/ 0.00	1/ 0.02	/	/	/	/	/	1.1/ 0.03	2.56566
ESE	/	/	/	/	/	/	/	/	/
SE	0.1/ 0.00	2/ 0.05	/	/	/	/	/	2.1/ 0.05	1.17717
SSE	1.3/ 0.03	25/ 0.60	7/ 0.17	/	/	/	/	33.3/ 0.80	2.78641
S	4.1/ 0.10	79/ 1.89	7/ 0.17	/	/	/	/	90.1/ 2.16	2.42711
SSW	2.6/ 0.06	50/ 1.20	24/ 0.57	/	/	/	/	76.6/ 1.83	2.78576
SW	1.8/ 0.04	34/ 0.81	27/ 0.65	/	/	/	/	62.8/ 1.50	3.37907
WSW	1.6/ 0.04	30/ 0.72	11/ 0.26	/	/	/	/	42.6/ 1.02	2.47540
W	1.0/ 0.02	19/ 0.45	3/ 0.07	/	/	/	/	23.0/ 0.55	2.18151
WNW	1.6/ 0.04	31/ 0.74	4/ 0.10	/	/	/	/	36.6/ 0.88	2.23288
NW	1.6/ 0.04	30/ 0.72	8/ 0.19	/	/	/	/	39.6/ 0.95	2.59387
NNW	2.2/ 0.05	43/ 1.03	18/ 0.43	/	/	/	/	63.2/ 1.51	3.03236
TOTAL	19.0/ 0.45	367/ 8.78	113/ 2.70	/	/	/	/	499.0/11.94	2.68632

NUMBER OF BAD RECORDS: 7

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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15:50 FRIDAY, JULY 19, 1985

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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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 15:50 FRIDAY, JULY 19, 1985

SITE=ROBN YEAR=85 PERIOD=JAN-JUN STAB=G

LOWNDSPD

LOWNDEG	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE LOWNDSPD
N	1.5/ 0.04	9/ 0.22	/	/	/	/	/	10.5/ 0.25	1.24623
NNE	0.5/ 0.01	3/ 0.07	/	/	/	/	/	3.5/ 0.08	1.03025
NE	0.2/ 0.00	1/ 0.02	/	/	/	/	/	1.2/ 0.03	0.82677
ENE	/	/	/	/	/	/	/	/	
E	/	/	/	/	/	/	/	/	
ESE	0.3/ 0.01	2/ 0.05	/	/	/	/	/	2.3/ 0.06	1.78891
SE	0.2/ 0.00	1/ 0.02	/	/	/	/	/	1.2/ 0.03	0.71560
SSE	1.2/ 0.03	7/ 0.17	/	/	/	/	/	8.2/ 0.20	1.52512
S	9.4/ 0.22	57/ 1.36	3/ 0.07	/	/	/	/	69.4/ 1.66	1.78046
SSW	6.9/ 0.17	42/ 1.00	/	/	/	/	/	48.9/ 1.17	1.65210
SW	4.0/ 0.10	24/ 0.57	2/ 0.05	/	/	/	/	30.0/ 0.72	1.57388
WSW	3.0/ 0.07	18/ 0.43	/	/	/	/	/	21.0/ 0.50	1.53050
W	1.5/ 0.04	9/ 0.22	1/ 0.02	/	/	/	/	11.5/ 0.28	1.46953
WNW	5.3/ 0.13	32/ 0.77	/	/	/	/	/	37.3/ 0.89	1.21159
NW	9.6/ 0.23	58/ 1.39	/	/	/	/	/	67.6/ 1.62	1.49653
NNW	7.6/ 0.18	46/ 1.10	6/ 0.14	/	/	/	/	59.6/ 1.43	2.01690
TOTAL	51.0/ 1.22	309/ 7.39	12/ 0.29	/	/	/	/	372.0/ 8.90	1.61918

NUMBER OF BAD RECORDS: 19

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

15:50 FRIDAY, JULY 19, 1985

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DMB

CP&L

Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT  
POST OFFICE BOX 790  
HARTSVILLE, SOUTH CAROLINA 29550

AUG 22 1985

Robinson File No: 12510E

Serial: RNP/85-2132

50-261/D

Dr. J. N. Grace  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30323

~~SUBJECT: Effluent and Waste Disposal Semi-Annual Report~~

Dear Dr. Grace:

The Effluent and Waste Disposal Semi-Annual Report for January through June, 1985, is enclosed as required by 10CFR50.36a (a) (2).

Please contact me if you need additional information.

Very truly yours,



R. E. Morgan  
General Manager

H. B. Robinson S. E. Plant

ALT/tk

Enclosure

- cc: R. A. Hartfield (2)
- M. D. Hill (1)
- A. L. Taylor (2)
- J. M. Taylor (25)
- B. H. Webster (4)

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