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 AUTH. NAME AUTHOR AFFILIATION  
 MORGAN, R.E. Carolina Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

GRACE, J.N. Region 2, Office of Director

SUBJECT: "Effluent & Waste Disposal Semiannual Rept, Jul-Dec 1984."  
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CAROLINA POWER & LIGHT COMPANY  
Carolina Power & Light Company

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

FEB 14 1985

Robinson File No: 12510E

Serial: RNP/85-300

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 July through December, 1984, 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. C. DeYoung (25)  
J. L. Harness (1)  
R. A. Hartfield (2)  
A. L. Taylor (2)  
B. H. Webster (4)

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EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

2nd SIX MONTHS REPORT 1984

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  $\sum \frac{Q_i}{MPC_i} \leq 5.0E-04 \text{ m}^3/\text{sec}.$   
 $Q_i$  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

3rd Quarter N/A MEV  
4th Quarter N/A 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: 1.02 E02
2. Total Time Period for Batch Releases: 2.71 E04 Min.
3. Maximum Time Period for a Batch Release: 1.60 E03 Min.
4. Average Time Period for Batch Releases: 2.66 E02 Min.
5. Minimum Time Period for a Batch Release: 1.40 E01 Min.
6. Average Stream Flow during Periods of Release of Effluent into a Flowing Stream: 2.22 E05 GPM

B. Gaseous

1. Number of Batch Releases: 3.50 E01
2. Total Time Period for Batch Releases: 2.49 E05 Min.
3. Maximum Time Period for a Batch Release: 1.01 E04 Min.
4. Average Time Period for a Batch Release: 7.11 E03 Min.
5. Minimum Time Period for a Batch Release: 8.80 E01 Min.

6. ABNORMAL RELEASES

- A. Liquid - 0  
B. Gaseous - 0

7. H. B. Robinson shut down in January for Steam Generator Replacement and Refueling.

TABLE 1AEFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	<u>UNITS</u>	<u>3rd QUARTER</u>	<u>4rd QUARTER</u>	<u>% ERROR</u>
<u>A. FISSION AND ACTIVATION GASES</u>				
1. Total Release	Ci	0	0	1.00E01
2. Average Release Rate	uCi/sec	0	0	
3. % of Tech. Spec. Limit	%	0	0	
4. Maximum Release Rate/Hour	uCi/sec	0	0	
<u>B. IODINES</u>				
1. Total Iodine-131	Ci	0	0	1.00E01
2. Average Release Rate	uCi/sec	0	0	
3. % of Tech. Spec. Limit	%	0	0	
4. Total Iodine	Ci	0	0	
<u>C. PARTICULATES</u>				
1. Particulates $T_{1/2} > 8$ days	Ci	6.39E-06	8.67E-06	1.00E01
2. Average Release Rate	uCi/sec	8.04E-07	1.09E-06	
3. % of Tech. Spec. Limit	%	3.62E-03	4.93E-03	
4. Gross Alpha Radioactivity	Ci	0	0	
5. Total Gross Radioactivity	Ci	6.39E-06	8.67E-06	
<u>D. TRITIUM</u>				
1. Total Release	Ci	4.03E-01	9.19E-01	1.00E01
2. Average Release Rate	uCi/sec	5.07E-02	1.16E-01	
3. % of Tech. Spec. Limit	%	5.07E-04	1.16E-03	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984

GASEOUS EFFLUENTS - ELEVATED RELEASES

No elevated releases made at H. B. Robinson.

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984

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

		CONTINUOUS MODE		BATCH MODE	
	UNITS	3rd QUARTER	4th QUARTER	3rd QUARTER	4th QUARTER
1. FISSION GASES					
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	0
Xe-133	Ci	0	0	0	0
Xe-133m	Ci	0	0	0	0
Xe-135	Ci	0	0	0	0
Xe-135m	Ci	0	0	0	0
Total for Period	Ci	0	0	0	0
2. IODINES					
I-131	Ci	0	0	0	0
I-133	Ci	0	0	0	0
I-135	Ci	0	0	0	0
Total for Period	Ci	0	0	0	0
3. PARTICULATES					
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	0	0
Co-58	Ci	0	0	1.85E-08	0
Co-60	Ci	5.83E-06	7.95E-06	1.25E-05	3.09E-05
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	1.84E-06	2.61E-05
I-131	Ci	0	0	0	0
Cs-134	Ci	0	0	0	1.16E-05
Cs-136	Ci	0	0	0	0
Cs-137	Ci	5.62E-07	7.24E-07	0	2.79E-05
Cs-138	Ci	0	0	0	0
Ba-139	Ci	0	0	0	0
Ce-139	Ci	0	0	0	0
Total for Period	Ci	6.39E-06	8.67E-06	1.44E-05	9.65E-05

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

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNITS	3rd QUARTER	4th QUARTER	% ERROR
<u>A. FISSION AND ACTIVATION PRODUCTS</u>				
1. Total Release	Ci	<u>1.98E-02</u>	<u>3.23E-02</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>2.92E-10</u>	<u>2.08E-10</u>	
3. % of Applicable Limit	%	<u>2.92E-01</u>	<u>2.08E-01</u>	
<u>B. TRITIUM</u>				
1. Total Release	Ci	<u>9.42E-01</u>	<u>1.51 E00</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>1.39E-08</u>	<u>9.74E-09</u>	
3. % of Applicable Limit	%	<u>4.63E-04</u>	<u>3.25E-04</u>	
<u>C. DISSOLVED AND ENTRAINED GASES</u>				
1. Total Release	Ci	<u>0</u>	<u>0</u>	1.00E01
2. Average Diluted Concentration	uCi/ml	<u>0</u>	<u>0</u>	
3. % of Applicable Limit	%	<u>0</u>	<u>0</u>	
<u>D. GROSS ALPHA RADIOACTIVITY</u>				
1. Total Release	Ci	<u>0</u>	<u>0</u>	1.00E01
<u>E. VOLUME OF WASTE RELEASED</u>				
	Liters	<u>1.13E06</u>	<u>1.12E06</u>	1.00E01
<u>F. VOLUME OF DILUTION WATER</u>				
	Liters	<u>6.78E10</u>	<u>1.55E11</u>	1.00E01
<u>G. MAXIMUM CONCENTRATION OF GROSS RADIOACTIVITY RELEASED</u>				
	uCi/ml	<u>3.95E-08</u>	<u>1.11E-08</u>	



TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE		BATCH MODE	
		3rd QUARTER	4th QUARTER	3rd QUARTER	4th QUARTER
F-18	Ci	0	0	0	0
Na-24	Ci	0	0	0	0
Cr-51	Ci	0	0	0	0
Mn-54	Ci	0	0	1.45E-04	3.52E-04
Fe-59	Ci	0	0	0	0
Co-58	Ci	0	0	3.95E-04	6.34E-04
Co-60	Ci	0	0	9.47E-03	2.33E-02
Zn-65	Ci	0	0	0	0
Y-88	Ci	0	0	0	0
Sr-89	Ci	0	0	2.71E-05	3.40E-05
Sr-90	Ci	0	0	0	6.68E-06
Sr-92	Ci	0	0	0	0
Zr-95	Ci	0	0	0	0
Nb-95	Ci	0	0	3.53E-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	1.16E-03	6.75E-04
Sn-113	Ci	0	0	6.97E-06	6.04E-07
Sb-124	Ci	0	0	0	0
Sb-125	Ci	0	0	0	0
I-131	Ci	0	0	0	0
I-132	Ci	0	0	0	0
I-133	Ci	0	0	0	0
Cs-134	Ci	0	0	3.41E-03	2.79E-03
Cs-136	Ci	0	0	0	0
Cs-137	Ci	0	0	5.10E-03	4.51E-03
Ce-144	Ci	0	0	0	0
Co-57	Ci	0	0	1.94E-06	0
Total	Ci	0	0	1.98E-02	3.23E-02
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	0
Xe-133	Ci	0	0	0	0
Xe-133m	Ci	0	0	0	0
Xe-135	Ci	0	0	0	0
Xe-135m	Ci	0	0	0	0
Total	Ci	0	0	0	0

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1984

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> Ci	1.83E02 7.74E01	1.00E01
(b) Dry compressible waste, contaminated equipment, etc.	M <sup>3</sup> Ci	1.43E03 3.22E01	1.00E01
(c) Irradiated components, control rods, etc.	M <sup>3</sup> Ci	0 0	0.00E00
(d) Other:	M <sup>3</sup> Ci	0 0	0.00E00

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

	<u>%</u>	<u>Ci</u>
(a) H-3	64.5	4.99E01
Co-60	12.8	9.91E00
Cs-137	6.6	5.11E00
Ni-63	2.9	2.24E00
Cs-134	4.1	3.17E00
Sr-90	2.4	1.86E00
Others*	6.7	5.19E00
(b) Co-60	32.7	1.05E01
Fe-55	25.5	8.20E00
Cs-137	24.6	7.92E00
Cs-134	12.2	3.92E00
Co-58	2.3	7.41E-01
Cr-51	2.1	6.79E-01
Others**	.6	1.93E-01

3. Solid Waste Disposition

Number of Shipments: 63  
Mode of Transportation: Sole use vehicle  
Destination: Barnwell, South Carolina  
Richland, Washington

\* Others include: Ag-110m, Mn-54, Fe-55, Cm-242, Cm-244, Am-241, Pu-241, Pu-239, Pu-238, C-14, U-234, Np-237, Co-58, and Pu-240

\*\* Others include: Co-57, Ag-110m, Sb-124, Sb-125, Cm-244, Cm-242, Am-241, Pu-238, Pu-239, Pu-240, C-14, H-3, Te-125m, and Ni-63

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 July 1, 1984, through December 31, 1984. 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 FISH  
MREM/YEAR

	CHILD	TEEN	ADULT
BONE	1.42E-06	1.15E-06	1.09E-06
LIVER	1.67E-06	1.91E-06	1.85E-06
WHOLE BODY	2.97E-07	7.69E-07	1.36E-06
THYROID	2.66E-11	3.23E-11	4.20E-11
KIDNEY	5.32E-07	6.29E-07	6.15E-07
LUNG	1.91E-07	2.42E-07	2.04E-07
GI-LLI	2.03E-08	5.56E-08	7.74E-08

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

	CHILD	TEEN	ADULT
BONE	7.71E-07	4.27E-07	4.63E-07
LIVER	2.27E-05	1.91E-05	2.85E-05
WHOLE BODY	2.27E-05	1.91E-05	2.87E-05
THYROID	2.16E-05	1.83E-05	2.76E-05
KIDNEY	2.19E-05	1.85E-05	2.78E-05
LUNG	2.17E-05	1.83E-05	2.76E-05
GI-LLI	2.34E-05	2.18E-05	3.35E-05

DOSE FROM EATING PRODUCE FROM CRITICAL GARDEN  
MREM/YEAR

	CHILD	TEEN	ADULT
BONE	1.17E-05	4.84E-06	2.85E-06
LIVER	3.45E-04	2.18E-04	1.76E-04
WHOLE BODY	3.45E-04	2.17E-04	1.77E-04
THYROID	3.29E-04	2.08E-04	1.70E-04
KIDNEY	3.33E-04	2.10E-04	1.72E-04
LUNG	3.30E-04	2.09E-04	1.71E-04
GI-LLI	3.55E-04	2.48E-04	2.06E-04

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

	INFANT	CHILD	TEEN	ADULT
BONE	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LIVER	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WHOLE BODY	0.00E+00	0.00E+00	0.00E+00	0.00E+00
THYROID	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KIDNEY	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LUNG	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GI-LLI	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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

	INFANT	CHILD	TEEN	ADULT
BONE	6.84E-07	1.13E-06	8.36E-07	5.97E-07
LIVER	5.79E-04	1.01E-03	1.14E-03	1.13E-03
WHOLE BODY	5.79E-04	1.01E-03	1.14E-03	1.13E-03
THYROID	5.78E-04	1.01E-03	1.14E-03	1.13E-03
KIDNEY	5.79E-04	1.01E-03	1.14E-03	1.13E-03
LUNG	7.62E-04	1.29E-03	1.49E-03	1.37E-03
GI-LLI	5.80E-04	1.01E-03	1.15E-03	1.14E-03

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

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DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY= 0.00E+00 MREM/6 MOS.

	RADIAL DISTANCE, MILES				
	0.5	1.5	2.5	3.5	4.5
S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	RADIAL DISTANCE, MILES				
	7.5	15.0	25.0	35.0	45.0
S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DOSE FROM SHORELINE SEDIMENT  
MREM/YEAR

	CHILD	TEEN	ADULT
WHOLE BODY	1.18E-08	5.63E-08	1.01E-08
SKIN	1.38E-08	6.61E-08	1.18E-08

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

	INFANT	CHILD	TEEN	ADULT
BONE	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LIVER	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WHOLE BODY	0.00E+00	0.00E+00	0.00E+00	0.00E+00
THYROID	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KIDNEY	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LUNG	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GI-LLI	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL DOSE FROM DRINKING MILK FROM CRITICAL COW  
MREM/YEAR

	INFANT	CHILD	TEEN	ADULT
BONE	2.48E-06	1.56E-06	6.46E-07	3.56E-07
LIVER	3.24E-05	2.09E-05	1.32E-05	9.93E-06
WHOLE BODY	2.99E-05	1.98E-05	1.27E-05	9.79E-06
THYROID	2.94E-05	1.94E-05	1.23E-05	9.42E-06
KIDNEY	3.02E-05	1.99E-05	1.26E-05	9.59E-06
LUNG	2.97E-05	1.96E-05	1.24E-05	9.48E-06
GI-LLI	2.97E-05	1.97E-05	1.28E-05	9.86E-06

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

	INFANT	CHILD	TEEN	ADULT
WHOLE BODY	2.85E-06	4.99E-05	4.52E-05	1.88E-04
THYROID	2.85E-06	4.99E-05	4.52E-05	1.87E-04



SKIN DOSES FROM AIR SUBMERSION IN RADIONOBLE GASES  
MREM/YEAR

DOSE FOR CRITICAL SECTOR AT SITE BOUNDARY= 0.00E+00 MREM/6 MOS.

	RADIAL DISTANCE, MILES				
	0.5	1.5	2.5	3.5	4.5
S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	RADIAL DISTANCE, MILES				
	7.5	15.0	25.0	35.0	45.0
S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

POPULATION INTEGRATED WHOLE BODY DOSES  
PERSON-REM/YEAR

## RADIAL DISTANCE, MILES

0.5                      1.5                      2.5                      3.5                      4.5

S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

## RADIAL DISTANCE, MILES

7.5                      15.0                      25.0                      35.0                      45.0

S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WSW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNW	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NNE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ESE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SSE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL POPULATION INTEGRATED WHOLE BODY DOSE= 0.00E+00 PERSON-REM

COPY

Form 244



**Carolina Power & Light Company**

Company Correspondence

Raleigh, North Carolina  
January 24, 1985

Be

M E M O R A N D U M

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

The attached information, described as follows, is provided for the January 1984 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 July 1, 1984 through December 31, 1984. 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.

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RBS/kjr (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  
THIRD QUARTER 1984  
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 July 1 through September 30, 1984.

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>
4.0	6.2	7.5	29.2	31.5	14.9	6.7

2. Wind Speed

<u>10 Meter</u>	<u>60 Meter</u>
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Average Speed (mph)	5.0	8.7
Percent Calm	1.7	0.0
Percent Less than 3.5 mph	34.3	7.2

3. Wind Direction

<u>10 Meter</u>	<u>60 Meter</u>
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Prevailing Direction	SSW	SSW
Percent Occurrence	13.5	11.9

4. Data Recovery

<u>10 Meter</u>	<u>60 Meter</u>
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Percent Good Hours	99.7	99.7
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ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IMDO1#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPO  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

9:37 TUESDAY, JANUARY 22, 1985

1

SITE=ROBN YEAR=84 PERIOD=3RD QTR SUMMARY OVER ALL STAB

## UPWNDSPO

## UPWNDDEG

## CALM

.75-3.5

3.5-7.5

7.5-12.5

12.5-18.5

18.5-25

&gt;= 25

TOTAL

AVERAGE  
UPWNDSPO

	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDSPO
N	/	6/ 0.27	50/ 2.27	97/ 4.41	59/ 2.68	24/ 1.09	/	236.0/10.72	11.26799
NNE	/	8/ 0.36	57/ 2.59	70/ 3.18	70/ 3.18	3/ 0.14	/	208.0/ 9.45	10.24190
NE	/	20/ 0.91	51/ 2.32	58/ 2.63	48/ 2.18	2/ 0.09	/	179.0/ 8.13	9.40526
ENE	/	16/ 0.73	32/ 1.45	31/ 1.41	15/ 0.68	/	/	94.0/ 4.27	7.80266
E	/	15/ 0.68	34/ 1.54	23/ 1.04	1/ 0.05	/	/	73.0/ 3.32	6.07792
ESE	/	20/ 0.91	39/ 1.77	9/ 0.41	/	/	/	68.0/ 3.09	4.99759
SE	/	12/ 0.54	35/ 1.59	15/ 0.68	1/ 0.05	/	/	63.0/ 2.86	6.09776
SSE	/	9/ 0.41	46/ 2.09	42/ 1.91	8/ 0.36	/	/	105.0/ 4.77	7.72799
S	/	3/ 0.14	68/ 3.09	112/ 5.09	26/ 1.18	2/ 0.09	/	211.0/ 9.58	9.01944
SSW	/	7/ 0.32	63/ 2.86	163/ 7.40	27/ 1.23	1/ 0.05	/	261.0/11.85	9.12320
SW	/	10/ 0.45	72/ 3.27	133/ 6.04	15/ 0.68	/	/	230.0/10.45	8.36411
WSW	/	5/ 0.23	102/ 4.63	72/ 3.27	2/ 0.09	1/ 0.05	/	182.0/ 8.27	7.13171
W	/	9/ 0.41	64/ 2.91	16/ 0.73	/	/	/	89.0/ 4.04	5.77311
WNW	/	5/ 0.23	34/ 1.54	11/ 0.50	5/ 0.23	1/ 0.05	/	56.0/ 2.54	7.08697
NW	/	8/ 0.36	18/ 0.82	15/ 0.68	9/ 0.41	6/ 0.27	/	56.0/ 2.54	9.00003
NNW	/	6/ 0.27	26/ 1.18	28/ 1.27	18/ 0.82	13/ 0.59	/	91.0/ 4.13	10.64689
TOTAL	/	159/ 7.22	791/35.92	895/40.64	304/13.81	53/ 2.41	/	2202/ 100	8.66267

NUMBER OF BAD RECORDS: 6

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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

2  
9:37 TUESDAY, JANUARY 22, 1985

## ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER &amp; LIGHT COMPANY

PROGRAM IMDO1#25 (MDFREQ) - FEB 1983

9:37 TUESDAY, JANUARY 22, 1985

JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWNDSPP

RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

SITE=ROBN

YEAR=84

PERIOD=3RD QTR

STAB=A

## UPWNDSPP

## UPWNDDEG

CALM

.75-3.5

3.5-7.5

7.5-12.5

12.5-18.5

18.5-25

&gt;= 25

TOTAL

AVERAGE  
UPWNDSPP

	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDSPP
N	/	/	/	2/ 0.09	1/ 0.05	1/ 0.05	/	4.0/ 0.18	13.75687
NNE	/	/	/	6/ 0.27	1/ 0.05	/	/	7.0/ 0.32	11.36044
NE	/	/	1/ 0.05	8/ 0.36	12/ 0.54	2/ 0.09	/	23.0/ 1.04	13.33275
ENE	/	/	1/ 0.05	6/ 0.27	3/ 0.14	/	/	10.0/ 0.45	11.09221
E	/	/	1/ 0.05	4/ 0.18	/	/	/	5.0/ 0.23	8.76104
ESE	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.61997
SE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	6.11972
SSE	/	/	/	/	1/ 0.05	/	/	1.0/ 0.05	12.73970
S	/	/	1/ 0.05	2/ 0.09	6/ 0.27	/	/	9.0/ 0.41	12.28947
SSW	/	/	/	9/ 0.41	6/ 0.27	/	/	15.0/ 0.68	12.05825
SW	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	9.01006
WSW	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	10.67200
W	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	9.65482
WNW	/	/	/	3/ 0.14	/	/	/	3.0/ 0.14	9.93830
NW	/	/	/	/	/	/	/	/	/
NNW	/	/	/	/	/	/	/	/	/
TOTAL	/	/	9/ 0.41	45/ 2.04	30/ 1.36	3/ 0.14	/	87.0/ 3.95	11.60254

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

9:37 TUESDAY, JANUARY 22, 1985

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## ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER &amp; LIGHT COMPANY

5

PROGRAM IMDO1#25 (MDFREQ) - FEB 1983

9:37 TUESDAY, JANUARY 22, 1985

JOINT OCCURRENCE FREQUENCIES FOR UPWNDDEG AND UPWINDSPD

RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

SITE=ROBN

YEAR=84

PERIOD=3RD QTR

STAB=8

## 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	9/ 0.41	6/ 0.27	2/ 0.09	/	19.0/ 0.86	12.50888
NNE	/	/	2/ 0.09	1/ 0.05	9/ 0.41	1/ 0.05	/	13.0/ 0.59	13.39259
NE	/	/	3/ 0.14	2/ 0.09	3/ 0.14	/	/	8.0/ 0.36	10.69493
ENE	/	/	2/ 0.09	7/ 0.32	1/ 0.05	/	/	10.0/ 0.45	9.74487
E	/	/	3/ 0.14	4/ 0.18	/	/	/	7.0/ 0.32	7.29889
ESE	/	/	6/ 0.27	/	/	/	/	6.0/ 0.27	4.46612
SE	/	/	5/ 0.23	/	/	/	/	5.0/ 0.23	5.72619
SSE	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	11.76421
S	/	/	1/ 0.05	9/ 0.41	1/ 0.05	/	/	11.0/ 0.50	9.68817
SSW	/	/	4/ 0.18	9/ 0.41	4/ 0.18	/	/	17.0/ 0.77	9.41058
SW	/	/	7/ 0.32	8/ 0.36	5/ 0.23	/	/	20.0/ 0.91	8.89194
WSW	/	/	2/ 0.09	7/ 0.32	/	/	/	9.0/ 0.41	8.27265
W	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	7.60380
WNW	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.81637
NW	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	4.96915
NNW	/	/	/	/	2/ 0.09	/	/	2.0/ 0.09	17.60879
TOTAL	/	/	41/ 1.86	61/ 2.77	31/ 1.41	3/ 0.14	/	136.0/ 6.18	9.75822

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

9:37 TUESDAY, JANUARY 22, 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

9:37 TUESDAY, JANUARY 22, 1985

Page 6 of 61

SITE=ROBN YEAR=84 PERIOD=3RD 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	/	/	5/ 0.23	6/ 0.27	/	2/ 0.09	/	13.0/ 0.59	9.39059
NNE	/	/	2/ 0.09	3/ 0.14	4/ 0.18	1/ 0.05	/	10.0/ 0.45	12.08103
NE	/	1/ 0.05	3/ 0.14	8/ 0.36	3/ 0.14	/	/	15.0/ 0.68	8.83664
ENE	/	/	5/ 0.23	2/ 0.09	2/ 0.09	/	/	9.0/ 0.41	8.23560
E	/	/	8/ 0.36	/	/	/	/	8.0/ 0.36	5.34851
ESE	/	1/ 0.05	4/ 0.18	/	/	/	/	5.0/ 0.23	4.41887
SE	/	/	4/ 0.18	3/ 0.14	1/ 0.05	/	/	8.0/ 0.36	7.82474
SSE	/	/	4/ 0.18	3/ 0.14	1/ 0.05	/	/	8.0/ 0.36	8.26871
S	/	/	4/ 0.18	7/ 0.32	1/ 0.05	/	/	12.0/ 0.54	8.86137
SSW	/	/	8/ 0.36	12/ 0.54	/	/	/	20.0/ 0.91	8.22661
SW	/	/	8/ 0.36	9/ 0.41	1/ 0.05	/	/	18.0/ 0.82	8.64228
WSW	/	/	14/ 0.64	7/ 0.32	/	/	/	21.0/ 0.95	6.99741
W	/	/	5/ 0.23	3/ 0.14	/	/	/	8.0/ 0.36	6.97640
WNW	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.11417
NW	/	/	3/ 0.14	2/ 0.09	/	/	/	5.0/ 0.23	7.10688
NNW	/	/	/	3/ 0.14	1/ 0.05	/	/	4.0/ 0.18	10.41353
TOTAL	/	2/ 0.09	79/ 3.59	69/ 3.13	14/ 0.64	3/ 0.14	/	167.0/ 7.58	8.19105

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

9:37 TUESDAY, JANUARY 22, 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

9:37 TUESDAY, JANUARY 22, 1985

Page 7 of 61

SITE=ROBN YEAR=84 PERIOD=3RD QTR STAB=D

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/ 0.05	21/ 0.95	41/ 1.86	35/ 1.59	16/ 0.73	/	114.0/ 5.18	12.35646
NNE	/	/	15/ 0.68	26/ 1.18	50/ 2.27	1/ 0.05	/	92.0/ 4.18	12.23528
NE	/	3/ 0.14	19/ 0.86	17/ 0.77	19/ 0.86	/	/	58.0/ 2.63	10.08262
ENE	/	4/ 0.18	11/ 0.50	7/ 0.32	3/ 0.14	/	/	25.0/ 1.14	7.24095
E	/	3/ 0.14	8/ 0.36	5/ 0.23	1/ 0.05	/	/	17.0/ 0.77	6.43361
ESE	/	7/ 0.32	8/ 0.36	3/ 0.14	/	/	/	18.0/ 0.82	5.45365
SE	/	4/ 0.18	10/ 0.45	4/ 0.18	/	/	/	18.0/ 0.82	5.63337
SSE	/	1/ 0.05	7/ 0.32	10/ 0.45	2/ 0.09	/	/	20.0/ 0.91	8.47340
S	/	1/ 0.05	9/ 0.41	19/ 0.86	9/ 0.41	1/ 0.05	/	39.0/ 1.77	10.29360
SSW	/	1/ 0.05	16/ 0.73	23/ 1.04	6/ 0.27	/	/	46.0/ 2.09	9.27819
SW	/	2/ 0.09	21/ 0.95	26/ 1.18	/	/	/	49.0/ 2.23	7.36763
WSW	/	1/ 0.05	37/ 1.68	8/ 0.36	1/ 0.05	1/ 0.05	/	48.0/ 2.18	6.49144
W	/	2/ 0.09	29/ 1.32	4/ 0.18	/	/	/	35.0/ 1.59	5.87151
WNW	/	1/ 0.05	10/ 0.45	/	3/ 0.14	/	/	14.0/ 0.64	6.95824
NW	/	1/ 0.05	2/ 0.09	5/ 0.23	1/ 0.05	6/ 0.27	/	15.0/ 0.68	12.82085
NNW	/	/	7/ 0.32	6/ 0.27	10/ 0.45	12/ 0.54	/	35.0/ 1.59	14.43530
TOTAL	/	32/ 1.45	230/ 10.45	204/ 9.26	140/ 6.36	37/ 1.68	/	643.0/ 29.20	9.76644

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

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9:37 TUESDAY, JANUARY 22, 1985

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

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 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN

YEAR=84

PERIOD=3RD QTR

STAB=E

UPWNDS PD

UPWNDS PD

	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	/	3/ 0.14	11/ 0.50	33/ 1.50	15/ 0.68	3/ 0.14	/	65.0/ 2.95	10.55912
NNE	/	3/ 0.14	17/ 0.77	30/ 1.36	6/ 0.27	/	/	56.0/ 2.54	8.35388
NE	/	7/ 0.32	16/ 0.73	20/ 0.91	6/ 0.27	/	/	49.0/ 2.23	8.11664
ENE	/	7/ 0.32	9/ 0.41	8/ 0.36	5/ 0.23	/	/	29.0/ 1.32	7.42612
E	/	5/ 0.23	8/ 0.36	7/ 0.32	/	/	/	20.0/ 0.91	6.15474
ESE	/	5/ 0.23	12/ 0.54	2/ 0.09	/	/	/	19.0/ 0.86	4.97529
SE	/	6/ 0.27	9/ 0.41	6/ 0.27	/	/	/	21.0/ 0.95	6.13243
SSE	/	1/ 0.05	17/ 0.77	17/ 0.77	3/ 0.14	/	/	38.0/ 1.73	8.25632
S	/	1/ 0.05	33/ 1.50	58/ 2.63	6/ 0.27	1/ 0.05	/	99.0/ 4.50	8.67016
SSW	/	1/ 0.05	25/ 1.14	68/ 3.09	11/ 0.50	/	/	105.0/ 4.77	9.19586
SW	/	5/ 0.23	27/ 1.23	40/ 1.82	4/ 0.18	/	/	76.0/ 3.45	8.17755
WSW	/	1/ 0.05	20/ 0.91	12/ 0.54	1/ 0.05	/	/	34.0/ 1.54	6.96426
W	/	4/ 0.18	10/ 0.45	4/ 0.18	/	/	/	18.0/ 0.82	5.27856
WNW	/	2/ 0.09	11/ 0.50	4/ 0.18	2/ 0.09	/	/	19.0/ 0.86	7.31769
NW	/	1/ 0.05	4/ 0.18	8/ 0.36	8/ 0.36	/	/	21.0/ 0.95	10.19795
NNW	/	1/ 0.05	5/ 0.23	13/ 0.59	5/ 0.23	1/ 0.05	/	25.0/ 1.14	10.04702
TOTAL	/	53/ 2.41	234/ 10.63	330/ 14.99	72/ 3.27	5/ 0.23	/	694.0/ 31.52	8.37025

NUMBER OF BAD RECORDS: 0

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

9:37 TUESDAY, JANUARY 22, 1985

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## ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER &amp; LIGHT COMPANY

PROGRAM IMDO1#25 (MDFREQ) - FEB 1983

9:37 TUESDAY, JANUARY 22, 1985

JOINT OCCURRENCE FREQUENCIES FOR UPWNDEG AND UPWNDS PD

RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

SITE=ROBN

YEAR=84

PERIOD=3RD QTR

STAB=F

## 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	3/ 0.14	5/ 0.23	2/ 0.09	/	/	11.0/ 0.50	8.30870
NNE	/	4/ 0.18	11/ 0.50	2/ 0.09	/	/	/	17.0/ 0.77	4.76611
NE	/	6/ 0.27	6/ 0.27	2/ 0.09	4/ 0.18	/	/	18.0/ 0.82	7.12393
ENE	/	4/ 0.18	1/ 0.05	1/ 0.05	1/ 0.05	/	/	7.0/ 0.32	5.64091
E	/	5/ 0.23	5/ 0.23	3/ 0.14	/	/	/	13.0/ 0.59	4.90245
ESE	/	5/ 0.23	5/ 0.23	3/ 0.14	/	/	/	13.0/ 0.59	5.04483
SE	/	1/ 0.05	2/ 0.09	1/ 0.05	/	/	/	4.0/ 0.18	6.12806
SSE	/	3/ 0.14	9/ 0.41	9/ 0.41	1/ 0.05	/	/	22.0/ 1.00	7.06414
S	/	1/ 0.05	14/ 0.64	14/ 0.64	3/ 0.14	/	/	32.0/ 1.45	8.10457
SSW	/	3/ 0.14	6/ 0.27	36/ 1.63	/	1/ 0.05	/	46.0/ 2.09	8.73734
SW	/	1/ 0.05	2/ 0.09	36/ 1.63	4/ 0.18	/	/	43.0/ 1.95	9.53577
WSW	/	2/ 0.09	23/ 1.04	33/ 1.50	/	/	/	58.0/ 2.63	7.70184
W	/	1/ 0.05	10/ 0.45	1/ 0.05	/	/	/	12.0/ 0.54	5.53610
WNW	/	/	8/ 0.36	2/ 0.09	/	1/ 0.05	/	11.0/ 0.50	7.53861
NW	/	2/ 0.09	6/ 0.27	/	/	/	/	8.0/ 0.36	4.42513
NNW	/	3/ 0.14	4/ 0.18	6/ 0.27	/	/	/	13.0/ 0.59	6.35831
TOTAL	/	42/ 1.91	115/ 5.22	154/ 6.99	15/ 0.68	2/ 0.09	/	328.0/14.90	7.42317

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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9:37 TUESDAY, JANUARY 22, 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

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 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=3RD QTR STAB=G

## 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	8/ 0.36	1/ 0.05	/	/	/	10.0/ 0.45	5.80957
NNE	/	1/ 0.05	10/ 0.45	2/ 0.09	/	/	/	13.0/ 0.59	6.26082
NE	/	3/ 0.14	3/ 0.14	1/ 0.05	1/ 0.05	/	/	8.0/ 0.36	6.00508
ENE	/	1/ 0.05	3/ 0.14	/	/	/	/	4.0/ 0.18	3.77272
E	/	2/ 0.09	1/ 0.05	/	/	/	/	3.0/ 0.14	3.26830
ESE	/	2/ 0.09	2/ 0.09	/	/	/	/	4.0/ 0.18	3.20160
SE	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	/	5.0/ 0.23	5.19926
SSE	/	4/ 0.18	9/ 0.41	1/ 0.05	/	/	/	14.0/ 0.64	5.02870
S	/	/	6/ 0.27	3/ 0.14	/	/	/	9.0/ 0.41	6.71632
SSW	/	2/ 0.09	4/ 0.18	6/ 0.27	/	/	/	12.0/ 0.54	6.79089
SW	/	2/ 0.09	6/ 0.27	12/ 0.54	1/ 0.05	/	/	21.0/ 0.95	8.13184
WSW	/	1/ 0.05	6/ 0.27	4/ 0.18	/	/	/	11.0/ 0.50	6.43807
W	/	2/ 0.09	9/ 0.41	1/ 0.05	/	/	/	12.0/ 0.54	4.88161
WNW	/	2/ 0.09	1/ 0.05	/	/	/	/	3.0/ 0.14	2.96259
NW	/	4/ 0.18	2/ 0.09	/	/	/	/	6.0/ 0.27	3.60458
NNW	/	2/ 0.09	10/ 0.45	/	/	/	/	12.0/ 0.54	4.41054
TOTAL	/	30/ 1.36	83/ 3.77	32/ 1.45	2/ 0.09	/	/	147.0/ 6.68	5.76308

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

9:37 TUESDAY, JANUARY 22, 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

9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=3RD 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	1.6/ 0.07	30/ 1.36	91/ 4.13	46/ 2.09	2/ 0.09	/	/	170.6/ 7.75	6.12546
NNE	1.3/ 0.06	25/ 1.14	88/ 4.00	76/ 3.45	/	/	/	190.3/ 8.65	6.52233
NE	1.2/ 0.05	23/ 1.04	79/ 3.59	57/ 2.59	3/ 0.14	/	/	163.2/ 7.41	6.69636
ENE	1.0/ 0.05	18/ 0.82	52/ 2.36	27/ 1.23	/	/	/	98.0/ 4.45	5.78120
E	1.2/ 0.05	22/ 1.00	29/ 1.32	3/ 0.14	/	/	/	55.2/ 2.51	4.09986
ESE	1.1/ 0.05	21/ 0.95	31/ 1.41	/	/	/	/	53.1/ 2.41	3.70005
SE	1.5/ 0.07	28/ 1.27	32/ 1.45	3/ 0.14	/	/	/	64.5/ 2.93	3.77687
SSE	2.4/ 0.11	45/ 2.04	70/ 3.18	12/ 0.55	/	/	/	129.4/ 5.88	4.18992
S	3.4/ 0.15	65/ 2.95	115/ 5.22	48/ 2.18	1/ 0.05	/	/	232.4/ 10.56	5.27435
SSW	5.9/ 0.27	111/ 5.04	127/ 5.77	52/ 2.36	1/ 0.05	/	/	296.9/ 13.49	4.84427
SW	4.3/ 0.20	82/ 3.73	116/ 5.27	11/ 0.50	1/ 0.05	/	/	214.3/ 9.74	4.33369
WSW	3.0/ 0.14	56/ 2.54	68/ 3.09	4/ 0.18	/	/	/	131.0/ 5.95	3.90522
W	1.3/ 0.06	25/ 1.14	46/ 2.09	1/ 0.05	/	/	/	73.3/ 3.33	3.96857
WNW	2.3/ 0.10	43/ 1.95	22/ 1.00	6/ 0.27	/	/	/	73.3/ 3.33	3.59165
NW	3.9/ 0.18	74/ 3.36	36/ 1.64	10/ 0.45	1/ 0.05	/	/	124.9/ 5.67	3.69798
NNW	2.6/ 0.12	49/ 2.23	46/ 2.09	32/ 1.45	1/ 0.05	/	/	130.6/ 5.93	5.10705
TOTAL	38.0/ 1.73	717/ 32.58	1048/ 47.61	388/ 17.63	10/ 0.45	/	/	2201/ 100	4.97116

NUMBER OF BAD RECORDS: 7

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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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9:35 TUESDAY, JANUARY 22, 1985

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

9:35 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=3RD 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	2/ 0.09	/	/	/	3.0/ 0.14	8.67100
NNE	/	/	1/ 0.05	4/ 0.18	/	/	/	5.0/ 0.23	8.46089
NE	/	/	4/ 0.18	8/ 0.36	2/ 0.09	/	/	14.0/ 0.64	9.28678
ENE	/	/	6/ 0.27	14/ 0.64	/	/	/	20.0/ 0.91	8.19493
E	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.18	7.31199
ESE	/	/	5/ 0.23	/	/	/	/	5.0/ 0.23	5.75954
SE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	3.95197
SSE	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.74226
S	/	/	/	11/ 0.50	/	/	/	11.0/ 0.50	10.70080
SSW	/	/	5/ 0.23	6/ 0.27	1/ 0.05	/	/	12.0/ 0.55	8.68489
SW	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	6.74226
WSW	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	7.57045
W	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	7.00350
WNW	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	7.31199
NW	/	/	/	/	/	/	/	/	/
NNW	/	/	/	/	/	/	/	/	/
TOTAL	/	/	34/ 1.54	50/ 2.27	3/ 0.14	/	/	87.0/ 3.95	8.36012

NUMBER OF BAD RECORDS: 0

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY

PROGRAM IMDO1#25 (MDFREQ) - FEB 1983

9:35 TUESDAY, JANUARY 22, 1985

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

9:35 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=3RD QTR STAB=B

## 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	/	/	6/ 0.27	11/ 0.50	/	/	/	17.0/ 0.77	8.43264
NNE	/	/	1/ 0.05	5/ 0.23	/	/	/	6.0/ 0.27	8.10405
NE	/	/	3/ 0.14	12/ 0.55	/	/	/	15.0/ 0.68	8.95559
ENE	/	/	5/ 0.23	5/ 0.23	/	/	/	10.0/ 0.45	7.06353
E	/	/	7/ 0.32	/	/	/	/	7.0/ 0.32	5.60042
ESE	/	1/ 0.05	6/ 0.27	/	/	/	/	7.0/ 0.32	4.46175
SE	/	/	6/ 0.27	/	/	/	/	6.0/ 0.27	4.48280
SSE	/	/	1/ 0.05	3/ 0.14	/	/	/	4.0/ 0.18	7.34951
S	/	/	8/ 0.36	4/ 0.18	/	/	/	12.0/ 0.55	7.23834
SSW	/	/	9/ 0.41	10/ 0.45	/	/	/	19.0/ 0.86	7.85919
SW	/	/	14/ 0.64	3/ 0.14	/	/	/	17.0/ 0.77	6.68079
WSW	/	/	8/ 0.36	1/ 0.05	/	/	/	9.0/ 0.41	6.15678
W	/	/	3/ 0.14	/	/	/	/	3.0/ 0.14	5.81587
WNW	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	5.23595
NW	/	/	/	/	/	/	/	/	
NNW	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	10.87210
TOTAL	/	1/ 0.05	79/ 3.59	56/ 2.54	/	/	/	136.0/ 6.18	7.19493

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

9:35 TUESDAY, JANUARY 22, 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

9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN

YEAR=84

PERIOD=3RD 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	/	/	11/ 0.50	3/ 0.14	/	/	/	14.0/ 0.64	6.63427
NNE	/	1/ 0.05	4/ 0.18	1/ 0.05	/	/	/	6.0/ 0.27	5.88350
NE	/	/	9/ 0.41	7/ 0.32	1/ 0.05	/	/	17.0/ 0.77	8.06678
ENE	/	/	9/ 0.41	2/ 0.09	/	/	/	11.0/ 0.50	5.68163
E	/	3/ 0.14	4/ 0.18	/	/	/	/	7.0/ 0.32	3.94721
ESE	/	2/ 0.09	5/ 0.23	/	/	/	/	7.0/ 0.32	3.93292
SE	/	1/ 0.05	6/ 0.27	2/ 0.09	/	/	/	9.0/ 0.41	5.61762
SSE	/	1/ 0.05	3/ 0.14	3/ 0.14	/	/	/	7.0/ 0.32	6.40638
S	/	/	11/ 0.50	3/ 0.14	/	/	/	14.0/ 0.64	6.40558
SSW	/	/	12/ 0.55	8/ 0.36	/	/	/	20.0/ 0.91	7.24946
SW	/	/	16/ 0.73	2/ 0.09	/	/	/	18.0/ 0.82	6.04098
WSW	/	/	19/ 0.86	/	/	/	/	19.0/ 0.86	5.48812
W	/	/	9/ 0.41	/	/	/	/	9.0/ 0.41	5.59168
WNW	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	5.16091
NW	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	5.91129
NNW	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.18	6.54494
TOTAL	/	8/ 0.36	125/ 5.68	32/ 1.45	1/ 0.05	/	/	166.0/ 7.54	6.17293

NUMBER OF BAD RECORDS: 1

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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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9:35 TUESDAY, JANUARY 22, 1985

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

9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=3RD 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	/	5/ 0.23	43/ 1.95	26/ 1.18	2/ 0.09	/	/	76.0/ 3.45	7.08665
NNE	/	2/ 0.09	43/ 1.95	59/ 2.68	/	/	/	104.0/ 4.73	7.63122
NE	/	9/ 0.41	29/ 1.32	26/ 1.18	/	/	/	64.0/ 2.91	7.01548
ENE	/	7/ 0.32	21/ 0.95	5/ 0.23	/	/	/	33.0/ 1.50	5.28901
E	/	4/ 0.18	12/ 0.55	2/ 0.09	/	/	/	18.0/ 0.82	4.61990
ESE	/	6/ 0.27	10/ 0.45	/	/	/	/	16.0/ 0.73	3.85714
SE	/	8/ 0.36	14/ 0.64	/	/	/	/	22.0/ 1.00	3.82388
SSE	/	4/ 0.18	18/ 0.82	4/ 0.18	/	/	/	26.0/ 1.18	5.60216
S	/	/	17/ 0.77	18/ 0.82	/	/	/	35.0/ 1.59	7.78627
SSW	/	1/ 0.05	34/ 1.54	17/ 0.77	/	/	/	52.0/ 2.36	6.44040
SW	/	1/ 0.05	46/ 2.09	4/ 0.18	/	/	/	51.0/ 2.32	5.56062
WSW	/	9/ 0.41	30/ 1.36	2/ 0.09	/	/	/	41.0/ 1.86	4.56773
W	/	6/ 0.27	28/ 1.27	1/ 0.05	/	/	/	35.0/ 1.59	4.51892
WNW	/	6/ 0.27	8/ 0.36	3/ 0.14	/	/	/	17.0/ 0.77	4.70137
NW	/	/	6/ 0.27	10/ 0.45	1/ 0.05	/	/	17.0/ 0.77	9.61559
NNW	/	1/ 0.05	14/ 0.64	20/ 0.91	1/ 0.05	/	/	36.0/ 1.64	8.28006
TOTAL	/	69/ 3.13	373/ 16.95	197/ 8.95	4/ 0.18	/	/	643.0/ 29.21	6.38933

NUMBER OF BAD RECORDS: 0

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

9:35 TUESDAY, JANUARY 22, 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

9:35 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=3RD 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	0.1/ 0.00	15/ 0.68	27/ 1.23	4/ 0.18	/	/	/	46.1/ 2.09	4.64467
NNE	0.1/ 0.00	14/ 0.64	35/ 1.59	7/ 0.32	/	/	/	56.1/ 2.55	5.08030
NE	0.1/ 0.00	11/ 0.50	29/ 1.32	1/ 0.05	/	/	/	41.1/ 1.87	4.57802
ENE	0.1/ 0.00	9/ 0.41	9/ 0.41	1/ 0.05	/	/	/	19.1/ 0.87	4.22702
E	0.1/ 0.00	14/ 0.64	3/ 0.14	/	/	/	/	17.1/ 0.78	2.62460
ESE	0.1/ 0.00	7/ 0.32	5/ 0.23	/	/	/	/	12.1/ 0.55	3.13724
SE	0.1/ 0.00	15/ 0.68	3/ 0.14	1/ 0.05	/	/	/	19.1/ 0.87	3.16017
SSE	0.1/ 0.00	16/ 0.73	34/ 1.54	1/ 0.05	/	/	/	51.1/ 2.32	4.04140
S	0.2/ 0.01	27/ 1.23	67/ 3.04	10/ 0.45	1/ 0.05	/	/	105.2/ 4.78	4.77155
SSW	0.3/ 0.01	43/ 1.95	55/ 2.50	11/ 0.50	/	/	/	109.3/ 4.97	4.51724
SW	0.3/ 0.01	37/ 1.68	32/ 1.45	/	/	/	/	69.3/ 3.15	3.60437
WSW	0.1/ 0.00	17/ 0.77	9/ 0.41	/	/	/	/	26.1/ 1.19	2.83826
W	0.1/ 0.00	11/ 0.50	5/ 0.23	/	/	/	/	16.1/ 0.73	2.74723
WNW	0.1/ 0.00	11/ 0.50	8/ 0.36	1/ 0.05	/	/	/	20.1/ 0.91	3.86739
NW	0.1/ 0.00	17/ 0.77	22/ 1.00	/	/	/	/	39.1/ 1.78	3.74462
NNW	0.1/ 0.00	13/ 0.59	25/ 1.14	9/ 0.41	/	/	/	47.1/ 2.14	4.95320
TOTAL	2.0/ 0.09	277/12.59	368/16.72	46/ 2.09	1/ 0.05	/	/	694.0/31.53	4.23483

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

9:35 TUESDAY, JANUARY 22, 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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 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=3RD 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	6/ 0.27	2/ 0.09	/	/	/	/	8.5/ 0.39	2.20794
NNE	0.6/ 0.03	8/ 0.36	3/ 0.14	/	/	/	/	11.6/ 0.53	2.46529
NE	0.2/ 0.01	2/ 0.09	5/ 0.23	1/ 0.05	/	/	/	8.2/ 0.37	4.37717
ENE	0.1/ 0.00	1/ 0.05	2/ 0.09	/	/	/	/	3.1/ 0.14	4.05309
E	/	/	/	/	/	/	/	/	/
ESE	0.4/ 0.02	5/ 0.23	/	/	/	/	/	5.4/ 0.25	1.59955
SE	0.2/ 0.01	2/ 0.09	1/ 0.05	/	/	/	/	3.2/ 0.15	3.02232
SSE	1.3/ 0.06	16/ 0.73	12/ 0.55	/	/	/	/	29.3/ 1.33	2.86518
S	2.1/ 0.10	26/ 1.18	11/ 0.50	2/ 0.09	/	/	/	41.1/ 1.87	3.07399
SSW	4.3/ 0.20	54/ 2.45	11/ 0.50	/	/	/	/	69.3/ 3.15	2.56126
SW	3.1/ 0.14	39/ 1.77	6/ 0.27	1/ 0.05	1/ 0.05	/	/	50.1/ 2.28	2.84003
WSW	2.1/ 0.10	26/ 1.18	1/ 0.05	/	/	/	/	29.1/ 1.32	2.34851
W	0.5/ 0.02	6/ 0.27	/	/	/	/	/	6.5/ 0.30	1.51677
WNW	1.3/ 0.06	17/ 0.77	1/ 0.05	1/ 0.05	/	/	/	20.3/ 0.92	2.68747
NW	1.4/ 0.06	18/ 0.82	4/ 0.18	/	/	/	/	23.4/ 1.06	2.21333
NNW	1.1/ 0.05	14/ 0.64	4/ 0.18	/	/	/	/	19.1/ 0.87	2.34452
TOTAL	19.0/ 0.86	240/ 10.90	63/ 2.86	5/ 0.23	1/ 0.05	/	/	328.0/ 14.90	2.66321

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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9:35 TUESDAY, JANUARY 22, 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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 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=3RD 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	0.6/ 0.03	4/ 0.18	1/ 0.05	/	/	/	/	5.6/ 0.25	1.75381
NNE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	6.82007
NE	0.1/ 0.00	1/ 0.05	/	2/ 0.09	/	/	/	3.1/ 0.14	5.46239
ENE	0.1/ 0.00	1/ 0.05	/	/	/	/	/	1.1/ 0.05	0.71625
E	0.1/ 0.00	1/ 0.05	/	/	/	/	/	1.1/ 0.05	0.86784
ESE	/	/	/	/	/	/	/	/	
SE	0.3/ 0.01	2/ 0.09	/	/	/	/	/	2.3/ 0.10	1.20891
SSE	1.1/ 0.05	8/ 0.36	/	/	/	/	/	9.1/ 0.41	1.14112
S	1.7/ 0.08	12/ 0.55	1/ 0.05	/	/	/	/	14.7/ 0.67	2.00833
SSW	1.8/ 0.08	13/ 0.59	1/ 0.05	/	/	/	/	15.8/ 0.72	1.87748
SW	0.7/ 0.03	5/ 0.23	/	/	/	/	/	5.7/ 0.26	1.61409
WSW	0.6/ 0.03	4/ 0.18	/	/	/	/	/	4.6/ 0.21	1.20891
W	0.3/ 0.01	2/ 0.09	/	/	/	/	/	2.3/ 0.10	1.20891
WNW	1.3/ 0.06	9/ 0.41	/	/	/	/	/	10.3/ 0.47	1.46713
NW	5.4/ 0.25	39/ 1.77	2/ 0.09	/	/	/	/	46.4/ 2.11	1.89027
NNW	2.9/ 0.13	21/ 0.95	/	/	/	/	/	23.9/ 1.09	1.71649
TOTAL	17.0/ 0.77	122/ 5.54	6/ 0.27	2/ 0.09	/	/	/	147.0/ 6.68	1.83030

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

16  
9:35 TUESDAY, JANUARY 22, 1985

ATTACHMENT 2

JOINT FREQUENCY OF WIND DIRECTION AND SPEED  
FOURTH QUARTER 1984  
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 October 1 through December 31, 1984.

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>
1.4	2.0	3.8	24.8	30.7	11.8	25.5

2. Wind Speed      10 Meter      60 Meter

Average Speed (mph)	4.4	8.6
Percent Calm	5.2	0.1
Percent Less than 3.5 mph	47.4	9.2

3. Wind Direction      10 Meter      60 Meter

Prevailing Direction	NNW	NNE
Percent Occurrence	15.9	13.3

4. Data Recovery      10 Meter      60 Meter

Percent Good Hours	99.7	99.7
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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

9:37 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=4TH 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	0.2/ 0.01	16/ 0.73	64/ 2.91	99/ 4.50	60/ 2.73	3/ 0.14	/	242.2/11.00	9.62928
NNE	0.1/ 0.00	14/ 0.64	67/ 3.04	113/ 5.13	90/ 4.09	8/ 0.36	/	292.1/13.27	10.37139
NE	0.2/ 0.01	18/ 0.82	52/ 2.36	47/ 2.14	21/ 0.95	3/ 0.14	/	141.2/ 6.42	8.13400
ENE	0.1/ 0.00	11/ 0.50	49/ 2.23	27/ 1.23	6/ 0.27	/	/	93.1/ 4.23	6.77800
E	0.1/ 0.00	10/ 0.45	47/ 2.14	21/ 0.95	/	/	/	78.1/ 3.55	6.15902
ESE	0.2/ 0.01	20/ 0.91	32/ 1.45	16/ 0.73	1/ 0.05	/	/	69.2/ 3.14	5.66950
SE	0.2/ 0.01	16/ 0.73	26/ 1.18	15/ 0.68	8/ 0.36	/	/	65.2/ 2.96	6.80555
SSE	0.1/ 0.00	15/ 0.68	42/ 1.91	38/ 1.73	10/ 0.45	2/ 0.09	/	107.1/ 4.87	7.50083
S	0.1/ 0.00	11/ 0.50	53/ 2.41	73/ 3.32	20/ 0.91	1/ 0.05	/	158.1/ 7.18	8.48213
SSW	0.1/ 0.00	10/ 0.45	79/ 3.59	113/ 5.13	36/ 1.64	1/ 0.05	/	239.1/10.86	8.99168
SW	0.1/ 0.00	7/ 0.32	55/ 2.50	94/ 4.27	31/ 1.41	1/ 0.05	/	188.1/ 8.55	9.22047
WSW	0.1/ 0.00	12/ 0.55	46/ 2.09	59/ 2.68	22/ 1.00	2/ 0.09	/	141.1/ 6.41	8.67103
W	0.2/ 0.01	16/ 0.73	51/ 2.32	13/ 0.59	1/ 0.05	/	/	81.2/ 3.69	5.59885
WNW	0.1/ 0.00	6/ 0.27	19/ 0.86	30/ 1.36	14/ 0.64	2/ 0.09	/	71.1/ 3.23	9.56367
NW	0.1/ 0.00	10/ 0.45	20/ 0.91	46/ 2.09	28/ 1.27	1/ 0.05	/	105.1/ 4.78	9.48543
NNW	0.1/ 0.00	9/ 0.41	42/ 1.91	43/ 1.95	35/ 1.59	/	/	129.1/ 5.87	9.20457
TOTAL	2.0/ 0.09	201/ 9.13	744/33.80	847/38.48	383/17.40	24/ 1.09	/	2201/ 100	8.64620

NUMBER OF BAD RECORDS: 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

9:37 TUESDAY, JANUARY 22, 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

9:37 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=A

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	/	/	/	3/ 0.14	5/ 0.23	/	/	8.0/ 0.36	12.71469
NNE	/	/	/	/	1/ 0.05	/	/	1.0/ 0.05	15.64115
NE	/	/	/	3/ 0.14	4/ 0.18	/	/	7.0/ 0.32	13.03508
ENE	/	/	2/ 0.09	3/ 0.14	1/ 0.05	/	/	6.0/ 0.27	9.55477
E	/	/	/	/	/	/	/	/	
ESE	/	/	/	/	/	/	/	/	
SE	/	/	/	/	/	/	/	/	
SSE	/	/	/	/	/	/	/	/	
S	/	/	/	/	/	/	/	/	
SSW	/	/	/	/	/	/	/	/	
SW	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	10.43855
WSW	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	9.65482
W	/	/	/	/	/	/	/	/	
WNW	/	/	/	/	1/ 0.05	/	/	1.0/ 0.05	15.90795
NW	/	/	/	1/ 0.05	2/ 0.09	/	/	3.0/ 0.14	12.63409
NNW	/	/	/	/	1/ 0.05	/	/	1.0/ 0.05	13.47340
TOTAL	/	/	2/ 0.09	13/ 0.59	15/ 0.68	/	/	30.0/ 1.36	12.12495

NUMBER OF BAD RECORDS: 0



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

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9:37 TUESDAY, JANUARY 22, 1985

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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 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	/	/	/	3/ 0.14	2/ 0.09	1/ 0.05	/	6.0/ 0.27	12.63501
NNE	/	/	/	/	4/ 0.18	/	/	4.0/ 0.18	15.44105
NE	/	/	/	2/ 0.09	1/ 0.05	1/ 0.05	/	4.0/ 0.18	14.65315
ENE	/	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	5.0/ 0.23	9.15124
E	/	1/ 0.05	2/ 0.09	/	/	/	/	3.0/ 0.14	4.97471
ESE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	6.72002
SE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	4.44389
SSE	/	/	/	/	/	/	/	/	
S	/	/	/	/	1/ 0.05	/	/	1.0/ 0.05	13.17325
SSW	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	8.34584
SW	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	12.13940
WSW	/	/	1/ 0.05	2/ 0.09	3/ 0.14	/	/	6.0/ 0.27	11.75587
W	/	/	/	/	/	/	/	/	
WNW	/	/	/	/	/	/	/	/	
NW	/	/	/	1/ 0.05	3/ 0.14	/	/	4.0/ 0.18	11.69751
NNW	/	/	/	3/ 0.14	3/ 0.14	/	/	6.0/ 0.27	12.76749
TOTAL	/	1/ 0.05	8/ 0.36	16/ 0.73	18/ 0.82	2/ 0.09	/	45.0/ 2.04	11.29799

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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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9:37 TUESDAY, JANUARY 22, 1985

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

23  
 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=C

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	4/ 0.18	1/ 0.05	/	/	6.0/ 0.27	10.09393
NNE	/	/	2/ 0.09	1/ 0.05	7/ 0.32	/	/	10.0/ 0.45	12.34616
NE	/	2/ 0.09	1/ 0.05	4/ 0.18	2/ 0.09	1/ 0.05	/	10.0/ 0.45	9.56645
ENE	/	/	2/ 0.09	2/ 0.09	1/ 0.05	/	/	5.0/ 0.23	8.50091
E	/	1/ 0.05	3/ 0.14	1/ 0.05	/	/	/	5.0/ 0.23	5.20927
ESE	/	/	3/ 0.14	/	/	/	/	3.0/ 0.14	4.15207
SE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	4.62731
SSE	/	/	1/ 0.05	/	1/ 0.05	/	/	2.0/ 0.09	12.23944
S	/	/	1/ 0.05	1/ 0.05	2/ 0.09	/	/	4.0/ 0.18	11.39736
SSW	/	/	2/ 0.09	3/ 0.14	/	/	/	5.0/ 0.23	9.13456
SW	/	/	2/ 0.09	2/ 0.09	2/ 0.09	/	/	6.0/ 0.27	10.68034
WSW	/	/	/	4/ 0.18	3/ 0.14	/	/	7.0/ 0.32	11.35091
W	/	1/ 0.05	/	/	/	/	/	1.0/ 0.05	2.45122
WNW	/	/	1/ 0.05	/	1/ 0.05	/	/	2.0/ 0.09	9.87160
NW	/	/	/	6/ 0.27	5/ 0.23	/	/	11.0/ 0.50	12.42136
NNW	/	/	/	/	4/ 0.18	/	/	4.0/ 0.18	13.06486
TOTAL	/	4/ 0.18	21/ 0.95	28/ 1.27	29/ 1.32	1/ 0.05	/	83.0/ 3.77	10.12433

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 UPWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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9:37 TUESDAY, JANUARY 22, 1985

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

25  
 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	/	5/ 0.23	26/ 1.18	26/ 1.18	23/ 1.04	1/ 0.05	/	81.0/ 3.68	9.52719
NNE	/	3/ 0.14	18/ 0.82	41/ 1.86	65/ 2.95	8/ 0.36	/	135.0/ 6.13	12.23488
NE	/	3/ 0.14	8/ 0.36	10/ 0.45	10/ 0.45	/	/	31.0/ 1.41	9.29335
ENE	/	6/ 0.27	9/ 0.41	4/ 0.18	1/ 0.05	/	/	20.0/ 0.91	5.64615
E	/	4/ 0.18	6/ 0.27	3/ 0.14	/	/	/	13.0/ 0.59	5.34113
ESE	/	10/ 0.45	6/ 0.27	2/ 0.09	/	/	/	18.0/ 0.82	4.22619
SE	/	5/ 0.23	9/ 0.41	1/ 0.05	/	/	/	15.0/ 0.68	4.67567
SSE	/	2/ 0.09	5/ 0.23	7/ 0.32	1/ 0.05	/	/	15.0/ 0.68	7.25473
S	/	1/ 0.05	7/ 0.32	11/ 0.50	6/ 0.27	/	/	25.0/ 1.14	9.39136
SSW	/	1/ 0.05	12/ 0.55	27/ 1.23	8/ 0.36	/	/	48.0/ 2.18	9.62078
SW	/	1/ 0.05	9/ 0.41	24/ 1.09	9/ 0.41	/	/	43.0/ 1.95	9.95652
WSW	/	1/ 0.05	11/ 0.50	10/ 0.45	3/ 0.14	1/ 0.05	/	26.0/ 1.18	8.72231
W	/	3/ 0.14	14/ 0.64	6/ 0.27	/	/	/	23.0/ 1.04	6.49962
WNW	/	1/ 0.05	3/ 0.14	6/ 0.27	1/ 0.05	/	/	11.0/ 0.50	8.37994
NW	/	/	1/ 0.05	3/ 0.14	5/ 0.23	/	/	9.0/ 0.41	11.58171
NNW	/	2/ 0.09	14/ 0.64	12/ 0.55	5/ 0.23	/	/	33.0/ 1.50	8.26625
TOTAL	/	48/ 2.18	158/ 7.18	193/ 8.77	137/ 6.22	10/ 0.45	/	546.0/24.81	9.37559

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 UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

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9:37 TUESDAY, JANUARY 22, 1985

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  
 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	/	2/ 0.09	18/ 0.82	31/ 1.41	18/ 0.82	1/ 0.05	/	70.0/ 3.18	10.03763
NNE	/	4/ 0.18	23/ 1.04	57/ 2.59	13/ 0.59	/	/	97.0/ 4.41	9.31565
NE	/	4/ 0.18	20/ 0.91	17/ 0.77	4/ 0.18	1/ 0.05	/	46.0/ 2.09	8.11432
ENE	/	1/ 0.05	11/ 0.50	4/ 0.18	2/ 0.09	/	/	18.0/ 0.82	7.29161
E	/	/	9/ 0.41	13/ 0.59	/	/	/	22.0/ 1.00	7.75236
ESE	/	6/ 0.27	10/ 0.45	6/ 0.27	1/ 0.05	/	/	23.0/ 1.04	6.44017
SE	/	5/ 0.23	4/ 0.18	4/ 0.18	8/ 0.36	/	/	21.0/ 0.95	9.40311
SSE	/	4/ 0.18	9/ 0.41	15/ 0.68	7/ 0.32	2/ 0.09	/	37.0/ 1.68	9.63409
S	/	3/ 0.14	21/ 0.95	24/ 1.09	9/ 0.41	1/ 0.05	/	58.0/ 2.64	9.12525
SSW	/	2/ 0.09	18/ 0.82	27/ 1.23	26/ 1.18	1/ 0.05	/	74.0/ 3.36	10.79030
SW	/	1/ 0.05	12/ 0.55	25/ 1.14	11/ 0.50	1/ 0.05	/	50.0/ 2.27	10.01467
WSW	/	3/ 0.14	8/ 0.36	23/ 1.04	11/ 0.50	1/ 0.05	/	46.0/ 2.09	10.19277
W	/	2/ 0.09	12/ 0.55	4/ 0.18	1/ 0.05	/	/	19.0/ 0.86	6.90345
WNW	/	1/ 0.05	3/ 0.14	12/ 0.55	5/ 0.23	2/ 0.09	/	23.0/ 1.04	11.36582
NW	/	6/ 0.27	6/ 0.27	8/ 0.36	9/ 0.41	1/ 0.05	/	30.0/ 1.36	9.14179
NNW	/	5/ 0.23	15/ 0.68	6/ 0.27	16/ 0.73	/	/	42.0/ 1.91	9.12758
TOTAL	/	49/ 2.23	199/ 9.04	276/ 12.54	141/ 6.41	11/ 0.50	/	676.0/ 30.71	9.36524

NUMBER OF BAD RECORDS: 0



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

9:37 TUESDAY, JANUARY 22, 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

29  
 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=F

## 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	/	3/ 0.14	3/ 0.14	16/ 0.73	7/ 0.32	/	/	29.0/ 1.32	9.90265
NNE	/	2/ 0.09	7/ 0.32	3/ 0.14	/	/	/	12.0/ 0.55	5.86682
NE	/	1/ 0.05	5/ 0.23	3/ 0.14	/	/	/	9.0/ 0.41	6.00656
ENE	/	/	7/ 0.32	4/ 0.18	/	/	/	11.0/ 0.50	6.36075
E	/	/	2/ 0.09	3/ 0.14	/	/	/	5.0/ 0.23	8.08404
ESE	/	1/ 0.05	/	2/ 0.09	/	/	/	3.0/ 0.14	6.85342
SE	/	2/ 0.09	2/ 0.09	6/ 0.27	/	/	/	10.0/ 0.45	7.21027
SSE	/	1/ 0.05	7/ 0.32	9/ 0.41	1/ 0.05	/	/	18.0/ 0.82	7.79278
S	/	/	10/ 0.45	21/ 0.95	/	/	/	31.0/ 1.41	8.26381
SSW	/	/	15/ 0.68	16/ 0.73	1/ 0.05	/	/	32.0/ 1.45	8.09623
SW	/	/	4/ 0.18	7/ 0.32	8/ 0.36	/	/	19.0/ 0.86	10.98970
WSW	/	/	7/ 0.32	8/ 0.36	2/ 0.09	/	/	17.0/ 0.77	8.34927
W	/	2/ 0.09	5/ 0.23	/	/	/	/	7.0/ 0.32	4.41411
WNW	/	1/ 0.05	5/ 0.23	5/ 0.23	4/ 0.18	/	/	15.0/ 0.68	9.21016
NW	/	1/ 0.05	7/ 0.32	14/ 0.64	3/ 0.14	/	/	25.0/ 1.14	8.85776
NNW	/	1/ 0.05	2/ 0.09	8/ 0.36	5/ 0.23	/	/	16.0/ 0.73	10.48857
TOTAL	/	15/ 0.68	88/ 4.00	125/ 5.68	31/ 1.41	/	/	259.0/ 11.77	8.41424

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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9:37 TUESDAY, JANUARY 22, 1985

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

31  
 9:37 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=G

UPWNDSPO

UPWNDDEG

	CALM	.75-3.5	3.5-7.5	7.5-12.5	12.5-18.5	18.5-25	>= 25	TOTAL	AVERAGE UPWNDSPO
N	0.1/ 0.00	6/ 0.27	16/ 0.73	16/ 0.73	4/ 0.18	/	/	42.1/ 1.91	7.89508
NNE	0.1/ 0.00	5/ 0.23	17/ 0.77	11/ 0.50	/	/	/	33.1/ 1.50	6.12730
NE	0.2/ 0.01	8/ 0.36	18/ 0.82	8/ 0.36	/	/	/	34.2/ 1.55	5.48007
ENE	0.1/ 0.00	4/ 0.18	17/ 0.77	7/ 0.32	/	/	/	28.1/ 1.28	6.09483
E	0.1/ 0.00	4/ 0.18	25/ 1.14	1/ 0.05	/	/	/	30.1/ 1.37	5.30373
ESE	0.1/ 0.00	3/ 0.14	12/ 0.55	6/ 0.27	/	/	/	21.1/ 0.96	6.07630
SE	0.1/ 0.00	4/ 0.18	7/ 0.32	4/ 0.18	/	/	/	15.1/ 0.69	5.67474
SSE	0.2/ 0.01	8/ 0.36	20/ 0.91	7/ 0.32	/	/	/	35.2/ 1.60	4.92457
S	0.2/ 0.01	7/ 0.32	14/ 0.64	16/ 0.73	2/ 0.09	/	/	39.2/ 1.78	6.68744
SSW	0.2/ 0.01	7/ 0.32	31/ 1.41	39/ 1.77	1/ 0.05	/	/	78.2/ 3.55	7.26727
SW	0.1/ 0.00	5/ 0.23	28/ 1.27	33/ 1.50	1/ 0.05	/	/	67.1/ 3.05	7.44510
WSW	0.2/ 0.01	8/ 0.36	19/ 0.86	11/ 0.50	/	/	/	38.2/ 1.74	5.92377
W	0.2/ 0.01	8/ 0.36	20/ 0.91	3/ 0.14	/	/	/	31.2/ 1.42	4.50465
WNW	0.1/ 0.00	3/ 0.14	7/ 0.32	7/ 0.32	2/ 0.09	/	/	19.1/ 0.87	7.98653
NW	0.1/ 0.00	3/ 0.14	6/ 0.27	13/ 0.59	1/ 0.05	/	/	23.1/ 1.05	7.60264
NNW	0.0/ 0.00	1/ 0.05	11/ 0.50	14/ 0.64	1/ 0.05	/	/	27.0/ 1.23	8.21707
TOTAL	2.0/ 0.09	84/ 3.82	268/ 12.18	196/ 8.91	12/ 0.55	/	/	562.0/ 25.53	6.56163

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

9:37 TUESDAY, JANUARY 22, 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

17  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	8.6/ 0.39	69/ 3.13	95/ 4.32	41/ 1.86	1/ 0.05	/	/	214.6/ 9.75	4.77410
NNE	3.7/ 0.17	30/ 1.36	103/ 4.68	100/ 4.54	6/ 0.27	/	/	242.7/11.03	7.07268
NE	3.8/ 0.17	31/ 1.41	52/ 2.36	17/ 0.77	2/ 0.09	/	/	105.8/ 4.81	5.17994
ENE	3.1/ 0.14	25/ 1.14	24/ 1.09	8/ 0.36	/	/	/	60.1/ 2.73	4.39020
E	2.0/ 0.09	16/ 0.73	23/ 1.04	2/ 0.09	/	/	/	43.0/ 1.95	3.91743
ESE	4.0/ 0.18	32/ 1.45	22/ 1.00	1/ 0.05	/	/	/	59.0/ 2.68	3.30350
SE	3.3/ 0.15	27/ 1.23	15/ 0.68	8/ 0.36	/	/	/	53.3/ 2.42	3.85328
SSE	10.4/ 0.47	84/ 3.82	35/ 1.59	12/ 0.55	3/ 0.14	/	/	144.4/ 6.56	3.70170
S	10.0/ 0.45	81/ 3.68	58/ 2.64	19/ 0.86	1/ 0.05	/	/	169.0/ 7.68	4.05178
SSW	6.1/ 0.28	49/ 2.23	80/ 3.63	40/ 1.82	2/ 0.09	/	/	177.1/ 8.05	5.42655
SW	3.3/ 0.15	27/ 1.23	84/ 3.82	30/ 1.36	1/ 0.05	/	/	145.3/ 6.60	5.38292
WSW	3.5/ 0.16	28/ 1.27	32/ 1.45	10/ 0.45	/	/	/	73.5/ 3.34	4.29810
W	4.1/ 0.19	33/ 1.50	22/ 1.00	2/ 0.09	/	/	/	61.1/ 2.78	3.44979
WNW	6.1/ 0.28	49/ 2.23	23/ 1.04	8/ 0.36	/	/	/	86.1/ 3.91	3.49120
NW	16.7/ 0.76	135/ 6.13	42/ 1.91	23/ 1.04	/	/	/	216.7/ 9.85	3.18754
NNW	26.3/ 1.19	212/ 9.63	99/ 4.50	12/ 0.55	/	/	/	349.3/15.87	2.93086
TOTAL	115.0/ 5.22	928/42.16	809/36.76	333/15.13	16/ 0.73	/	/	2201/ 100	4.37343

NUMBER OF BAD RECORDS: 7

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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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9:35 TUESDAY, JANUARY 22, 1985

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  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	7/ 0.32	/	/	/	8.0/ 0.36	8.68559
NNE	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	9.63815
NE	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	9.90495
ENE	/	/	5/ 0.23	5/ 0.23	/	/	/	10.0/ 0.45	7.88561
E	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	5.80290
ESE	/	/	/	/	/	/	/	/	
SE	/	/	/	/	/	/	/	/	
SSE	/	/	/	/	/	/	/	/	
S	/	/	/	/	/	/	/	/	
SSW	/	/	/	/	/	/	/	/	
SW	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	7.71497
WSW	/	/	/	/	/	/	/	/	
W	/	/	/	/	/	/	/	/	
WNW	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	9.40470
NW	/	/	/	2/ 0.09	/	/	/	2.0/ 0.09	8.51259
NNW	/	/	/	/	/	/	/	/	
TOTAL	/	/	9/ 0.41	21/ 0.95	/	/	/	30.0/ 1.36	8.27024

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

9:35 TUESDAY, JANUARY 22, 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

21  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	/	/	1/ 0.05	6/ 0.27	/	/	/	7.0/ 0.32	8.70911
NNE	/	/	1/ 0.05	4/ 0.18	/	/	/	5.0/ 0.23	9.44805
NE	/	/	/	2/ 0.09	1/ 0.05	/	/	3.0/ 0.14	11.07220
ENE	/	/	2/ 0.09	1/ 0.05	/	/	/	3.0/ 0.14	7.24807
E	/	/	4/ 0.18	/	/	/	/	4.0/ 0.18	5.31099
ESE	/	1/ 0.05	2/ 0.09	/	/	/	/	3.0/ 0.14	4.16875
SE	/	/	2/ 0.09	/	/	/	/	2.0/ 0.09	3.88527
SSE	/	/	/	/	/	/	/	/	
S	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	9.57145
SSW	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	6.80340
SW	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	6.98682
WSW	/	/	/	4/ 0.18	/	/	/	4.0/ 0.18	9.11289
W	/	/	/	/	/	/	/	/	
WNW	/	/	/	1/ 0.05	/	/	/	1.0/ 0.05	8.33750
NW	/	/	1/ 0.05	2/ 0.09	/	/	/	3.0/ 0.14	7.67050
NNW	/	/	1/ 0.05	3/ 0.14	/	/	/	4.0/ 0.18	8.40420
TOTAL	/	1/ 0.05	16/ 0.73	27/ 1.23	1/ 0.05	/	/	45.0/ 2.04	7.78315

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

22  
9:35 TUESDAY, JANUARY 22, 1985

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  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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/ 0.09	/	/	/	4.0/ 0.18	7.62464
NNE	/	/	2/ 0.09	7/ 0.32	/	/	/	9.0/ 0.41	8.56910
NE	/	1/ 0.05	6/ 0.27	3/ 0.14	1/ 0.05	/	/	11.0/ 0.50	7.21573
ENE	/	1/ 0.05	1/ 0.05	/	/	/	/	2.0/ 0.09	3.87694
E	/	1/ 0.05	5/ 0.23	1/ 0.05	/	/	/	7.0/ 0.32	4.64280
ESE	/	2/ 0.09	2/ 0.09	/	/	/	/	4.0/ 0.18	3.69768
SE	/	2/ 0.09	2/ 0.09	/	/	/	/	4.0/ 0.18	3.91862
SSE	/	/	/	1/ 0.05	1/ 0.05	/	/	2.0/ 0.09	11.88927
S	/	/	1/ 0.05	3/ 0.14	/	/	/	4.0/ 0.18	8.25412
SSW	/	/	3/ 0.14	1/ 0.05	/	/	/	4.0/ 0.18	6.65749
SW	/	/	6/ 0.27	5/ 0.23	/	/	/	11.0/ 0.50	7.70082
WSW	/	1/ 0.05	1/ 0.05	1/ 0.05	/	/	/	3.0/ 0.14	6.04191
W	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	4.90245
WNW	/	/	1/ 0.05	1/ 0.05	/	/	/	2.0/ 0.09	7.85392
NW	/	/	1/ 0.05	9/ 0.41	/	/	/	10.0/ 0.45	8.31082
NNW	/	/	1/ 0.05	4/ 0.18	/	/	/	5.0/ 0.23	8.29081
TOTAL	/	8/ 0.36	35/ 1.59	38/ 1.73	2/ 0.09	/	/	83.0/ 3.77	7.09812

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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9:35 TUESDAY, JANUARY 22, 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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 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=D

## 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	/	8/ 0.36	54/ 2.45	21/ 0.95	/	/	/	83.0/ 3.77	5.83424
NNE	/	7/ 0.32	48/ 2.18	76/ 3.45	6/ 0.27	/	/	137.0/ 6.22	8.18183
NE	/	11/ 0.50	14/ 0.64	6/ 0.27	/	/	/	31.0/ 1.41	5.22680
ENE	/	7/ 0.32	9/ 0.41	2/ 0.09	/	/	/	18.0/ 0.82	4.47353
E	/	7/ 0.32	5/ 0.23	/	/	/	/	12.0/ 0.55	3.28636
ESE	/	18/ 0.82	10/ 0.45	/	/	/	/	28.0/ 1.27	3.35088
SE	/	10/ 0.45	6/ 0.27	1/ 0.05	/	/	/	17.0/ 0.77	3.54098
SSE	/	1/ 0.05	12/ 0.55	3/ 0.14	/	/	/	16.0/ 0.73	6.08742
S	/	5/ 0.23	12/ 0.55	9/ 0.41	/	/	/	26.0/ 1.18	6.38268
SSW	/	4/ 0.18	29/ 1.32	22/ 1.00	/	/	/	55.0/ 2.50	7.23483
SW	/	1/ 0.05	26/ 1.18	14/ 0.64	1/ 0.05	/	/	42.0/ 1.91	6.82047
WSW	/	3/ 0.14	10/ 0.45	5/ 0.23	/	/	/	18.0/ 0.82	5.72230
W	/	7/ 0.32	10/ 0.45	2/ 0.09	/	/	/	19.0/ 0.86	4.85593
WNW	/	2/ 0.09	9/ 0.41	/	/	/	/	11.0/ 0.50	5.28446
NW	/	1/ 0.05	2/ 0.09	6/ 0.27	/	/	/	9.0/ 0.41	7.05167
NNW	/	1/ 0.05	19/ 0.86	4/ 0.18	/	/	/	24.0/ 1.09	5.50831
TOTAL	/	93/ 4.23	275/ 12.49	171/ 7.77	7/ 0.32	/	/	546.0/ 24.81	6.29660

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 LOWNDEG AND LOWNDSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

26  
9:35 TUESDAY, JANUARY 22, 1985

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  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH 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	24/ 1.09	35/ 1.59	5/ 0.23	1/ 0.05	/	/	65.2/ 2.96	4.58485
NNE	0.1/ 0.00	17/ 0.77	52/ 2.36	11/ 0.50	/	/	/	80.1/ 3.64	5.42588
NE	0.1/ 0.00	15/ 0.68	31/ 1.41	5/ 0.23	/	/	/	51.1/ 2.32	4.90419
ENE	0.1/ 0.00	11/ 0.50	7/ 0.32	/	/	/	/	18.1/ 0.82	3.43956
E	0.1/ 0.00	8/ 0.36	7/ 0.32	1/ 0.05	/	/	/	16.1/ 0.73	3.82152
ESE	0.1/ 0.00	9/ 0.41	8/ 0.36	1/ 0.05	/	/	/	18.1/ 0.82	3.64431
SE	0.1/ 0.00	7/ 0.32	5/ 0.23	7/ 0.32	/	/	/	19.1/ 0.87	5.45538
SSE	0.3/ 0.01	33/ 1.50	18/ 0.82	8/ 0.36	2/ 0.09	/	/	61.3/ 2.79	4.59419
S	0.1/ 0.00	15/ 0.68	39/ 1.77	6/ 0.27	1/ 0.05	/	/	61.1/ 2.78	5.16843
SSW	0.1/ 0.00	15/ 0.68	41/ 1.86	16/ 0.73	2/ 0.09	/	/	74.1/ 3.37	5.78382
SW	0.1/ 0.00	9/ 0.41	37/ 1.68	7/ 0.32	/	/	/	53.1/ 2.41	5.17671
WSW	0.1/ 0.00	11/ 0.50	16/ 0.73	/	/	/	/	27.1/ 1.23	4.08230
W	0.1/ 0.00	12/ 0.55	8/ 0.36	/	/	/	/	20.1/ 0.91	3.39348
WNW	0.1/ 0.00	9/ 0.41	10/ 0.45	4/ 0.18	/	/	/	23.1/ 1.05	5.01964
NW	0.2/ 0.01	18/ 0.82	16/ 0.73	4/ 0.18	/	/	/	38.2/ 1.74	4.42651
NNW	0.1/ 0.00	17/ 0.77	32/ 1.45	1/ 0.05	/	/	/	50.1/ 2.28	4.35938
TOTAL	2.0/ 0.09	230/10.45	362/16.45	76/ 3.45	6/ 0.27	/	/	676.0/30.71	4.82435

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

9:35 TUESDAY, JANUARY 22, 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

29  
 9:35 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=4TH QTR STAB=F

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	0.7/ 0.03	12/ 0.55	1/ 0.05	/	/	/	/	13.7/ 0.62	2.25963
NNE	0.2/ 0.01	3/ 0.14	/	/	/	/	/	3.2/ 0.15	2.00359
NE	/	/	1/ 0.05	/	/	/	/	1.0/ 0.05	3.93530
ENE	0.3/ 0.01	5/ 0.23	/	/	/	/	/	5.3/ 0.24	1.61007
E	/	/	/	/	/	/	/	/	/
ESE	0.1/ 0.00	2/ 0.09	/	/	/	/	/	2.1/ 0.10	1.65359
SE	0.2/ 0.01	4/ 0.18	/	/	/	/	/	4.2/ 0.19	1.66551
SSE	1.4/ 0.06	23/ 1.04	5/ 0.23	/	/	/	/	29.4/ 1.34	2.54547
S	1.8/ 0.08	29/ 1.32	5/ 0.23	/	/	/	/	35.8/ 1.63	2.38106
SSW	1.0/ 0.05	16/ 0.73	5/ 0.23	/	/	/	/	22.0/ 1.00	2.80441
SW	0.6/ 0.03	9/ 0.41	12/ 0.55	/	/	/	/	21.6/ 0.98	3.36201
WSW	0.5/ 0.02	8/ 0.36	5/ 0.23	/	/	/	/	13.5/ 0.61	2.88353
W	0.6/ 0.03	9/ 0.41	2/ 0.09	/	/	/	/	11.6/ 0.53	2.64929
WNW	0.6/ 0.03	10/ 0.45	1/ 0.05	/	/	/	/	11.6/ 0.53	2.23386
NW	1.2/ 0.05	19/ 0.86	20/ 0.91	/	/	/	/	40.2/ 1.83	3.36402
NNW	1.9/ 0.09	31/ 1.41	11/ 0.50	/	/	/	/	43.9/ 1.99	2.85392
TOTAL	11.0/ 0.50	180/ 8.18	68/ 3.09	/	/	/	/	259.0/ 11.77	2.74437

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

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9:35 TUESDAY, JANUARY 22, 1985

ENVIRONMENTAL MONITORING SYSTEM - CAROLINA POWER & LIGHT COMPANY  
 PROGRAM IM001#25 (MDFREQ) - FEB 1983  
 JOINT OCCURRENCE FREQUENCIES FOR LOWNDDEG AND LOWNDSPD  
 RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

9:35 TUESDAY, JANUARY 22, 1985

Page 35 of 61

SITE=ROBN YEAR=84 PERIOD=4TH 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	6.1/ 0.28	25/ 1.14	1/ 0.05	/	/	/	/	32.1/ 1.46	1.30666
NNE	0.7/ 0.03	3/ 0.14	/	/	/	/	/	3.7/ 0.17	1.58522
NE	1.0/ 0.05	4/ 0.18	/	/	/	/	/	5.0/ 0.23	0.75200
ENE	0.2/ 0.01	1/ 0.05	/	/	/	/	/	1.2/ 0.05	0.79898
E	/	/	/	/	/	/	/	0.0/ 0.00	
ESE	/	/	/	/	/	/	/	0.0/ 0.00	
SE	1.0/ 0.05	4/ 0.18	/	/	/	/	/	5.0/ 0.23	1.47903
SSE	6.6/ 0.30	27/ 1.23	/	/	/	/	/	33.6/ 1.53	1.34711
S	7.8/ 0.35	32/ 1.45	1/ 0.05	/	/	/	/	40.8/ 1.85	1.65517
SSW	3.4/ 0.15	14/ 0.64	1/ 0.05	/	/	/	/	18.4/ 0.84	1.46262
SW	2.0/ 0.09	8/ 0.36	1/ 0.05	/	/	/	/	11.0/ 0.50	1.49765
WSW	1.2/ 0.05	5/ 0.23	/	/	/	/	/	6.2/ 0.28	0.92516
W	1.2/ 0.05	5/ 0.23	1/ 0.05	/	/	/	/	7.2/ 0.33	1.59564
WNW	6.9/ 0.31	28/ 1.27	2/ 0.09	/	/	/	/	36.9/ 1.68	1.53435
NW	23.8/ 1.08	97/ 4.41	2/ 0.09	/	/	/	/	122.8/ 5.58	1.62859
NNW	40.0/ 1.82	163/ 7.41	35/ 1.59	/	/	/	/	238.0/10.81	1.99470
TOTAL	102.0/ 4.63	416/18.90	44/ 2.00	/	/	/	/	562.0/25.53	1.71650

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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9:35 TUESDAY, JANUARY 22, 1985

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ATTACHMENT 3

DIFFUSION ANALYSIS  
GROUND LEVEL RELEASE  
JULY 1 - DECEMBER 31, 1984  
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 July 1 through December 31, 1984 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  $7.5E-05$  in the SSE sector. Site boundary maximums for previous six-month periods are as follows:

JAN - JUN 1983	$4.9E-05$	SSE SECTOR
JUL - DEC 1983	$3.1E-05$	SSE SECTOR
JAN - JUN 1984	$4.3E-05$	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	11	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 JUL-DEC 84															
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 JUL-DEC 84															
37	16	20.100	1.400	60.700	59.000	1370.0	11.0	0.0									
38	17	B	0	0	0												
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1 XQQDOQ - ROBINSON GROUND AND MIXED MODE RELEASES JUL-DEC 84

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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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 I= 3, J= 1	0.05	0.02	0.09	0.25	0.11	0.11	0.05	0.05	0.0	0.11	0.07	0.02	0.02	0.02	0.0	0.0
8 I= 4, J= 1	0.20	0.14	0.20	0.43	0.02	0.0	0.0	0.02	0.25	0.14	0.07	0.02	0.02	0.07	0.05	0.0
9 I= 5, J= 1	0.0	0.0	0.05	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
10 I= 6, 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
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	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 I= 3, J= 2	0.16	0.05	0.07	0.16	0.25	0.18	0.18	0.02	0.18	0.23	0.34	0.18	0.07	0.05	0.02	0.02
15 I= 4, J= 2	0.39	0.20	0.32	0.14	0.0	0.0	0.0	0.07	0.11	0.25	0.11	0.11	0.0	0.02	0.05	0.11
16 I= 5, J= 2	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 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	0.02	0.02	0.02	0.09	0.09	0.07	0.02	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0
21 I= 3, J= 3	0.30	0.14	0.34	0.23	0.20	0.16	0.18	0.07	0.27	0.34	0.50	0.45	0.23	0.07	0.07	0.09
22 I= 4, J= 3	0.11	0.18	0.23	0.05	0.02	0.0	0.05	0.09	0.14	0.20	0.16	0.02	0.0	0.02	0.20	0.11
23 I= 5, J= 3	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	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	0.30	0.20	0.45	0.32	0.25	0.55	0.41	0.11	0.11	0.11	0.05	0.27	0.30	0.18	0.02	0.05
28 I= 3, J= 4	2.20	2.07	0.98	0.68	0.39	0.45	0.45	0.68	0.66	1.43	1.64	0.91	0.86	0.39	0.18	0.75
29 I= 4, J= 4	1.07	3.07	0.73	0.16	0.05	0.0	0.02	0.16	0.61	0.89	0.41	0.16	0.07	0.07	0.36	0.55
30 I= 5, J= 4	0.05	0.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.02	0.02
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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00
34 I= 2, J= 5	0.89	0.70	0.59	0.45	0.50	0.36	0.50	1.11	0.95	1.32	1.04	0.64	0.52	0.45	0.80	0.68
35 I= 3, J= 5	1.41	1.98	1.36	0.36	0.23	0.30	0.18	1.18	2.41	2.18	1.57	0.57	0.30	0.41	0.86	1.29
36 I= 4, J= 5	0.20	0.41	0.14	0.02	0.02	0.02	0.18	0.20	0.36	0.61	0.16	0.0	0.0	0.11	0.09	0.23
37 I= 5, J= 5	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.0
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	0.03	0.02	0.00	0.01	0.0	0.01	0.01	0.06	0.09	0.11	0.08	0.05	0.02	0.04	0.06	0.07
41 I= 2, J= 6	0.41	0.25	0.05	0.14	0.0	0.16	0.14	0.89	1.25	1.59	1.09	0.77	0.34	0.61	0.84	1.02
42 I= 3, J= 6	0.07	0.07	0.14	0.05	0.0	0.0	0.02	0.39	0.36	0.36	0.41	0.14	0.05	0.05	0.55	0.34
43 I= 4, J= 6	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.02	0.0	0.0	0.02	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	0.02	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	0.15	0.02	0.02	0.01	0.00	0.0	0.03	0.17	0.22	0.14	0.07	0.05	0.03	0.19	0.68	0.92
48 I= 2, J= 7	0.66	0.07	0.11	0.05	0.02	0.0	0.14	0.80	1.00	0.61	0.30	0.20	0.16	0.84	3.09	4.18
49 I= 3, J= 7	0.05	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.05	0.02	0.0	0.02	0.05	0.09	0.80
50 I= 4, J= 7	0.0	0.0	0.05	0.0	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 8.70 9.76 6.03 3.52 2.17 2.44 2.61 6.18 9.13 10.76 8.15 4.60 2.99 3.66 8.04 11.25

56 TOTAL HOURS CONSIDERED ARE 4402

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

2	DISTANCES AND TERRAIN HEIGHTS IN METERS AS FUNCTIONS OF DIRECTION FROM THE SITE:																
3	DIRECTION =	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE
4	DISTANCE	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.	402.
5	ELEVATION	69.	71.	68.	68.	71.	73.	73.	70.	69.	71.	69.	73.	74.	72.	69.	69.
6	DISTANCE	451.	805.	579.	579.	805.	885.	418.	418.	418.	207.	207.	207.	418.	805.	418.	418.
7	ELEVATION	70.	73.	69.	69.	73.	78.	73.	71.	70.	76.	72.	84.	74.	76.	69.	69.
8	DISTANCE	1207.	1207.	805.	966.	966.	1207.	1207.	1207.	1207.	2012.	1625.	1448.	1207.	966.	483.	483.
9	ELEVATION	72.	76.	70.	71.	74.	81.	82.	75.	79.	82.	73.	87.	86.	78.	69.	69.
10	DISTANCE	2012.	2012.	1207.	1207.	1207.	1448.	2012.	2012.	2012.	2253.	2012.	2012.	1448.	1207.	1207.	1207.
11	ELEVATION	74.	81.	72.	73.	75.	84.	91.	79.	74.	83.	74.	104.	89.	80.	69.	69.
12	DISTANCE	2816.	2816.	2012.	2012.	2012.	2012.	2816.	2816.	2816.	2655.	2816.	2816.	2012.	2012.	2012.	2012.
13	ELEVATION	76.	87.	77.	77.	80.	88.	92.	83.	77.	86.	76.	114.	98.	88.	69.	69.
14	DISTANCE	3621.	3347.	2816.	2816.	2816.	2816.	3621.	3042.	3122.	2816.	3621.	3541.	2816.	2816.	2816.	2816.
15	ELEVATION	79.	90.	81.	82.	85.	89.	102.	84.	78.	87.	78.	115.	109.	91.	69.	69.
16	DISTANCE	4426.	3621.	3621.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	4426.	3621.	3621.	3621.	3621.	3621.
17	ELEVATION	81.	92.	86.	87.	88.	90.	111.	87.	79.	92.	81.	122.	120.	91.	69.	69.
18	DISTANCE	5230.	4426.	4426.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	5230.	4426.	4426.	4426.	4426.	4426.
19	ELEVATION	83.	95.	91.	91.	88.	90.	121.	91.	82.	99.	83.	122.	120.	91.	69.	69.
20	DISTANCE	6035.	5230.	5230.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	6035.	5230.	5230.	5230.	5230.	5230.
21	ELEVATION	85.	95.	95.	91.	88.	91.	127.	96.	84.	109.	85.	122.	120.	91.	69.	69.
22	DISTANCE	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.	7644.
23	ELEVATION	87.	95.	95.	91.	88.	122.	133.	96.	91.	118.	101.	122.	120.	91.	69.	69.

1 EXIT ONE GROUND LEVEL RELEASE JUL-DEC 84  
2 NO DECAY, UNDEPLETED

## 3 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

## DISTANCE IN MILES

SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	2.063E-05	6.325E-06	3.244E-06	2.091E-06	1.149E-06	7.769E-07	5.793E-07	4.560E-07	3.726E-07	3.130E-07	2.685E-07
SSW	1.086E-05	3.569E-06	1.951E-06	1.284E-06	7.132E-07	4.719E-07	3.431E-07	2.646E-07	2.125E-07	1.759E-07	1.489E-07
SW	8.086E-06	2.607E-06	1.410E-06	9.187E-07	5.047E-07	3.342E-07	2.438E-07	1.886E-07	1.519E-07	1.260E-07	1.069E-07
WSW	4.959E-06	1.583E-06	8.481E-07	5.556E-07	3.081E-07	2.043E-07	1.489E-07	1.151E-07	9.264E-08	7.681E-08	6.513E-08
W	3.279E-06	1.072E-06	5.918E-07	3.856E-07	2.106E-07	1.378E-07	9.946E-08	7.625E-08	6.095E-08	5.023E-08	4.238E-08
WNW	4.191E-06	1.383E-06	7.484E-07	4.922E-07	2.728E-07	1.792E-07	1.294E-07	9.921E-08	7.931E-08	6.536E-08	5.513E-08
NW	6.267E-06	1.972E-06	1.036E-06	6.723E-07	3.700E-07	2.473E-07	1.821E-07	1.419E-07	1.151E-07	9.598E-08	8.184E-08
NNW	2.442E-05	7.281E-06	3.674E-06	2.385E-06	1.330E-06	9.097E-07	6.839E-07	5.418E-07	4.451E-07	3.754E-07	3.232E-07
N	3.135E-05	9.332E-06	4.695E-06	3.047E-06	1.701E-06	1.163E-06	8.748E-07	6.931E-07	5.694E-07	4.804E-07	4.135E-07
NNE	2.919E-05	8.815E-06	4.508E-06	2.963E-06	1.672E-06	1.137E-06	8.484E-07	6.679E-07	5.458E-07	4.584E-07	3.931E-07
NE	1.921E-05	5.860E-06	3.025E-06	1.997E-06	1.130E-06	7.648E-07	5.676E-07	4.450E-07	3.625E-07	3.035E-07	2.596E-07
ENE	1.248E-05	3.818E-06	1.957E-06	1.288E-06	7.270E-07	4.920E-07	3.651E-07	2.862E-07	2.331E-07	1.952E-07	1.670E-07
E	8.057E-06	2.505E-06	1.301E-06	8.512E-07	4.751E-07	3.201E-07	2.370E-07	1.855E-07	1.508E-07	1.261E-07	1.078E-07
ESE	2.003E-05	5.902E-06	2.908E-06	1.862E-06	1.026E-06	7.061E-07	5.351E-07	4.266E-07	3.523E-07	2.985E-07	2.579E-07
SE	5.931E-05	1.723E-05	8.360E-06	5.279E-06	2.873E-06	1.988E-06	1.519E-06	1.220E-06	1.013E-06	8.618E-07	7.477E-07
SSE	8.009E-05	2.327E-05	1.126E-05	7.094E-06	3.849E-06	2.665E-06	2.039E-06	1.637E-06	1.360E-06	1.158E-06	1.005E-06

## 25 ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

## DISTANCE IN MILES

BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	2.342E-07	1.388E-07	9.600E-08	5.738E-08	3.996E-08	3.024E-08	2.410E-08	1.991E-08	1.688E-08	1.460E-08	1.283E-08
SSW	1.283E-07	7.263E-08	4.866E-08	2.780E-08	1.876E-08	1.385E-08	1.082E-08	8.793E-09	7.349E-09	6.276E-09	5.452E-09
SW	9.230E-08	5.275E-08	3.559E-08	2.057E-08	1.401E-08	1.042E-08	8.195E-09	6.694E-09	5.621E-09	4.820E-09	4.203E-09
WSW	5.623E-08	3.209E-08	2.163E-08	1.248E-08	8.485E-09	6.304E-09	4.952E-09	4.041E-09	3.390E-09	2.905E-09	2.532E-09
W	3.643E-08	2.046E-08	1.364E-08	7.755E-09	5.232E-09	3.864E-09	3.019E-09	2.453E-09	2.051E-09	1.752E-09	1.522E-09
WNW	4.738E-08	2.656E-08	1.767E-08	1.001E-08	6.725E-09	4.948E-09	3.856E-09	3.125E-09	2.606E-09	2.221E-09	1.926E-09
NW	7.100E-08	4.126E-08	2.817E-08	1.655E-08	1.140E-08	8.556E-09	6.775E-09	5.566E-09	4.698E-09	4.047E-09	3.543E-09
NNW	2.827E-07	1.693E-07	1.179E-07	7.105E-08	4.973E-08	3.775E-08	3.017E-08	2.498E-08	2.122E-08	1.838E-08	1.617E-08
N	3.618E-07	2.167E-07	1.510E-07	9.102E-08	6.373E-08	4.840E-08	3.868E-08	3.203E-08	2.721E-08	2.357E-08	2.074E-08
NNE	3.427E-07	2.027E-07	1.400E-07	8.336E-08	5.788E-08	4.368E-08	3.474E-08	2.864E-08	2.425E-08	2.094E-08	1.837E-08
NE	2.259E-07	1.325E-07	9.098E-08	5.379E-08	3.718E-08	2.795E-08	2.217E-08	1.823E-08	1.540E-08	1.327E-08	1.162E-08
ENE	1.452E-07	8.521E-08	5.853E-08	3.462E-08	2.394E-08	1.801E-08	1.429E-08	1.176E-08	9.937E-09	8.568E-09	7.506E-09
E	9.367E-08	5.476E-08	3.752E-08	2.213E-08	1.527E-08	1.147E-08	9.093E-09	7.475E-09	6.312E-09	5.440E-09	4.763E-09
ESE	2.264E-07	1.373E-07	9.643E-08	5.878E-08	4.145E-08	3.166E-08	2.542E-08	2.112E-08	1.800E-08	1.564E-08	1.379E-08
SE	6.585E-07	4.043E-07	2.863E-07	1.764E-07	1.253E-07	9.622E-08	7.758E-08	6.470E-08	5.530E-08	4.816E-08	4.257E-08
SSE	8.858E-07	5.445E-07	3.860E-07	2.382E-07	1.693E-07	1.301E-07	1.049E-07	8.754E-08	7.485E-08	6.521E-08	5.765E-08

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

## SEGMENT BOUNDARIES IN MILES

DIRECTION FROM SITE	5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	3.416E-06	1.193E-06	5.827E-07	3.737E-07	2.690E-07	1.410E-07	5.822E-08	3.037E-08	1.995E-08	1.462E-08
SSW	2.014E-06	7.329E-07	3.460E-07	2.134E-07	1.492E-07	7.434E-08	2.842E-08	1.395E-08	8.823E-09	6.289E-09
SW	1.458E-06	5.209E-07	2.458E-07	1.525E-07	1.071E-07	5.391E-08	2.099E-08	1.049E-08	6.714E-09	4.829E-09
WSW	8.813E-07	3.169E-07	1.501E-07	9.303E-08	6.530E-08	3.281E-08	1.274E-08	6.345E-09	4.053E-09	2.911E-09
W	6.068E-07	2.171E-07	1.004E-07	6.124E-08	4.250E-08	2.098E-08	7.941E-09	3.891E-09	2.462E-09	1.755E-09
WNW	7.755E-07	2.799E-07	1.306E-07	7.169E-08	5.529E-08	2.724E-08	1.025E-08	4.985E-09	3.136E-09	2.226E-09
NW	1.082E-06	3.826E-07	1.834E-07	1.155E-07	8.201E-08	4.205E-08	1.684E-08	8.603E-09	5.581E-09	4.053E-09
NNW	3.903E-06	1.378E-06	6.873E-07	4.462E-07	3.237E-07	1.716E-07	7.198E-08	3.791E-08	2.503E-08	1.840E-08
N	4.993E-06	1.761E-06	8.791E-07	5.708E-07	4.142E-07	2.197E-07	9.221E-08	4.860E-08	3.209E-08	2.360E-08
NNE	4.779E-06	1.721E-06	8.532E-07	5.474E-07	3.938E-07	2.059E-07	8.461E-08	4.389E-08	2.871E-08	2.097E-08
NE	3.198E-06	1.160E-06	5.712E-07	3.636E-07	2.601E-07	1.348E-07	5.467E-08	2.810E-08	1.828E-08	1.329E-08
ENE	2.073E-06	7.473E-07	3.674E-07	2.338E-07	1.673E-07	8.669E-08	3.519E-08	1.811E-08	1.179E-08	8.580E-09

1	E	1.369E-06	4.898E-07	2.385E-07	1.513E-07	1.080E-07	5.575E-08	2.250E-08	1.153E-08	7.495E-09	5.448E-09
2	ESE	3.108E-06	1.070E-06	5.373E-07	3.530E-07	2.583E-07	1.389E-07	5.944E-08	3.177E-08	2.116E-08	1.565E-08
3	SE	8.963E-06	3.014E-06	1.524E-06	1.014E-06	7.485E-07	4.083E-07	1.781E-07	9.653E-08	6.480E-08	4.820E-08
4	SSE	1.208E-05	4.044E-06	2.045E-06	1.362E-06	1.006E-06	5.499E-07	2.404E-07	1.305E-07	8.768E-08	6.527E-08

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	UNSTABLE/NEUTRAL CONDITIONS
15	ELEVATED	LESS THAN 0.0	LESS THAN 0.0
16	MIXED	BETWEEN 0.0 AND 0.0	BETWEEN 0.0 AND 0.0
17	GROUND LEVEL	ABOVE 0.0	ABOVE 0.0

1 EXIT ONE GROUND LEVEL RELEASE JUL-DEC 84  
2 2.260 DAY DECAY, UNDEPLETED

## ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

## DISTANCE IN MILES

SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	2.056E-05	6.283E-06	3.213E-06	2.064E-06	1.127E-06	7.573E-07	5.607E-07	4.383E-07	3.557E-07	2.966E-07	2.527E-07
SSW	1.084E-05	3.557E-06	1.942E-06	1.277E-06	7.067E-07	4.660E-07	3.377E-07	2.595E-07	2.077E-07	1.713E-07	1.445E-07
SW	8.070E-06	2.596E-06	1.402E-06	9.120E-07	4.992E-07	3.293E-07	2.392E-07	1.843E-07	1.478E-07	1.221E-07	1.031E-07
WSW	4.948E-06	1.576E-06	8.430E-07	5.511E-07	3.044E-07	2.009E-07	1.458E-07	1.122E-07	8.993E-08	7.422E-08	6.265E-08
W	3.273E-06	1.068E-06	5.888E-07	3.829E-07	2.084E-07	1.359E-07	9.772E-08	7.463E-08	5.944E-08	4.880E-08	4.102E-08
WNW	4.183E-06	1.378E-06	7.445E-07	4.888E-07	2.698E-07	1.766E-07	1.270E-07	9.703E-08	7.727E-08	6.344E-08	5.330E-08
NW	6.248E-06	1.960E-06	1.027E-06	6.650E-07	3.640E-07	2.419E-07	1.771E-07	1.372E-07	1.105E-07	9.164E-08	7.766E-08
NNW	2.433E-05	7.228E-06	3.634E-06	2.350E-06	1.302E-06	8.839E-07	6.595E-07	5.186E-07	4.228E-07	3.539E-07	3.024E-07
N	3.123E-05	9.262E-06	4.644E-06	3.004E-06	1.665E-06	1.131E-06	8.440E-07	6.637E-07	5.412E-07	4.532E-07	3.873E-07
NNE	2.909E-05	8.758E-06	4.466E-06	2.926E-06	1.641E-06	1.109E-06	8.222E-07	6.431E-07	5.221E-07	4.356E-07	3.711E-07
NE	1.915E-05	5.826E-06	3.000E-06	1.975E-06	1.111E-06	7.480E-07	5.519E-07	4.302E-07	3.483E-07	2.899E-07	2.465E-07
ENE	1.244E-05	3.794E-06	1.939E-06	1.273E-06	7.143E-07	4.804E-07	3.542E-07	2.760E-07	2.233E-07	1.858E-07	1.580E-07
E	8.032E-06	2.490E-06	1.290E-06	8.416E-07	4.671E-07	3.128E-07	2.302E-07	1.790E-07	1.446E-07	1.202E-07	1.021E-07
ESE	1.994E-05	5.850E-06	2.871E-06	1.831E-06	1.001E-06	6.827E-07	5.129E-07	4.054E-07	3.319E-07	2.788E-07	2.388E-07
SE	5.902E-05	1.707E-05	8.241E-06	5.180E-06	2.793E-06	1.915E-06	1.450E-06	1.152E-06	9.478E-07	7.992E-07	6.869E-07
SSE	7.970E-05	2.305E-05	1.110E-05	6.962E-06	3.743E-06	2.567E-06	1.945E-06	1.548E-06	1.274E-06	1.075E-06	9.240E-07

## ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

## DISTANCE IN MILES

BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	2.188E-07	1.251E-07	8.362E-08	4.670E-08	3.049E-08	2.169E-08	1.631E-08	1.275E-08	1.025E-08	8.438E-09	7.070E-09
SSW	1.241E-07	6.900E-08	4.541E-08	2.505E-08	1.634E-08	1.168E-08	8.842E-09	6.969E-09	5.656E-09	4.696E-09	3.970E-09
SW	8.869E-08	4.961E-08	3.277E-08	1.816E-08	1.188E-08	8.502E-09	6.441E-09	5.077E-09	4.120E-09	3.419E-09	2.889E-09
WSW	5.385E-08	3.005E-08	1.980E-08	1.093E-08	7.130E-09	5.087E-09	3.843E-09	3.021E-09	2.445E-09	2.024E-09	1.705E-09
W	3.513E-08	1.936E-08	1.266E-08	6.935E-09	4.512E-09	3.216E-09	2.428E-09	1.908E-09	1.543E-09	1.277E-09	1.076E-09
WNW	4.563E-08	2.510E-08	1.638E-08	8.939E-09	5.792E-09	4.115E-09	3.099E-09	2.429E-09	1.962E-09	1.620E-09	1.362E-09
NW	6.696E-08	3.774E-08	2.499E-08	1.383E-08	9.000E-09	6.394E-09	4.805E-09	3.755E-09	3.021E-09	2.486E-09	2.083E-09
NNW	2.626E-07	1.514E-07	1.017E-07	5.708E-08	3.734E-08	2.659E-08	2.000E-08	1.563E-08	1.257E-08	1.034E-08	8.656E-09
N	3.363E-07	1.941E-07	1.304E-07	7.332E-08	4.803E-08	3.425E-08	2.579E-08	2.018E-08	1.625E-08	1.338E-08	1.122E-08
NNE	3.214E-07	1.840E-07	1.231E-07	6.890E-08	4.511E-08	3.219E-08	2.428E-08	1.903E-08	1.536E-08	1.267E-08	1.064E-08
NE	2.132E-07	1.214E-07	8.100E-08	4.528E-08	2.967E-08	2.120E-08	1.602E-08	1.258E-08	1.017E-08	8.411E-09	7.078E-09
ENE	1.365E-07	7.762E-08	5.168E-08	2.879E-08	1.880E-08	1.340E-08	1.009E-08	7.901E-09	6.368E-09	5.249E-09	4.405E-09
E	8.817E-08	4.995E-08	3.319E-08	1.843E-08	1.201E-08	8.539E-09	6.421E-09	5.021E-09	4.042E-09	3.328E-09	2.790E-09
ESE	2.078E-07	1.208E-07	8.136E-08	4.575E-08	2.989E-08	2.123E-08	1.591E-08	1.239E-08	9.928E-09	8.136E-09	6.789E-09
SE	5.993E-07	3.513E-07	2.378E-07	1.343E-07	8.785E-08	6.238E-08	4.671E-08	3.632E-08	2.906E-08	2.378E-08	1.982E-08
SSE	8.066E-07	4.737E-07	3.211E-07	1.817E-07	1.191E-07	8.470E-08	6.353E-08	4.949E-08	3.966E-08	3.250E-08	2.713E-08

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

## SEGMENT BOUNDARIES IN MILES

DIRECTION FROM SITE	5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	3.385E-06	1.171E-06	5.641E-07	3.568E-07	2.531E-07	1.275E-07	4.770E-08	2.188E-08	1.281E-08	8.470E-09
SSW	2.005E-06	7.264E-07	3.406E-07	2.086E-07	1.449E-07	7.075E-08	2.570E-08	1.179E-08	7.004E-09	4.712E-09
SW	1.450E-06	5.154E-07	2.412E-07	1.484E-07	1.034E-07	5.081E-08	1.861E-08	8.578E-09	5.102E-09	3.431E-09
WSW	8.762E-07	3.132E-07	1.471E-07	9.032E-08	6.282E-08	3.078E-08	1.121E-08	5.135E-09	3.037E-09	2.031E-09
W	6.038E-07	2.150E-07	9.867E-08	5.973E-08	4.114E-08	1.989E-08	7.130E-09	3.246E-09	1.918E-09	1.281E-09
WNW	7.715E-07	2.770E-07	1.282E-07	7.765E-08	5.346E-08	2.579E-08	9.195E-09	4.156E-09	2.442E-09	1.626E-09
NW	1.074E-06	3.766E-07	1.784E-07	1.110E-07	7.784E-08	3.857E-08	1.416E-08	6.453E-09	3.776E-09	2.496E-09
NNW	3.862E-06	1.349E-06	6.630E-07	4.239E-07	3.029E-07	1.540E-07	5.822E-08	2.682E-08	1.571E-08	1.038E-08
N	4.941E-06	1.725E-06	8.484E-07	5.427E-07	3.879E-07	1.974E-07	7.477E-08	3.454E-08	2.029E-08	1.343E-08
NNE	4.736E-06	1.690E-06	8.271E-07	5.237E-07	3.718E-07	1.875E-07	7.036E-08	3.247E-08	1.913E-08	1.271E-08
NE	3.173E-06	1.142E-06	5.555E-07	3.494E-07	2.470E-07	1.238E-07	4.628E-08	2.139E-08	1.265E-08	8.440E-09
ENE	2.056E-06	7.346E-07	3.566E-07	2.241E-07	1.583E-07	7.919E-08	2.944E-08	1.351E-08	7.942E-09	5.268E-09

1	E	1.357E-06	4.817E-07	2.317E-07	1.452E-07	1.023E-07	5.099E-08	1.886E-08	8.617E-09	5.048E-09	3.340E-09
2	ESE	3.071E-06	1.044E-06	5.152E-07	3.327E-07	2.392E-07	1.226E-07	4.662E-08	2.141E-08	1.246E-08	8.168E-09
3	SE	8.842E-06	2.933E-06	1.455E-06	9.497E-07	6.878E-07	3.560E-07	1.367E-07	6.290E-08	3.652E-08	2.388E-08
4	SSE	1.192E-05	3.936E-06	1.952E-06	1.276E-06	9.252E-07	4.798E-07	1.849E-07	8.541E-08	4.976E-08	3.263E-08
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:			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				
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1 EXIT ONE GROUND LEVEL RELEASE JUL-DEC 84  
2 8.000 DAY DECAY, DEPLETED

	ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)					DISTANCE IN MILES							
	SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500	
5													
6													
7	S	1.951E-05	5.765E-06	2.883E-06	1.824E-06	9.705E-07	6.387E-07	4.649E-07	3.581E-07	2.869E-07	2.366E-07	1.995E-07	
8	SSW	1.027E-05	3.256E-06	1.736E-06	1.122E-06	6.041E-07	3.893E-07	2.767E-07	2.090E-07	1.648E-07	1.340E-07	1.116E-07	
9	SW	7.649E-06	2.378E-06	1.255E-06	8.025E-07	4.273E-07	2.755E-07	1.964E-07	1.488E-07	1.176E-07	9.582E-08	7.997E-08	
10	WSW	4.690E-06	1.444E-06	7.544E-07	4.852E-07	2.608E-07	1.683E-07	1.199E-07	9.077E-08	7.168E-08	5.838E-08	4.870E-08	
11	W	3.102E-06	9.777E-07	5.266E-07	3.369E-07	1.783E-07	1.137E-07	8.016E-08	6.020E-08	4.722E-08	3.825E-08	3.174E-08	
12	WNW	3.964E-06	1.261E-06	6.659E-07	4.300E-07	2.309E-07	1.477E-07	1.043E-07	7.831E-08	6.143E-08	4.975E-08	4.128E-08	
13	NW	5.926E-06	1.797E-06	9.210E-07	5.867E-07	3.128E-07	2.035E-07	1.463E-07	1.117E-07	8.875E-08	7.271E-08	6.095E-08	
14	NNW	2.309E-05	6.635E-06	3.264E-06	2.079E-06	1.123E-06	7.471E-07	5.483E-07	4.250E-07	3.422E-07	2.834E-07	2.397E-07	
15	N	2.964E-05	8.504E-06	4.171E-06	2.657E-06	1.436E-06	9.557E-07	7.014E-07	5.438E-07	4.379E-07	3.626E-07	3.068E-07	
16	NNE	2.760E-05	8.035E-06	4.007E-06	2.584E-06	1.412E-06	9.350E-07	6.811E-07	5.248E-07	4.205E-07	3.468E-07	2.923E-07	
17	NE	1.816E-05	5.343E-06	2.690E-06	1.743E-06	9.548E-07	6.293E-07	4.561E-07	3.501E-07	2.796E-07	2.299E-07	1.934E-07	
18	ENE	1.180E-05	3.480E-06	1.739E-06	1.124E-06	6.144E-07	4.046E-07	2.932E-07	2.250E-07	1.797E-07	1.477E-07	1.242E-07	
19	E	7.619E-06	2.284E-06	1.156E-06	7.427E-07	4.016E-07	2.633E-07	1.904E-07	1.458E-07	1.163E-07	9.550E-08	8.023E-08	
20	ESE	1.893E-05	5.376E-06	2.582E-06	1.622E-06	8.655E-07	5.791E-07	4.282E-07	3.340E-07	2.702E-07	2.247E-07	1.908E-07	
21	SE	5.605E-05	1.570E-05	7.420E-06	4.596E-06	2.420E-06	1.629E-06	1.214E-06	9.531E-07	7.753E-07	6.474E-07	5.517E-07	
22	SSE	7.569E-05	2.119E-05	9.997E-06	6.177E-06	3.243E-06	2.183E-06	1.629E-06	1.280E-06	1.042E-06	8.702E-07	7.419E-07	

25	ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)												
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	1.712E-07	9.491E-08	6.191E-08	3.352E-08	2.146E-08	1.506E-08	1.120E-08	8.677E-09	6.922E-09	5.649E-09	4.694E-09	
29	SSW	9.471E-08	5.044E-08	3.203E-08	1.675E-08	1.050E-08	7.264E-09	5.350E-09	4.115E-09	3.267E-09	2.658E-09	2.204E-09	
30	SW	6.802E-08	3.652E-08	2.333E-08	1.232E-08	7.775E-09	5.408E-09	3.999E-09	3.086E-09	2.457E-09	2.003E-09	1.664E-09	
31	WSW	4.140E-08	2.219E-08	1.416E-08	7.456E-09	4.699E-09	3.263E-09	2.410E-09	1.858E-09	1.477E-09	1.203E-09	9.988E-10	
32	W	2.688E-08	1.420E-08	8.966E-09	4.665E-09	2.923E-09	2.022E-09	1.489E-09	1.145E-09	9.092E-10	7.396E-10	6.133E-10	
33	WNW	3.494E-08	1.842E-08	1.161E-08	6.020E-09	3.756E-09	2.589E-09	1.902E-09	1.459E-09	1.156E-09	9.387E-10	7.771E-10	
34	NW	5.204E-08	2.834E-08	1.827E-08	9.750E-09	6.192E-09	4.321E-09	3.201E-09	2.472E-09	1.968E-09	1.603E-09	1.330E-09	
35	NNW	2.063E-07	1.155E-07	7.582E-08	4.136E-08	2.659E-08	1.871E-08	1.395E-08	1.082E-08	8.639E-09	7.057E-09	5.868E-09	
36	N	2.640E-07	1.479E-07	9.714E-08	5.302E-08	3.411E-08	2.401E-08	1.791E-08	1.390E-08	1.110E-08	9.072E-09	7.546E-09	
37	NNE	2.508E-07	1.389E-07	9.051E-08	4.893E-08	3.130E-08	2.195E-08	1.633E-08	1.264E-08	1.009E-08	8.237E-09	6.848E-09	
38	NE	1.656E-07	9.105E-08	5.906E-08	3.175E-08	2.025E-08	1.418E-08	1.053E-08	8.150E-09	6.500E-09	5.306E-09	4.411E-09	
39	ENE	1.064E-07	5.846E-08	3.790E-08	2.036E-08	1.298E-08	9.082E-09	6.742E-09	5.214E-09	4.156E-09	3.390E-09	2.816E-09	
40	E	6.861E-08	3.758E-08	2.431E-08	1.302E-08	8.283E-09	5.786E-09	4.290E-09	3.314E-09	2.639E-09	2.151E-09	1.786E-09	
41	ESE	1.647E-07	9.323E-08	6.162E-08	3.390E-08	2.190E-08	1.546E-08	1.155E-08	8.968E-09	7.168E-09	5.857E-09	4.870E-09	
42	SE	4.777E-07	2.736E-07	1.822E-07	1.011E-07	6.568E-08	4.653E-08	3.483E-08	2.710E-08	2.169E-08	1.774E-08	1.476E-08	
43	SSE	6.427E-07	3.686E-07	2.457E-07	1.366E-07	8.881E-08	6.297E-08	4.718E-08	3.673E-08	2.942E-08	2.407E-08	2.005E-08	

45	CHI/Q (SEC/METER CUBED) FOR EACH SEGMENT											
46	SEGMENT BOUNDARIES IN MILES											
47	DIRECTION	5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50	
48	FROM SITE											
49	S	3.053E-06	1.013E-06	4.685E-07	2.881E-07	2.000E-07	9.719E-08	3.447E-08	1.523E-08	8.731E-09	5.673E-09	
50	SSW	1.801E-06	6.238E-07	2.797E-07	1.657E-07	1.120E-07	5.209E-08	1.737E-08	7.361E-09	4.145E-09	2.670E-09	
51	SW	1.303E-06	4.432E-07	1.985E-07	1.182E-07	8.024E-08	3.766E-08	1.275E-08	5.476E-09	3.107E-09	2.011E-09	
52	WSW	7.879E-07	2.696E-07	1.212E-07	7.207E-08	4.886E-08	2.289E-08	7.720E-09	3.305E-09	1.871E-09	1.209E-09	
53	W	5.425E-07	1.848E-07	8.111E-08	4.751E-08	3.187E-08	1.469E-08	4.847E-09	2.049E-09	1.153E-09	7.430E-10	
54	WNW	6.934E-07	2.382E-07	1.055E-07	6.180E-08	4.144E-08	1.907E-08	6.257E-09	2.625E-09	1.470E-09	9.432E-10	
55	NW	9.672E-07	3.251E-07	1.477E-07	8.918E-08	6.113E-08	2.913E-08	1.006E-08	4.372E-09	2.488E-09	1.610E-09	
56	NNW	3.486E-06	1.168E-06	5.520E-07	3.434E-07	2.403E-07	1.180E-07	4.245E-08	1.891E-08	1.088E-08	7.085E-09	
57	N	4.461E-06	1.494E-06	7.062E-07	4.395E-07	3.075E-07	1.512E-07	5.442E-08	2.426E-08	1.398E-08	9.108E-09	
58	NNE	4.270E-06	1.461E-06	6.863E-07	4.222E-07	2.931E-07	1.423E-07	5.034E-08	2.219E-08	1.272E-08	8.271E-09	
59	NE	2.858E-06	9.852E-07	4.599E-07	2.808E-07	1.939E-07	9.339E-08	3.271E-08	1.434E-08	8.201E-09	5.329E-09	
60	ENE	1.853E-06	6.344E-07	2.956E-07	1.804E-07	1.246E-07	5.996E-08	2.098E-08	9.186E-09	5.248E-09	3.404E-09	



1	E	1.223E-06	4.159E-07	1.920E-07	1.168E-07	8.045E-08	3.858E-08	1.343E-08	5.853E-09	3.336E-09	2.160E-09
2	ESE	2.776E-06	9.063E-07	4.308E-07	2.711E-07	1.911E-07	9.506E-08	3.473E-08	1.561E-08	9.019E-09	5.880E-09
3	SE	8.004E-06	2.552E-06	1.220E-06	7.774E-07	5.527E-07	2.783E-07	1.034E-07	4.696E-08	2.725E-08	1.781E-08
4	SSE	1.079E-05	3.424E-06	1.637E-06	1.044E-06	7.432E-07	3.749E-07	1.396E-07	6.355E-08	3.693E-08	2.417E-08
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:			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				
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1	EXIT ONE GROUND LEVEL RELEASE JUL-DEC 84											
2	***** RELATIVE DEPOSITION PER UNIT AREA (M**-2) 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	5.038E-08	1.704E-08	8.747E-09	5.371E-09	2.678E-09	1.624E-09	1.098E-09	7.956E-10	6.050E-10	4.766E-10	3.859E-10
6	SSW	5.652E-08	1.911E-08	9.813E-09	6.026E-09	3.004E-09	1.822E-09	1.232E-09	8.927E-10	6.788E-10	5.347E-10	4.329E-10
7	SW	3.491E-08	1.180E-08	6.061E-09	3.722E-09	1.855E-09	1.125E-09	7.608E-10	5.513E-10	4.192E-10	3.303E-10	2.674E-10
8	WSW	2.039E-08	6.894E-09	3.540E-09	2.174E-09	1.084E-09	6.572E-10	4.444E-10	3.220E-10	2.448E-10	1.929E-10	1.562E-10
9	W	1.255E-08	4.243E-09	2.179E-09	1.338E-09	6.670E-10	4.045E-10	2.735E-10	1.982E-10	1.507E-10	1.187E-10	9.611E-11
10	WNW	1.415E-08	4.786E-09	2.457E-09	1.509E-09	7.522E-10	4.562E-10	3.085E-10	2.235E-10	1.700E-10	1.339E-10	1.084E-10
11	NW	1.511E-08	5.111E-09	2.624E-09	1.611E-09	8.033E-10	4.872E-10	3.294E-10	2.387E-10	1.815E-10	1.430E-10	1.158E-10
12	NNW	3.576E-08	1.209E-08	6.210E-09	3.813E-09	1.901E-09	1.153E-09	7.795E-10	5.648E-10	4.295E-10	3.384E-10	2.739E-10
13	N	5.286E-08	1.788E-08	9.178E-09	5.636E-09	2.810E-09	1.704E-09	1.152E-09	8.349E-10	6.348E-10	5.002E-10	4.049E-10
14	NNE	6.228E-08	2.106E-08	1.081E-08	6.640E-09	3.310E-09	2.008E-09	1.357E-09	9.836E-10	7.479E-10	5.893E-10	4.770E-10
15	NE	4.718E-08	1.595E-08	8.192E-09	5.030E-09	2.508E-09	1.521E-09	1.028E-09	7.452E-10	5.666E-10	4.464E-10	3.614E-10
16	ENE	2.665E-08	9.011E-09	4.627E-09	2.841E-09	1.416E-09	8.590E-10	5.808E-10	4.209E-10	3.200E-10	2.521E-10	2.041E-10
17	E	1.734E-08	5.862E-09	3.010E-09	1.848E-09	9.214E-10	5.588E-10	3.778E-10	2.738E-10	2.082E-10	1.640E-10	1.328E-10
18	ESE	2.122E-08	7.174E-09	3.684E-09	2.262E-09	1.128E-09	6.839E-10	4.624E-10	3.351E-10	2.548E-10	2.007E-10	1.625E-10
19	SE	4.656E-08	1.575E-08	8.084E-09	4.964E-09	2.475E-09	1.501E-09	1.015E-09	7.354E-10	5.592E-10	4.400E-10	3.566E-10
20	SSE	6.512E-08	2.202E-08	1.131E-08	6.943E-09	3.461E-09	2.099E-09	1.419E-09	1.029E-09	7.821E-10	6.161E-10	4.988E-10
21												
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	3.192E-10	1.564E-10	9.814E-11	4.961E-11	3.002E-11	2.013E-11	1.442E-11	1.083E-11	8.422E-12	6.727E-12	5.491E-12
25	SSW	3.581E-10	1.755E-10	1.101E-10	5.565E-11	3.368E-11	2.258E-11	1.618E-11	1.215E-11	9.448E-12	7.547E-12	6.160E-12
26	SW	2.212E-10	1.084E-10	6.801E-11	3.437E-11	2.081E-11	1.395E-11	9.995E-12	7.505E-12	5.836E-12	4.662E-12	3.805E-12
27	WSW	1.292E-10	6.330E-11	3.972E-11	2.008E-11	1.215E-11	8.147E-12	5.838E-12	4.383E-12	3.408E-12	2.723E-12	2.222E-12
28	W	7.950E-11	3.896E-11	2.445E-11	1.236E-11	7.479E-12	5.014E-12	3.593E-12	2.698E-12	2.098E-12	1.676E-12	1.368E-12
29	WNW	8.967E-11	4.394E-11	2.757E-11	1.394E-11	8.435E-12	5.655E-12	4.052E-12	3.043E-12	2.366E-12	1.890E-12	1.543E-12
30	NW	9.575E-11	4.692E-11	2.944E-11	1.488E-11	9.007E-12	6.039E-12	4.327E-12	3.249E-12	2.526E-12	2.018E-12	1.647E-12
31	NNW	2.266E-10	1.110E-10	6.967E-11	3.522E-11	2.131E-11	1.429E-11	1.024E-11	7.689E-12	5.979E-12	4.776E-12	3.898E-12
32	N	3.349E-10	1.641E-10	1.030E-10	5.205E-11	3.151E-11	2.112E-11	1.514E-11	1.137E-11	8.837E-12	7.059E-12	5.762E-12
33	NNE	3.946E-10	1.934E-10	1.213E-10	6.133E-11	3.712E-11	2.489E-11	1.783E-11	1.339E-11	1.041E-11	8.317E-12	6.788E-12
34	NE	2.989E-10	1.465E-10	9.192E-11	4.646E-11	2.812E-11	1.885E-11	1.351E-11	1.014E-11	7.887E-12	6.300E-12	5.143E-12
35	ENE	1.688E-10	8.274E-11	5.192E-11	2.624E-11	1.588E-11	1.065E-11	7.630E-12	5.730E-12	4.455E-12	3.559E-12	2.905E-12
36	E	1.098E-10	5.383E-11	3.377E-11	1.707E-11	1.033E-11	6.927E-12	4.964E-12	3.727E-12	2.898E-12	2.315E-12	1.890E-12
37	ESE	1.344E-10	6.587E-11	4.133E-11	2.089E-11	1.264E-11	8.478E-12	6.075E-12	4.562E-12	3.547E-12	2.833E-12	2.312E-12
38	SE	2.950E-10	1.446E-10	9.071E-11	4.585E-11	2.775E-11	1.861E-11	1.333E-11	1.001E-11	7.784E-12	6.218E-12	5.075E-12
39	SSE	4.126E-10	2.022E-10	1.269E-10	6.412E-11	3.881E-11	2.602E-11	1.865E-11	1.400E-11	1.089E-11	8.696E-12	7.098E-12
40												
41	***** RELATIVE DEPOSITION PER UNIT AREA (M**-2) BY DOWNWIND SECTORS *****											
42	SEGMENT BOUNDARIES IN MILES											
43	DIRECTION	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50	
44	FROM SITE											
45	S	9.088E-09	2.808E-09	1.117E-09	6.106E-10	3.881E-10	1.667E-10	5.169E-11	2.049E-11	1.094E-11	6.771E-12	
46	SSW	1.020E-08	3.150E-09	1.254E-09	6.850E-10	4.354E-10	1.870E-10	5.799E-11	2.298E-11	1.227E-11	7.597E-12	
47	SW	6.298E-09	1.946E-09	7.742E-10	4.231E-10	2.689E-10	1.155E-10	3.582E-11	1.420E-11	7.581E-12	4.692E-12	
48	WSW	3.678E-09	1.136E-09	4.522E-10	2.471E-10	1.570E-10	6.746E-11	2.092E-11	8.291E-12	4.427E-12	2.740E-12	
49	W	2.264E-09	6.994E-10	2.783E-10	1.521E-10	9.666E-11	4.152E-11	1.287E-11	5.103E-12	2.725E-12	1.687E-12	
50	WNW	2.553E-09	7.888E-10	3.139E-10	1.715E-10	1.090E-10	4.683E-11	1.452E-11	5.755E-12	3.073E-12	1.902E-12	
51	NW	2.726E-09	8.423E-10	3.352E-10	1.832E-10	1.164E-10	5.001E-11	1.551E-11	6.146E-12	3.282E-12	2.031E-12	
52	NNW	6.452E-09	1.993E-09	7.932E-10	4.335E-10	2.755E-10	1.183E-10	3.669E-11	1.454E-11	7.766E-12	4.807E-12	
53	N	9.537E-09	2.946E-09	1.172E-09	6.407E-10	4.072E-10	1.749E-10	5.424E-11	2.150E-11	1.148E-11	7.105E-12	
54	NNE	1.124E-08	3.471E-09	1.381E-09	7.548E-10	4.798E-10	2.061E-10	6.390E-11	2.533E-11	1.352E-11	8.371E-12	
55	NE	8.512E-09	2.630E-09	1.046E-09	5.718E-10	3.634E-10	1.561E-10	4.841E-11	1.919E-11	1.025E-11	6.342E-12	
56	ENE	4.808E-09	1.485E-09	5.910E-10	3.230E-10	2.053E-10	8.817E-11	2.734E-11	1.084E-11	5.787E-12	3.582E-12	
57	E	3.128E-09	9.662E-10	3.845E-10	2.101E-10	1.335E-10	5.736E-11	1.779E-11	7.050E-12	3.765E-12	2.330E-12	
58	ESE	3.828E-09	1.183E-09	4.706E-10	2.571E-10	1.634E-10	7.020E-11	2.177E-11	8.628E-12	4.607E-12	2.852E-12	
59	SE	8.400E-09	2.595E-09	1.033E-09	5.643E-10	3.587E-10	1.541E-10	4.777E-11	1.894E-11	1.011E-11	6.259E-12	
60	SSE	1.175E-08	3.630E-09	1.444E-09	7.893E-10	5.016E-10	2.155E-10	6.682E-11	2.648E-11	1.414E-11	8.753E-12	

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VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT (METERS) 0.0  
DIAMETER (METERS) 0.0  
EXIT VELOCITY (METERS) 0.0

REP. WIND HEIGHT (METERS) 11.0  
BUILDING HEIGHT (METERS) 59.0  
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)

STABLE CONDITIONS  
ELEVATED LESS THAN 0.0  
MIXED BETWEEN 0.0 AND 0.0  
GROUND LEVEL ABOVE 0.0

WIND SPEED (METERS/SEC)  
UNSTABLE/NEUTRAL CONDITIONS  
LESS THAN 0.0  
BETWEEN 0.0 AND 0.0  
ABOVE 0.0

1 EXIT ONE GROUND LEVEL RELEASE JUL-DEC 84  
 2 SPECIFIC POINTS OF INTEREST

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	
8	A SITE BOUNDARY	S	0.28	451.	1.7E-05	1.7E-05	1.6E-05	4.2E-08
9	A SITE BOUNDARY	SSW	0.29	467.	8.4E-06	8.4E-06	7.9E-06	4.5E-08
10	A SITE BOUNDARY	SW	0.36	579.	4.4E-06	4.4E-06	4.1E-06	2.0E-08
11	A SITE BOUNDARY	WSW	0.36	579.	2.7E-06	2.7E-06	2.5E-06	1.2E-08
12	A SITE BOUNDARY	W	0.50	805.	1.1E-06	1.1E-06	9.8E-07	4.2E-09
13	A SITE BOUNDARY	WNW	0.55	885.	1.2E-06	1.2E-06	1.1E-06	4.1E-09
14	A SITE BOUNDARY	NW	1.23	1979.	5.0E-07	4.9E-07	4.3E-07	1.1E-09
15	A SITE BOUNDARY	NNW	1.89	3042.	9.8E-07	9.5E-07	8.1E-07	1.3E-09
16	A SITE BOUNDARY	N	1.94	3122.	1.2E-06	1.2E-06	1.0E-06	1.8E-09
17	A SITE BOUNDARY	NNE	1.26	2028.	2.1E-06	2.1E-06	1.8E-06	4.5E-09
18	A SITE BOUNDARY	NE	1.01	1625.	2.0E-06	1.9E-06	1.7E-06	4.9E-09
19	A SITE BOUNDARY	ENE	0.86	1384.	1.6E-06	1.6E-06	1.4E-06	3.7E-09
20	A SITE BOUNDARY	E	0.61	982.	1.8E-06	1.8E-06	1.6E-06	4.2E-09
21	A SITE BOUNDARY	ESE	0.50	805.	5.9E-06	5.8E-06	5.4E-06	7.2E-09
22	A SITE BOUNDARY	SE	0.29	467.	4.5E-05	4.5E-05	4.3E-05	3.7E-08
23	A SITE BOUNDARY	SSE	0.26	418.	7.5E-05	7.4E-05	7.0E-05	6.1E-08
24	A MILK COW	NE	1.30	2092.	1.4E-06	1.4E-06	1.2E-06	3.2E-09
25	A MILK COW	E	4.20	6759.	1.2E-07	1.1E-07	8.9E-08	1.5E-10
26	A MEAT ANIMAL	S	2.32	3734.	6.4E-07	6.2E-07	5.2E-07	1.3E-09
27	A MEAT ANIMAL	SSW	2.08	3347.	4.5E-07	4.4E-07	3.7E-07	1.7E-09
28	A MEAT ANIMAL	SW	2.27	3653.	2.8E-07	2.7E-07	2.3E-07	9.0E-10
29	A MEAT ANIMAL	WSW	2.69	4329.	1.3E-07	1.3E-07	1.1E-07	3.9E-10
30	A MEAT ANIMAL	W	3.97	6389.	5.1E-08	4.9E-08	3.9E-08	1.2E-10
31	A MEAT ANIMAL	WNW	4.07	6550.	6.4E-08	6.2E-08	4.8E-08	1.3E-10
32	A MEAT ANIMAL	NW	1.60	2575.	3.4E-07	3.3E-07	2.8E-07	7.2E-10
33	A MEAT ANIMAL	NNW	2.84	4571.	5.8E-07	5.6E-07	4.6E-07	6.2E-10
34	A MEAT ANIMAL	N	2.93	4715.	7.1E-07	6.8E-07	5.6E-07	8.7E-10
35	A MEAT ANIMAL	NNE	1.65	2655.	1.5E-06	1.4E-06	1.2E-06	2.8E-09
36	A MEAT ANIMAL	NE	1.16	1867.	1.6E-06	1.6E-06	1.4E-06	3.9E-09
37	A MEAT ANIMAL	ENE	2.41	3879.	3.8E-07	3.7E-07	3.1E-07	6.2E-10
38	A MEAT ANIMAL	E	3.12	5021.	1.8E-07	1.7E-07	1.4E-07	2.6E-10
39	A MEAT ANIMAL	ESE	1.99	3203.	7.1E-07	6.9E-07	5.8E-07	6.9E-10
40	A RESIDENT	S	0.30	483.	1.5E-05	1.5E-05	1.4E-05	3.8E-08
41	A RESIDENT	SSW	0.30	483.	8.0E-06	8.0E-06	7.5E-06	4.3E-08
42	A RESIDENT	SW	0.40	644.	3.7E-06	3.7E-06	3.4E-06	1.7E-08
43	A RESIDENT	WSW	0.40	644.	2.2E-06	2.2E-06	2.1E-06	9.9E-09
44	A RESIDENT	W	0.60	966.	8.2E-07	8.2E-07	7.4E-07	3.2E-09
45	A RESIDENT	WNW	0.70	1127.	8.3E-07	8.3E-07	7.4E-07	2.8E-09
46	A RESIDENT	NW	1.30	2092.	4.6E-07	4.5E-07	3.9E-07	1.0E-09
47	A RESIDENT	NNW	2.90	4667.	5.7E-07	5.4E-07	4.5E-07	6.0E-10
48	A RESIDENT	N	2.90	4667.	7.2E-07	6.9E-07	5.7E-07	8.9E-10
49	A RESIDENT	NNE	1.30	2092.	2.0E-06	2.0E-06	1.7E-06	4.2E-09
50	A RESIDENT	NE	1.20	1931.	1.5E-06	1.5E-06	1.3E-06	3.7E-09
51	A RESIDENT	ENE	0.90	1448.	1.5E-06	1.5E-06	1.3E-06	3.4E-09
52	A RESIDENT	E	0.80	1287.	1.2E-06	1.2E-06	1.0E-06	2.7E-09
53	A RESIDENT	ESE	0.60	966.	4.3E-06	4.3E-06	3.9E-06	5.3E-09
54	A RESIDENT	SE	0.30	483.	4.3E-05	4.3E-05	4.0E-05	3.5E-08
55	A RESIDENT	SSE	0.30	483.	5.8E-05	5.7E-05	5.4E-05	4.9E-08
56	A GARDEN	S	0.40	644.	9.2E-06	9.1E-06	8.5E-06	2.4E-08
57	A GARDEN	SSW	0.50	805.	3.6E-06	3.6E-06	3.3E-06	1.9E-08
58	A GARDEN	SW	0.50	805.	2.6E-06	2.6E-06	2.4E-06	1.2E-08
59	A GARDEN	WSW	0.60	966.	1.2E-06	1.2E-06	1.1E-06	5.1E-09
60	A GARDEN	W	0.60	966.	8.2E-07	8.2E-07	7.4E-07	3.2E-09

1	A	GARDEN	WNW	0.90	1448.	5.7E-07	5.7E-07	5.0E-07	1.8E-09
2	A	GARDEN	NW	1.30	2092.	4.6E-07	4.5E-07	3.9E-07	1.0E-09
3	A	GARDEN	NNW	3.00	4828.	5.4E-07	5.2E-07	4.2E-07	5.6E-10
4	A	GARDEN	N	2.90	4667.	7.2E-07	6.9E-07	5.7E-07	8.9E-10
5	A	GARDEN	NNE	1.40	2253.	1.8E-06	1.8E-06	1.6E-06	3.7E-09
6	A	GARDEN	NE	1.30	2092.	1.4E-06	1.4E-06	1.2E-06	3.2E-09
7	A	GARDEN	ENE	2.20	3541.	4.3E-07	4.2E-07	3.5E-07	7.3E-10
8	A	GARDEN	E	2.80	4506.	2.0E-07	2.0E-07	1.6E-07	3.1E-10
9	A	GARDEN	ESE	0.60	966.	4.3E-06	4.3E-06	3.9E-06	5.3E-09
10	A	GARDEN	SE	0.30	483.	4.3E-05	4.3E-05	4.0E-05	3.5E-08
11	A	GARDEN	SSE	0.30	483.	5.8E-05	5.7E-05	5.4E-05	4.9E-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)				
21					WIND SPEED (METERS/SEC)				
22					STABLE CONDITIONS UNSTABLE/NEUTRAL CONDITIONS				
23	ELEVATED LESS THAN 0.0				LESS THAN 0.0				
24	MIXED BETWEEN 0.0 AND 0.0				BETWEEN 0.0 AND 0.0				
25	GROUND LEVEL ABOVE 0.0				ABOVE 0.0				
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ATTACHMENT 4

METEOROLOGICAL DATA FOR  
 DIFFUSION ANALYSIS  
 JULY 1 - DECEMBER 31, 1984  
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 July 1 through December 31, 1984.

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>
	2.7	4.1	5.7	27.0	31.1	13.3	16.1
2.	<u>Wind Speed</u>					<u>10 Meter</u>	<u>60 Meter</u>
	Average Speed (mph)					4.7	8.7
	Percent Calm					3.5	0.1
	Percent Less than 3.5 mph					40.9	8.2
3.	<u>Wind Direction</u>					<u>10 Meter</u>	<u>60 Meter</u>
	Prevailing Direction					SSW	NNE, SSW
	Percent Occurrence					10.8	11.4
4.	<u>Data Recovery</u>					<u>10 Meter</u>	<u>60 Meter</u>
	Percent Good Hours					99.7	99.7

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

9:41 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC SUMMARY OVER ALL STAB

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	0.1/ 0.00	22/ 0.50	114/ 2.59	196/ 4.45	119/ 2.70	27/ 0.61	/	478.1/10.86	10.43980
NNE	0.1/ 0.00	22/ 0.50	124/ 2.82	183/ 4.16	160/ 3.63	11/ 0.25	/	500.1/11.36	10.31753
NE	0.2/ 0.00	38/ 0.86	103/ 2.34	105/ 2.38	69/ 1.57	5/ 0.11	/	320.2/ 7.27	8.84467
ENE	0.2/ 0.00	27/ 0.61	81/ 1.84	58/ 1.32	21/ 0.48	/	/	187.2/ 4.25	7.28970
E	0.1/ 0.00	25/ 0.57	81/ 1.84	44/ 1.00	1/ 0.02	/	/	151.1/ 3.43	6.12009
ESE	0.2/ 0.00	40/ 0.91	71/ 1.61	25/ 0.57	1/ 0.02	/	/	137.2/ 3.12	5.33648
SE	0.2/ 0.00	28/ 0.64	61/ 1.39	30/ 0.68	9/ 0.20	/	/	128.2/ 2.91	6.45772
SSE	0.1/ 0.00	24/ 0.55	88/ 2.00	80/ 1.82	18/ 0.41	2/ 0.05	/	212.1/ 4.82	7.61328
S	0.1/ 0.00	14/ 0.32	121/ 2.75	185/ 4.20	46/ 1.04	3/ 0.07	/	369.1/ 8.38	8.78928
SSW	0.1/ 0.00	17/ 0.39	142/ 3.23	276/ 6.27	63/ 1.43	2/ 0.05	/	500.1/11.36	9.06032
SW	0.1/ 0.00	17/ 0.39	127/ 2.88	227/ 5.16	46/ 1.04	1/ 0.02	/	418.1/ 9.50	8.74938
WSW	0.1/ 0.00	17/ 0.39	148/ 3.36	131/ 2.98	24/ 0.55	3/ 0.07	/	323.1/ 7.34	7.80394
W	0.1/ 0.00	25/ 0.57	115/ 2.61	29/ 0.66	1/ 0.02	/	/	170.1/ 3.86	5.69244
WNW	0.1/ 0.00	11/ 0.25	53/ 1.20	41/ 0.93	19/ 0.43	3/ 0.07	/	127.1/ 2.89	8.47244
NW	0.1/ 0.00	18/ 0.41	38/ 0.86	61/ 1.39	37/ 0.84	7/ 0.16	/	161.1/ 3.66	9.31670
NNW	0.1/ 0.00	15/ 0.34	68/ 1.54	71/ 1.61	53/ 1.20	13/ 0.30	/	220.1/ 5.00	9.80107
TOTAL	2.0/ 0.05	360/ 8.18	1535/34.86	1742/39.56	687/15.60	77/ 1.75	/	4403/ 100	8.65441

NUMBER OF BAD RECORDS: 13

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

9:41 TUESDAY, JANUARY 22, 1985

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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

9:41 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=JUL-DEC STAB=A

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	/	/	/	5/ 0.11	6/ 0.14	1/ 0.02	/	12.0/ 0.27	13.06208
NNE	/	/	/	6/ 0.14	2/ 0.05	/	/	8.0/ 0.18	11.89553
NE	/	/	1/ 0.02	11/ 0.25	16/ 0.36	2/ 0.05	/	30.0/ 0.68	13.26329
ENE	/	/	3/ 0.07	9/ 0.20	4/ 0.09	/	/	16.0/ 0.36	10.51567
E	/	/	1/ 0.02	4/ 0.09	/	/	/	5.0/ 0.11	8.76104
ESE	/	/	2/ 0.05	1/ 0.02	/	/	/	3.0/ 0.07	6.61997
SE	/	/	2/ 0.05	/	/	/	/	2.0/ 0.05	6.11972
SSE	/	/	/	/	1/ 0.02	/	/	1.0/ 0.02	12.73970
S	/	/	1/ 0.02	2/ 0.05	6/ 0.14	/	/	9.0/ 0.20	12.28947
SSW	/	/	/	9/ 0.20	6/ 0.14	/	/	15.0/ 0.34	12.05825
SW	/	/	1/ 0.02	4/ 0.09	/	/	/	5.0/ 0.11	9.58145
WSW	/	/	/	2/ 0.05	/	/	/	2.0/ 0.05	10.16341
W	/	/	/	1/ 0.02	/	/	/	1.0/ 0.02	9.65482
WNW	/	/	/	3/ 0.07	1/ 0.02	/	/	4.0/ 0.09	11.43071
NW	/	/	/	1/ 0.02	2/ 0.05	/	/	3.0/ 0.07	12.63409
NNW	/	/	/	/	1/ 0.02	/	/	1.0/ 0.02	13.47340
TOTAL	/	/	11/ 0.25	58/ 1.32	45/ 1.02	3/ 0.07	/	117.0/ 2.66	11.73649

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

9:41 TUESDAY, JANUARY 22, 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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 9:41 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	/	/	2/ 0.05	12/ 0.27	8/ 0.18	3/ 0.07	/	25.0/ 0.57	12.53915
NNE	/	/	2/ 0.05	1/ 0.02	13/ 0.30	1/ 0.02	/	17.0/ 0.39	13.87458
NE	/	/	3/ 0.07	4/ 0.09	4/ 0.09	1/ 0.02	/	12.0/ 0.27	12.01433
ENE	/	/	3/ 0.07	10/ 0.23	2/ 0.05	/	/	15.0/ 0.34	9.54699
E	/	1/ 0.02	5/ 0.11	4/ 0.09	/	/	/	10.0/ 0.23	6.60163
ESE	/	/	7/ 0.16	/	/	/	/	7.0/ 0.16	4.78811
SE	/	/	7/ 0.16	/	/	/	/	7.0/ 0.16	5.35982
SSE	/	/	/	2/ 0.05	/	/	/	2.0/ 0.05	11.76421
S	/	/	1/ 0.02	9/ 0.20	2/ 0.05	/	/	12.0/ 0.27	9.97860
SSW	/	/	5/ 0.11	10/ 0.23	4/ 0.09	/	/	19.0/ 0.43	9.29851
SW	/	/	7/ 0.16	9/ 0.20	5/ 0.11	/	/	21.0/ 0.48	9.04658
WSW	/	/	3/ 0.07	9/ 0.20	3/ 0.07	/	/	15.0/ 0.34	9.66594
W	/	/	1/ 0.02	2/ 0.05	/	/	/	3.0/ 0.07	7.60380
WNW	/	/	2/ 0.05	1/ 0.02	/	/	/	3.0/ 0.07	6.81637
NW	/	/	1/ 0.02	1/ 0.02	3/ 0.07	/	/	5.0/ 0.11	10.35184
NNW	/	/	/	3/ 0.07	5/ 0.11	/	/	8.0/ 0.18	13.97781
TOTAL	/	1/ 0.02	49/ 1.11	77/ 1.75	49/ 1.11	5/ 0.11	/	181.0/ 4.11	10.14104

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

9:41 TUESDAY, JANUARY 22, 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

9:41 TUESDAY, JANUARY 22, 1985

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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	10/ 0.23	1/ 0.02	2/ 0.05	/	19.0/ 0.43	9.61270
NNE	/	/	4/ 0.09	4/ 0.09	11/ 0.25	1/ 0.02	/	20.0/ 0.45	12.21360
NE	/	3/ 0.07	4/ 0.09	12/ 0.27	5/ 0.11	1/ 0.02	/	25.0/ 0.57	9.12856
ENE	/	/	7/ 0.16	4/ 0.09	3/ 0.07	/	/	14.0/ 0.32	8.33035
E	/	1/ 0.02	11/ 0.25	1/ 0.02	/	/	/	13.0/ 0.30	5.29495
ESE	/	1/ 0.02	7/ 0.16	/	/	/	/	8.0/ 0.18	4.31882
SE	/	/	6/ 0.14	3/ 0.07	1/ 0.02	/	/	10.0/ 0.23	7.18526
SSE	/	/	5/ 0.11	3/ 0.07	2/ 0.05	/	/	10.0/ 0.23	9.06286
S	/	/	5/ 0.11	8/ 0.18	3/ 0.07	/	/	16.0/ 0.36	9.49537
SSW	/	/	10/ 0.23	15/ 0.34	/	/	/	25.0/ 0.57	8.40820
SW	/	/	10/ 0.23	11/ 0.25	3/ 0.07	/	/	24.0/ 0.55	9.15179
WSW	/	/	14/ 0.32	11/ 0.25	3/ 0.07	/	/	28.0/ 0.64	8.08579
W	/	1/ 0.02	5/ 0.11	3/ 0.07	/	/	/	9.0/ 0.20	6.47360
WNW	/	/	3/ 0.07	1/ 0.02	1/ 0.02	/	/	5.0/ 0.11	7.61714
NW	/	/	3/ 0.07	8/ 0.18	5/ 0.11	/	/	16.0/ 0.36	10.76058
NNW	/	/	/	3/ 0.07	5/ 0.11	/	/	8.0/ 0.18	11.73920
TOTAL	/	6/ 0.14	100/ 2.27	97/ 2.20	43/ 0.98	4/ 0.09	/	250.0/ 5.68	8.83290
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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9:41 TUESDAY, JANUARY 22, 1985

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

9:41 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC STAB=D

## 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	/	6/ 0.14	47/ 1.07	67/ 1.52	58/ 1.32	17/ 0.39	/	195.0/ 4.43	11.18123
NNE	/	3/ 0.07	33/ 0.75	67/ 1.52	115/ 2.61	9/ 0.20	/	227.0/ 5.16	12.23504
NE	/	6/ 0.14	27/ 0.61	27/ 0.61	29/ 0.66	/	/	89.0/ 2.02	9.80771
ENE	/	10/ 0.23	20/ 0.45	11/ 0.25	4/ 0.09	/	/	45.0/ 1.02	6.53215
E	/	7/ 0.16	14/ 0.32	8/ 0.18	1/ 0.02	/	/	30.0/ 0.68	5.96020
ESE	/	17/ 0.39	14/ 0.32	5/ 0.11	/	/	/	36.0/ 0.82	4.83992
SE	/	9/ 0.20	19/ 0.43	5/ 0.11	/	/	/	33.0/ 0.75	5.19805
SSE	/	3/ 0.07	12/ 0.27	17/ 0.39	3/ 0.07	/	/	35.0/ 0.79	7.95112
S	/	2/ 0.05	16/ 0.36	30/ 0.68	15/ 0.34	1/ 0.02	/	64.0/ 1.45	9.94116
SSW	/	2/ 0.05	28/ 0.64	50/ 1.14	14/ 0.32	/	/	94.0/ 2.13	9.45313
SW	/	3/ 0.07	30/ 0.68	50/ 1.14	9/ 0.20	/	/	92.0/ 2.09	8.57766
WSW	/	2/ 0.05	48/ 1.09	18/ 0.41	4/ 0.09	2/ 0.05	/	74.0/ 1.68	7.27526
W	/	5/ 0.11	43/ 0.98	10/ 0.23	/	/	/	58.0/ 1.32	6.12059
WNW	/	2/ 0.05	13/ 0.30	6/ 0.14	4/ 0.09	/	/	25.0/ 0.57	7.58379
NW	/	1/ 0.02	3/ 0.07	8/ 0.18	6/ 0.14	6/ 0.14	/	24.0/ 0.55	12.35617
NNW	/	2/ 0.05	21/ 0.48	18/ 0.41	15/ 0.34	12/ 0.27	/	68.0/ 1.54	11.44150
TOTAL	/	80/ 1.82	388/ 8.81	397/ 9.02	277/ 6.29	47/ 1.07	/	1189/27.00	9.58696

NUMBER OF BAD RECORDS: 0

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

9:41 TUESDAY, JANUARY 22, 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

11  
 9:41 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	/	5/ 0.11	29/ 0.66	64/ 1.45	33/ 0.75	4/ 0.09	/	135.0/ 3.07	10.28872
NNE	/	7/ 0.16	40/ 0.91	87/ 1.98	19/ 0.43	/	/	153.0/ 3.47	8.96363
NE	/	11/ 0.25	36/ 0.82	37/ 0.84	10/ 0.23	1/ 0.02	/	95.0/ 2.16	8.11552
ENE	/	8/ 0.18	20/ 0.45	12/ 0.27	7/ 0.16	/	/	47.0/ 1.07	7.37461
E	/	5/ 0.11	17/ 0.39	20/ 0.45	/	/	/	42.0/ 0.95	6.99159
ESE	/	11/ 0.25	22/ 0.50	8/ 0.18	1/ 0.02	/	/	42.0/ 0.95	5.77749
SE	/	11/ 0.25	13/ 0.30	10/ 0.23	8/ 0.18	/	/	42.0/ 0.95	7.76777
SSE	/	5/ 0.11	26/ 0.59	32/ 0.73	10/ 0.23	2/ 0.05	/	75.0/ 1.70	8.93602
S	/	4/ 0.09	54/ 1.23	82/ 1.86	15/ 0.34	2/ 0.05	/	157.0/ 3.57	8.83828
SSW	/	3/ 0.07	43/ 0.98	95/ 2.16	37/ 0.84	1/ 0.02	/	179.0/ 4.07	9.85502
SW	/	6/ 0.14	39/ 0.89	65/ 1.48	15/ 0.34	1/ 0.02	/	126.0/ 2.86	8.90657
WSW	/	4/ 0.09	28/ 0.64	35/ 0.79	12/ 0.27	1/ 0.02	/	80.0/ 1.82	8.82066
W	/	6/ 0.14	22/ 0.50	8/ 0.18	1/ 0.02	/	/	37.0/ 0.84	6.11296
WNW	/	3/ 0.07	14/ 0.32	16/ 0.36	7/ 0.16	2/ 0.05	/	42.0/ 0.95	9.53452
NW	/	7/ 0.16	10/ 0.23	16/ 0.36	17/ 0.39	1/ 0.02	/	51.0/ 1.16	9.57668
NNW	/	6/ 0.14	20/ 0.45	19/ 0.43	21/ 0.48	1/ 0.02	/	67.0/ 1.52	9.47065
TOTAL	/	102/ 2.32	433/ 9.83	606/ 13.76	213/ 4.84	16/ 0.36	/	1370/ 31.12	8.86121

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 UPWNSPD  
RANGES INCLUDE LOWER END POINT, EXCLUDE UPPER END POINT

12  
9:41 TUESDAY, JANUARY 22, 1985

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

9:41 TUESDAY, JANUARY 22, 1985

13

SITE=ROBN YEAR=84 PERIOD=JUL-DEC STAB=F

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	/	4/ 0.09	6/ 0.14	21/ 0.48	9/ 0.20	/	/	40.0/ 0.91	9.46431
NNE	/	6/ 0.14	18/ 0.41	5/ 0.11	/	/	/	29.0/ 0.66	5.22157
NE	/	7/ 0.16	11/ 0.25	5/ 0.11	4/ 0.09	/	/	27.0/ 0.61	6.75214
ENE	/	4/ 0.09	8/ 0.18	5/ 0.11	1/ 0.02	/	/	18.0/ 0.41	6.08082
E	/	5/ 0.11	7/ 0.16	6/ 0.14	/	/	/	18.0/ 0.41	5.78622
ESE	/	6/ 0.14	5/ 0.11	5/ 0.11	/	/	/	16.0/ 0.36	5.38394
SE	/	3/ 0.07	4/ 0.09	7/ 0.16	/	/	/	14.0/ 0.32	6.90107
SSE	/	4/ 0.09	16/ 0.36	18/ 0.41	2/ 0.05	/	/	40.0/ 0.91	7.39203
S	/	1/ 0.02	24/ 0.55	35/ 0.79	3/ 0.07	/	/	63.0/ 1.43	8.18292
SSW	/	3/ 0.07	21/ 0.48	52/ 1.18	1/ 0.02	1/ 0.02	/	78.0/ 1.77	8.47432
SW	/	1/ 0.02	6/ 0.14	43/ 0.98	12/ 0.27	/	/	62.0/ 1.41	9.98133
WSW	/	2/ 0.05	30/ 0.68	41/ 0.93	2/ 0.05	/	/	75.0/ 1.70	7.84859
W	/	3/ 0.07	15/ 0.34	1/ 0.02	/	/	/	19.0/ 0.43	5.12273
WNW	/	1/ 0.02	13/ 0.30	7/ 0.16	4/ 0.09	1/ 0.02	/	26.0/ 0.59	8.50297
NW	/	3/ 0.07	13/ 0.30	14/ 0.32	3/ 0.07	/	/	33.0/ 0.75	7.78318
NNW	/	4/ 0.09	6/ 0.14	14/ 0.32	5/ 0.11	/	/	29.0/ 0.66	8.63707
TOTAL	/	57/ 1.29	203/ 4.61	279/ 6.34	46/ 1.04	2/ 0.05	/	587.0/13.33	7.86046

NUMBER OF BAD RECORDS: 0

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

9:41 TUESDAY, JANUARY 22, 1985

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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

9:41 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC STAB=G

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	0.1/ 0.00	7/ 0.16	24/ 0.55	17/ 0.39	4/ 0.09	/	/	52.1/ 1.18	7.49479
NNE	0.1/ 0.00	6/ 0.14	27/ 0.61	13/ 0.30	/	/	/	46.1/ 1.05	6.16496
NE	0.2/ 0.00	11/ 0.25	21/ 0.48	9/ 0.20	1/ 0.02	/	/	42.2/ 0.96	5.58138
ENE	0.1/ 0.00	5/ 0.11	20/ 0.45	7/ 0.16	/	/	/	32.1/ 0.73	5.80547
E	0.1/ 0.00	6/ 0.14	26/ 0.59	1/ 0.02	/	/	/	33.1/ 0.75	5.11925
ESE	0.1/ 0.00	5/ 0.11	14/ 0.32	6/ 0.14	/	/	/	25.1/ 0.57	5.61818
SE	0.1/ 0.00	5/ 0.11	10/ 0.23	5/ 0.11	/	/	/	20.1/ 0.46	5.55646
SSE	0.2/ 0.00	12/ 0.27	29/ 0.66	8/ 0.18	/	/	/	49.2/ 1.12	4.95420
S	0.1/ 0.00	7/ 0.16	20/ 0.45	19/ 0.43	2/ 0.05	/	/	48.1/ 1.09	6.70363
SSW	0.2/ 0.00	9/ 0.20	35/ 0.79	45/ 1.02	1/ 0.02	/	/	90.2/ 2.05	7.20389
SW	0.1/ 0.00	7/ 0.16	34/ 0.77	45/ 1.02	2/ 0.05	/	/	88.1/ 2.00	7.60880
WSW	0.2/ 0.00	9/ 0.20	25/ 0.57	15/ 0.34	/	/	/	49.2/ 1.12	6.03875
W	0.2/ 0.00	10/ 0.23	29/ 0.66	4/ 0.09	/	/	/	43.2/ 0.98	4.60936
WNW	0.1/ 0.00	5/ 0.11	8/ 0.18	7/ 0.16	2/ 0.05	/	/	22.1/ 0.50	7.30455
NW	0.1/ 0.00	7/ 0.16	8/ 0.18	13/ 0.30	1/ 0.02	/	/	29.1/ 0.66	6.77830
NNW	0.1/ 0.00	3/ 0.07	21/ 0.48	14/ 0.32	1/ 0.02	/	/	39.1/ 0.89	7.03164
TOTAL	2.0/ 0.05	114/ 2.59	351/ 7.97	228/ 5.18	14/ 0.32	/	/	709.0/ 16.10	6.39617

NUMBER OF BAD RECORDS: 0

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

9:41 TUESDAY, JANUARY 22, 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

9:39 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	9.2/ 0.21	99/ 2.25	186/ 4.23	87/ 1.98	3/ 0.07	/	/	384.2/ 8.73	5.38268
NNE	5.1/ 0.12	55/ 1.25	191/ 4.34	176/ 4.00	6/ 0.14	/	/	433.1/ 9.84	6.83070
NE	5.0/ 0.11	54/ 1.23	131/ 2.98	74/ 1.68	5/ 0.11	/	/	269.0/ 6.11	6.09994
ENE	4.0/ 0.09	43/ 0.98	76/ 1.73	35/ 0.80	/	/	/	158.0/ 3.59	5.25504
E	3.5/ 0.08	38/ 0.86	52/ 1.18	5/ 0.11	/	/	/	98.5/ 2.24	4.01116
ESE	4.9/ 0.11	53/ 1.20	53/ 1.20	1/ 0.02	/	/	/	111.9/ 2.54	3.49925
SE	5.1/ 0.12	55/ 1.25	47/ 1.07	11/ 0.25	/	/	/	118.1/ 2.68	3.80462
SSE	12.0/ 0.27	129/ 2.93	105/ 2.39	24/ 0.55	3/ 0.07	/	/	273.0/ 6.20	3.94286
S	13.6/ 0.31	146/ 3.32	173/ 3.93	67/ 1.52	2/ 0.05	/	/	401.6/ 9.12	4.75800
SSW	14.9/ 0.34	160/ 3.63	207/ 4.70	92/ 2.09	3/ 0.07	/	/	476.9/10.83	5.04017
SW	10.1/ 0.23	109/ 2.48	200/ 4.54	41/ 0.93	2/ 0.05	/	/	362.1/ 8.23	4.73515
WSW	7.8/ 0.18	84/ 1.91	100/ 2.27	14/ 0.32	/	/	/	205.8/ 4.68	4.02797
W	5.4/ 0.12	58/ 1.32	68/ 1.54	3/ 0.07	/	/	/	134.4/ 3.05	3.73272
WNW	8.6/ 0.20	92/ 2.09	45/ 1.02	14/ 0.32	/	/	/	159.6/ 3.63	3.53437
NW	19.4/ 0.44	209/ 4.75	78/ 1.77	33/ 0.75	1/ 0.02	/	/	340.4/ 7.73	3.39918
NNW	24.3/ 0.55	261/ 5.93	145/ 3.29	44/ 1.00	1/ 0.02	/	/	475.3/10.80	3.56342
TOTAL	153.0/ 3.48	1645/37.37	1857/42.19	721/16.38	26/ 0.59	/	/	4402/ 100	4.67618

NUMBER OF BAD RECORDS: 14

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

9:39 TUESDAY, JANUARY 22, 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

9:39 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	/	/	2/ 0.05	9/ 0.20	/	/	/	11.0/ 0.25	8.68161
NNE	/	/	1/ 0.02	6/ 0.14	/	/	/	7.0/ 0.16	8.79725
NE	/	/	4/ 0.09	9/ 0.20	2/ 0.05	/	/	15.0/ 0.34	9.32799
ENE	/	/	11/ 0.25	19/ 0.43	/	/	/	30.0/ 0.68	8.09182
E	/	/	5/ 0.11	1/ 0.02	/	/	/	6.0/ 0.14	6.80896
ESE	/	/	5/ 0.11	/	/	/	/	5.0/ 0.11	5.75954
SE	/	/	2/ 0.05	/	/	/	/	2.0/ 0.05	3.95197
SSE	/	/	2/ 0.05	1/ 0.02	/	/	/	3.0/ 0.07	6.74226
S	/	/	/	11/ 0.25	/	/	/	11.0/ 0.25	10.70080
SSW	/	/	5/ 0.11	6/ 0.14	1/ 0.02	/	/	12.0/ 0.27	8.68489
SW	/	/	3/ 0.07	3/ 0.07	/	/	/	6.0/ 0.14	7.22861
WSW	/	/	1/ 0.02	1/ 0.02	/	/	/	2.0/ 0.05	7.57045
W	/	/	1/ 0.02	/	/	/	/	1.0/ 0.02	7.00350
WNW	/	/	1/ 0.02	3/ 0.07	/	/	/	4.0/ 0.09	8.35834
NW	/	/	/	2/ 0.05	/	/	/	2.0/ 0.05	8.51259
NNW	/	/	/	/	/	/	/	/	
TOTAL	/	/	43/ 0.98	71/ 1.61	3/ 0.07	/	/	117.0/ 2.66	8.33707

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

9:39 TUESDAY, JANUARY 22, 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

9:39 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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/ 0.16	17/ 0.39	/	/	/	24.0/ 0.55	8.51328
NNE	/	/	2/ 0.05	9/ 0.20	/	/	/	11.0/ 0.25	8.71496
NE	/	/	3/ 0.07	14/ 0.32	1/ 0.02	/	/	18.0/ 0.41	9.30835
ENE	/	/	7/ 0.16	6/ 0.14	/	/	/	13.0/ 0.30	7.10611
E	/	/	11/ 0.25	/	/	/	/	11.0/ 0.25	5.49517
ESE	/	2/ 0.05	8/ 0.18	/	/	/	/	10.0/ 0.23	4.37385
SE	/	/	8/ 0.18	/	/	/	/	8.0/ 0.18	4.33341
SSE	/	/	1/ 0.02	3/ 0.07	/	/	/	4.0/ 0.09	7.34951
S	/	/	8/ 0.18	5/ 0.11	/	/	/	13.0/ 0.30	7.41781
SSW	/	/	10/ 0.23	11/ 0.25	/	/	/	21.0/ 0.48	7.75864
SW	/	/	15/ 0.34	5/ 0.11	/	/	/	20.0/ 0.45	6.72669
WSW	/	/	8/ 0.18	5/ 0.11	/	/	/	13.0/ 0.30	7.06635
W	/	/	3/ 0.07	/	/	/	/	3.0/ 0.07	5.81587
WNW	/	/	2/ 0.05	1/ 0.02	/	/	/	3.0/ 0.07	6.26980
NW	/	/	1/ 0.02	2/ 0.05	/	/	/	3.0/ 0.07	7.67050
NNW	/	/	1/ 0.02	5/ 0.11	/	/	/	6.0/ 0.14	9.22683
TOTAL	/	2/ 0.05	95/ 2.16	83/ 1.89	1/ 0.02	/	/	181.0/ 4.11	7.34118

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

9:39 TUESDAY, JANUARY 22, 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

9:39 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	/	/	13/ 0.30	5/ 0.11	/	/	/	18.0/ 0.41	6.85435
NNE	/	1/ 0.02	6/ 0.14	8/ 0.18	/	/	/	15.0/ 0.34	7.49486
NE	/	1/ 0.02	15/ 0.34	10/ 0.23	2/ 0.05	/	/	28.0/ 0.64	7.73243
ENE	/	1/ 0.02	10/ 0.23	2/ 0.05	/	/	/	13.0/ 0.30	5.40398
E	/	4/ 0.09	9/ 0.20	1/ 0.02	/	/	/	14.0/ 0.32	4.29500
ESE	/	4/ 0.09	7/ 0.16	/	/	/	/	11.0/ 0.25	3.84738
SE	/	3/ 0.07	8/ 0.18	2/ 0.05	/	/	/	13.0/ 0.30	5.09485
SSE	/	1/ 0.02	3/ 0.07	4/ 0.09	1/ 0.02	/	/	9.0/ 0.20	7.62480
S	/	/	12/ 0.27	6/ 0.14	/	/	/	18.0/ 0.41	6.81637
SSW	/	/	15/ 0.34	9/ 0.20	/	/	/	24.0/ 0.55	7.15080
SW	/	/	22/ 0.50	7/ 0.16	/	/	/	29.0/ 0.66	6.67057
WSW	/	1/ 0.02	20/ 0.45	1/ 0.02	/	/	/	22.0/ 0.50	5.56364
W	/	/	10/ 0.23	/	/	/	/	10.0/ 0.23	5.52276
WNW	/	/	3/ 0.07	1/ 0.02	/	/	/	4.0/ 0.09	6.50742
NW	/	/	3/ 0.07	9/ 0.20	/	/	/	12.0/ 0.27	7.91090
NNW	/	/	4/ 0.09	5/ 0.11	/	/	/	9.0/ 0.20	7.51487
TOTAL	/	16/ 0.36	160/ 3.63	70/ 1.59	3/ 0.07	/	/	249.0/ 5.66	6.48133

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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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9:39 TUESDAY, JANUARY 22, 1985

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

9:39 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	/	13/ 0.30	97/ 2.20	47/ 1.07	2/ 0.05	/	/	159.0/ 3.61	6.43288
NNE	/	9/ 0.20	91/ 2.07	135/ 3.07	6/ 0.14	/	/	241.0/ 5.47	7.94422
NE	/	20/ 0.45	43/ 0.98	32/ 0.73	/	/	/	95.0/ 2.16	6.43181
ENE	/	14/ 0.32	30/ 0.68	7/ 0.16	/	/	/	51.0/ 1.16	5.00119
E	/	11/ 0.25	17/ 0.39	2/ 0.05	/	/	/	30.0/ 0.68	4.08649
ESE	/	24/ 0.55	20/ 0.45	/	/	/	/	44.0/ 1.00	3.53497
SE	/	18/ 0.41	20/ 0.45	1/ 0.02	/	/	/	39.0/ 0.89	3.70057
SSE	/	5/ 0.11	30/ 0.68	7/ 0.16	/	/	/	42.0/ 0.95	5.78702
S	/	5/ 0.11	29/ 0.66	27/ 0.61	/	/	/	61.0/ 1.39	7.18802
SSW	/	5/ 0.11	63/ 1.43	39/ 0.89	/	/	/	107.0/ 2.43	6.84875
SW	/	2/ 0.05	72/ 1.64	18/ 0.41	1/ 0.02	/	/	93.0/ 2.11	6.12959
WSW	/	12/ 0.27	40/ 0.91	7/ 0.16	/	/	/	59.0/ 1.34	4.91997
W	/	13/ 0.30	38/ 0.86	3/ 0.07	/	/	/	54.0/ 1.23	4.63750
WNW	/	8/ 0.18	17/ 0.39	3/ 0.07	/	/	/	28.0/ 0.64	4.93044
NW	/	1/ 0.02	8/ 0.18	16/ 0.36	1/ 0.02	/	/	26.0/ 0.59	8.72808
NNW	/	2/ 0.05	33/ 0.75	24/ 0.55	1/ 0.02	/	/	60.0/ 1.36	7.17136
TOTAL	/	162/ 3.68	648/ 14.72	368/ 8.36	11/ 0.25	/	/	1189/ 27.01	6.34675

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

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9:39 TUESDAY, JANUARY 22, 1985



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

9:39 TUESDAY, JANUARY 22, 1985

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SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	0.3/ 0.01	39/ 0.89	62/ 1.41	9/ 0.20	1/ 0.02	/	/	111.3/ 2.53	4.60997
NNE	0.2/ 0.00	31/ 0.70	87/ 1.98	18/ 0.41	/	/	/	136.2/ 3.09	5.28354
NE	0.2/ 0.00	26/ 0.59	60/ 1.36	6/ 0.14	/	/	/	92.2/ 2.09	4.75879
ENE	0.2/ 0.00	20/ 0.45	16/ 0.36	1/ 0.02	/	/	/	37.2/ 0.85	3.84488
E	0.2/ 0.00	22/ 0.50	10/ 0.23	1/ 0.02	/	/	/	33.2/ 0.75	3.20617
ESE	0.1/ 0.00	16/ 0.36	13/ 0.30	1/ 0.02	/	/	/	30.1/ 0.68	3.45009
SE	0.2/ 0.00	22/ 0.50	8/ 0.18	8/ 0.18	/	/	/	38.2/ 0.87	4.30778
SSE	0.4/ 0.01	49/ 1.11	52/ 1.18	9/ 0.20	2/ 0.05	/	/	112.4/ 2.55	4.34321
S	0.3/ 0.01	42/ 0.95	106/ 2.41	16/ 0.36	2/ 0.05	/	/	166.3/ 3.78	4.91737
SSW	0.5/ 0.01	58/ 1.32	96/ 2.18	27/ 0.61	2/ 0.05	/	/	183.5/ 4.17	5.02767
SW	0.4/ 0.01	46/ 1.04	69/ 1.57	7/ 0.16	/	/	/	122.4/ 2.78	4.28741
WSW	0.2/ 0.00	28/ 0.64	25/ 0.57	/	/	/	/	53.2/ 1.21	3.47197
W	0.2/ 0.00	23/ 0.52	13/ 0.30	/	/	/	/	36.2/ 0.82	3.10606
WNW	0.2/ 0.00	20/ 0.45	18/ 0.41	5/ 0.11	/	/	/	43.2/ 0.98	4.48353
NW	0.3/ 0.01	35/ 0.80	38/ 0.86	4/ 0.09	/	/	/	77.3/ 1.76	4.08208
NNW	0.2/ 0.00	30/ 0.68	57/ 1.29	10/ 0.23	/	/	/	97.2/ 2.21	4.64713
TOTAL	4.0/ 0.09	507/11.52	730/16.58	122/ 2.77	7/ 0.16	/	/	1370/31.12	4.52607

NUMBER OF BAD RECORDS: 0

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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9:39 TUESDAY, JANUARY 22, 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.

9:39 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	1.3/ 0.03	18/ 0.41	3/ 0.07	/	/	/	/	22.3/ 0.51	2.23316
NNE	0.8/ 0.02	11/ 0.25	3/ 0.07	/	/	/	/	14.8/ 0.34	2.37053
NE	0.1/ 0.00	2/ 0.05	6/ 0.14	1/ 0.02	/	/	/	9.1/ 0.21	4.36435
ENE	0.4/ 0.01	6/ 0.14	2/ 0.05	/	/	/	/	8.4/ 0.19	2.52505
E	/	/	/	/	/	/	/	/	
ESE	0.5/ 0.01	7/ 0.16	/	/	/	/	/	7.5/ 0.17	1.61468
SE	0.4/ 0.01	6/ 0.14	1/ 0.02	/	/	/	/	7.4/ 0.17	2.26237
SSE	2.8/ 0.06	39/ 0.89	17/ 0.39	/	/	/	/	58.8/ 1.34	2.70173
S	3.9/ 0.09	55/ 1.25	16/ 0.36	2/ 0.05	/	/	/	76.9/ 1.75	2.76018
SSW	5.0/ 0.11	70/ 1.59	16/ 0.36	/	/	/	/	91.0/ 2.07	2.62602
SW	3.4/ 0.08	48/ 1.09	18/ 0.41	1/ 0.02	1/ 0.02	/	/	71.4/ 1.62	3.00987
WSW	2.4/ 0.05	34/ 0.77	6/ 0.14	/	/	/	/	42.4/ 0.96	2.52640
W	1.1/ 0.02	15/ 0.34	2/ 0.05	/	/	/	/	18.1/ 0.41	2.25294
WNW	1.9/ 0.04	27/ 0.61	2/ 0.05	1/ 0.02	/	/	/	31.9/ 0.72	2.52957
NW	2.6/ 0.06	37/ 0.84	24/ 0.55	/	/	/	/	63.6/ 1.44	2.94066
NNW	3.2/ 0.07	45/ 1.02	15/ 0.34	/	/	/	/	63.2/ 1.44	2.69331
TOTAL	30.0/ 0.68	420/ 9.54	131/ 2.98	5/ 0.11	1/ 0.02	/	/	587.0/13.33	2.70100

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

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9:39 TUESDAY, JANUARY 22, 1985

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  
 9:39 TUESDAY, JANUARY 22, 1985

SITE=ROBN YEAR=84 PERIOD=JUL-DEC 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	6.4/ 0.15	29/ 0.66	2/ 0.05	/	/	/	/	37.4/ 0.85	1.37808
NNE	0.7/ 0.02	3/ 0.07	1/ 0.02	/	/	/	/	4.7/ 0.11	2.75487
NE	1.1/ 0.02	5/ 0.11	/	2/ 0.05	/	/	/	8.1/ 0.18	2.60104
ENE	0.4/ 0.01	2/ 0.05	/	/	/	/	/	2.4/ 0.05	0.74340
E	0.2/ 0.00	1/ 0.02	/	/	/	/	/	1.2/ 0.03	0.82677
ESE	/	/	/	/	/	/	/	0.0/ 0.00	
SE	1.3/ 0.03	6/ 0.14	/	/	/	/	/	7.3/ 0.17	1.39393
SSE	7.7/ 0.17	35/ 0.80	/	/	/	/	/	42.7/ 0.97	1.30321
S	9.7/ 0.22	44/ 1.00	2/ 0.05	/	/	/	/	55.7/ 1.27	1.74512
SSW	6.0/ 0.14	27/ 0.61	2/ 0.05	/	/	/	/	35.0/ 0.80	1.63361
SW	2.9/ 0.07	13/ 0.30	1/ 0.02	/	/	/	/	16.9/ 0.38	1.54361
WSW	2.0/ 0.05	9/ 0.20	/	/	/	/	/	11.0/ 0.25	1.03382
W	1.5/ 0.03	7/ 0.16	1/ 0.02	/	/	/	/	9.5/ 0.22	1.51385
WNW	8.2/ 0.19	37/ 0.84	2/ 0.05	/	/	/	/	47.2/ 1.07	1.53001
NW	30.1/ 0.68	136/ 3.09	4/ 0.09	/	/	/	/	170.1/ 3.86	1.69532
NNW	40.7/ 0.92	184/ 4.18	35/ 0.80	/	/	/	/	259.7/ 5.90	1.98383
TOTAL	119.0/ 2.70	538/ 12.22	50/ 1.14	2/ 0.05	/	/	/	709.0/ 16.11	1.74354

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

9:39 TUESDAY, JANUARY 22, 1985

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