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Limerick Generating Station
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T.S. 6.9.1.8

April 30, 2003

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Limerick Generating Station, Unit 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

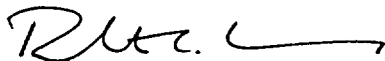
Subject: 2002 Annual Radioactive Effluent Release Report

In accordance with Section 6.9.1.8 of Limerick Generating Station (LGS) Technical Specifications and 10CFR50.36(a), attached are following reports:

- The 2002 Annual Radioactive Effluent Release Report No. 28, for LGS
- The 2002 Annual Tower No. 1 Joint Frequency Distributions of Wind Direction and Speed by Atmospheric Stability Class Report No. 18 for LGS

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,



Robert C. Braun
Vice President-LGS (acting)

Attachments:

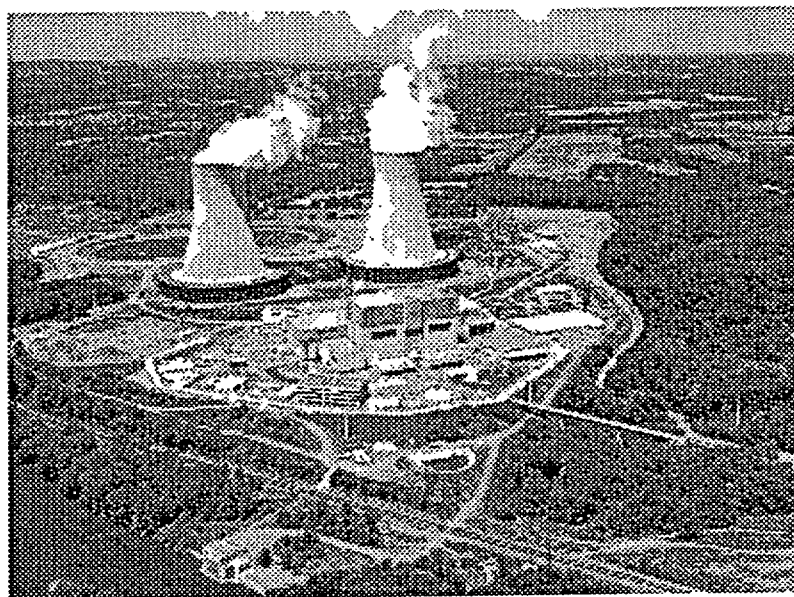
cc: H. Miller, Administrator, Region I, USNRC
A. Burritt, LGS USNRC Senior Resident Inspector
J. Jang, Inspector Region I, USNRC

IE48

bcc: W. Levis - KSA 3N
M. Gallagher - KSA 3P
R. Braun - GML 5-1
D. Helker - KSA 3P
R. Dickinson - SSB 2-3
W. Harris - GML 1-1
R. Newmaster - SSB 2-2
M. Kaminski - SSB 2-4
R. McCall - SSB 2-3
J. Toro - SMB 1-2
D. Wahl - KSA 3P
D. Branham - SSB 2-2
D. Eisenhut - NSRB
D. Dyckman - PADEP BRP
L Weinstock - US EPA
S. Focht - ANI

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Nuclear



Annual Radioactive Effluent Release Report

2002

Limerick Generating Station

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NO. 28
January 1, 2002 Through December 31, 2002

EXELON NUCLEAR
LIMERICK GENERATING STATION
UNITS NO. 1 AND 2

DOCKET NO. 50-352 (Unit 1)

DOCKET NO. 50-353 (Unit 2)

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating License NPF-39 (Unit 1)
and NPF-85 (Unit 2)

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I. INTRODUCTION

This submittal complies with the format described in Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants", Revision 1, June, 1974.

The following information is included as Tables to this report:

- A summary of the gaseous and liquid effluent releases for the report period. For 2002 data, where "0.00E+00" or a "Blank" is used, it denotes that no activity was found for samples analyzed per ODCM requirements. All LLD requirements listed in the ODCM were met. The estimated total errors stated in the gaseous and liquid summation of releases were the values quoted in past reports except for the volume of waste released and volume of dilution water for liquid releases. These errors are estimated from I&C calibration data. The Noble Gas Monitor data is analyzed to report noble gas effluent activities. When no activity is found in the Isotopic Analysis, the isotopic mixture is assumed to be that evaluated in the UFSAR (section 11.5, Table 11.5-4). If activity is found in the Isotopic Analysis, the isotopic mixture for the Noble Gas Monitor is determined from the Isotopic Analysis. The reported noble gas activities for gaseous releases are probably higher than actual noble gas releases due to a very high natural background of radon. The radon levels can vary by a wide margin from day to day and contribute to the majority of the noble gas monitor response.
- Composite particulate air samples and liquid radwaste composites, counted for beta emitters (e.g. Fe-55, Sr-89, Sr-90) and gross alpha (air samples only), were submitted to an offsite vendor laboratory for analysis. Other required analyses were performed onsite. All vendor results were received and included in the report calculations. Therefore the 2002 report is complete.
- A summary of solid waste dispositioned during the report period, to include: total activity shipped by waste type and the estimated composition of each type of waste by isotope; and the number of shipments, mode of transportation, destination, type of container, total container volume, and solidification agent.

- There was no contaminated oil burned in the Auxillary Boilers during 2002.

Additional Information:

- There were no changes to Radioactive Waste Treatment Systems during the report period.
- The Activities and Doses listed in this report are within the limits specified in 40CFR Part 190.
- Two of the tables from the 2001 ARERR contained typographical errors. The corrected tables are included in the "REVISION TO PREVIOUS SUBMITTAL" section.

II. TABLES

A. SUMMARY OF RADIOACTIVE GASEOUS EFFLUENTS

January 1, 2002 to December 31, 2002
(7 pages of Tables)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:53:01 AM
 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
A. FISSION AND ACTIVATION GASSES (estimated total error: 45.3 %)					
1. Total Release	Ci	3.23E+02	3.50E+02	5.48E+02	2.90E+02
2. Average Release Rate for Period	uCi/sec	4.16E+01	4.46E+01	6.95E+01	3.31E+01
B. IODINES (estimated total error: 45.3 %)					
1. Total I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. PARTICULATES (estimated total error: 45.3 %)					
1. Particulates with T 1/2 > 8 days	Ci	0.00E+00	1.78E-06	6.45E-08	0.00E+00
2. Average Release Rate for Period	uCi/sec	0.00E+00	2.27E-07	8.18E-09	0.00E+00
3. Gross Alpha	Ci	3.22E-06	2.60E-06	3.29E-06	1.55E-06
D. TRITIUM (estimated total error: 45.3 %)					
1. Total Release	Ci	1.14E+01	1.35E+01	9.29E+00	1.34E+01
2. Average Release Rate for Period	uCi/sec	1.46E+00	1.72E+00	1.18E+00	1.53E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:53:01 AM
 GASEOUS EFFLUENTS FOR RELEASE POINT - NORTH STACK

Nuclide Released	Units	Continuous Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

KR-85	Ci	1.05E+01	8.46E+00	1.70E+01	7.76E+00
KR-85M	Ci	2.78E+00	2.24E+00	4.50E+00	2.05E+00
KR-87	Ci	4.87E+00	3.93E+00	7.88E+00	3.60E+00
KR-88	Ci	8.62E+00	6.94E+00	1.39E+01	6.37E+00
XE-131M	Ci	2.63E-01	2.12E-01	4.25E-01	1.94E-01
XE-133	Ci	9.80E-01	7.90E-01	1.59E+00	7.24E-01
XE-135	Ci	3.84E+01	3.09E+01	6.20E+01	2.83E+01
XE-135M	Ci	2.45E+01	1.97E+01	3.96E+01	1.81E+01
XE-138	Ci	5.24E+01	4.22E+01	8.48E+01	3.87E+01

TOTAL FOR PERIOD (ABOVE)	Ci	1.43E+02	1.15E+02	2.32E+02	1.06E+02
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2. IODINES

None

TOTAL FOR PERIOD (ABOVE)	Ci				
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3. PARTICULATES (T 1/2 > 8 DAYS)

None

TOTAL FOR PERIOD (ABOVE)	Ci				
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SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:53:01 AM
 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 1 SOUTH STACK

Nuclide Released	Units	Qtr 1	Continuous Mode		
			Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

AR-41	Ci	6.60E+00	9.17E+00	1.60E+01	7.30E+00
KR-85M	Ci	1.58E+00	2.20E+00	3.84E+00	1.75E+00
KR-87	Ci	1.58E+00	2.20E+00	3.84E+00	1.75E+00
KR-88	Ci	1.58E+00	2.20E+00	3.84E+00	1.75E+00
XE-133	Ci	3.43E+01	4.76E+01	8.31E+01	3.79E+01
XE-135	Ci	1.79E+01	2.49E+01	4.35E+01	1.98E+01
XE-135M	Ci	2.43E+01	3.37E+01	5.89E+01	2.69E+01
XE-138	Ci	3.69E+00	5.14E+00	8.96E+00	4.09E+00

TOTAL FOR PERIOD (ABOVE)	Ci	9.15E+01	1.27E+02	2.22E+02	1.01E+02
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2. IODINES

None

TOTAL FOR PERIOD (ABOVE)	Ci				
-----------------------------	----	--	--	--	--

3. PARTICULATES (T 1/2 > 8 DAYS)

None

TOTAL FOR PERIOD (ABOVE)	Ci				
-----------------------------	----	--	--	--	--

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:53:02 AM
 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 2 SOUTH STACK

Nuclide Released	Units	Continuous Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
1. FISSION AND ACTIVATION GASSES					
AR-41	Ci	6.39E+00	7.74E+00	6.78E+00	5.95E+00
KR-85M	Ci	1.53E+00	1.85E+00	1.63E+00	1.43E+00
KR-87	Ci	1.53E+00	1.85E+00	1.63E+00	1.43E+00
KR-88	Ci	1.53E+00	1.85E+00	1.63E+00	1.43E+00
XE-133	Ci	3.32E+01	4.02E+01	3.52E+01	3.09E+01
XE-135	Ci	1.73E+01	2.10E+01	1.84E+01	1.62E+01
XE-135M	Ci	2.35E+01	2.85E+01	2.49E+01	2.19E+01
XE-138	Ci	3.58E+00	4.33E+00	3.80E+00	3.33E+00
TOTAL FOR PERIOD (ABOVE)	Ci	8.86E+01	1.07E+02	9.41E+01	8.25E+01

2. IODINES

None					
TOTAL FOR PERIOD (ABOVE)	Ci				

3. PARTICULATES (T 1/2 > 8 DAYS)

SR-89	Ci		1.78E-06	6.45E-08	
TOTAL FOR PERIOD (ABOVE)	Ci		1.78E-06	6.45E-08	

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
EFFLUENT REPORT - 2002
DATE: 02/05/2003 9:53:02 AM
GASEOUS EFFLUENTS FOR RELEASE POINT - HOT MAINTENANCE SHOP

Nuclide Released	Units	Qtr 1	Continuous Mode		
			Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

None

TOTAL FOR PERIOD Ci
(ABOVE)

2. IODINES

None

TOTAL FOR PERIOD Ci
(ABOVE)

3. PARTICULATES (T 1/2 > 8 DAYS)

None

TOTAL FOR PERIOD Ci
(ABOVE)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
EFFLUENT REPORT - 2002
DATE: 02/05/2003 9:53:02 AM
GASEOUS EFFLUENTS FOR RELEASE POINT - OIL INCINERATION

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

None

TOTAL FOR PERIOD Ci
(ABOVE)

2. IODINES

None

TOTAL FOR PERIOD Ci
(ABOVE)

3. PARTICULATES (T 1/2 > 8 DAYS)

None

TOTAL FOR PERIOD Ci
(ABOVE)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
EFFLUENT REPORT - 2002
DATE: 02/05/2003 9:53:02 AM
GASEOUS EFFLUENTS FOR RELEASE POINT - OTHER BATCH RELEASES

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

None

TOTAL FOR PERIOD Ci
(ABOVE)

2. IODINES

None

TOTAL FOR PERIOD Ci
(ABOVE)

3. PARTICULATES (T 1/2 > 8 DAYS)

None

TOTAL FOR PERIOD Ci
(ABOVE)

II. TABLES

B. SUMMARY OF RADIOACTIVE LIQUID EFFLUENTS

January 1, 2002 to December 31, 2002
(2 pages of Tables)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:52:45 AM
 LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
A. FISSION AND ACTIVATION PRODUCTS (estimated total error: 62.8 %)					
1. Total release (not including tritium, gasses, alpha)	Ci	1.36E-03	5.31E-04	7.54E-04	5.06E-04
2. Average diluted concentration during Period	uCi/ml	2.12E-08	1.31E-08	1.89E-08	1.17E-08
B. TRITIUM (estimated total error: 62.8 %)					
1. Total Release	Ci	8.13E+00	3.20E+00	4.84E+00	3.25E+00
2. Average diluted concentration during Period	uCi/ml	1.26E-04	7.92E-05	1.21E-04	7.51E-05
C. DISSOLVED AND ENTRAINED GASSES (estimated total error: 62.8 %)					
1. Total Release	Ci	5.10E-05	0.00E+00	0.00E+00	0.00E+00
2. Average diluted concentration during Period	uCi/ml	7.93E-10	0.00E+00	0.00E+00	0.00E+00
D. GROSS ALPHA RADIOACTIVITY (estimated total error: 62.8 %)					
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION) (est tot er: 0.7 %)					
1. Volume Released	Liters	2.30E+06	1.44E+06	1.41E+06	1.45E+06
F. VOLUME OF DILUTION WATER USED DURING PERIOD (est tot er: 3.0 %)					
1. Dilution Volume	Liters	6.20E+07	3.90E+07	3.85E+07	4.18E+07

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:52:46 AM
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO
 SCHULYKILL RIVER

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
CO-58	Ci	3.98E-05	1.85E-06	9.47E-07	2.30E-06
CO-60	Ci	3.89E-04	2.38E-04	5.59E-04	2.47E-04
CR-51	Ci	1.76E-05	3.90E-06		
CS-134	Ci		2.73E-06		
CS-137	Ci	1.42E-06	1.48E-05	1.22E-05	1.86E-04
FE-59	Ci	7.13E-05	7.44E-06		
H-3	Ci	8.13E+00	3.20E+00	4.84E+00	3.25E+00
LA-140	Ci				1.07E-06
MN-54	Ci	7.28E-04	2.03E-04	1.78E-04	3.82E-05
NA-24	Ci				2.65E-05
SR-89	Ci		5.19E-05		
ZN-65	Ci	1.17E-04	8.27E-06	3.21E-06	4.97E-06
ZR-97	Ci	7.68E-07			
Total For Above	Ci	8.13E+00	3.20E+00	4.84E+00	3.25E+00
XE-133	Ci	2.83E-05			
XE-135	Ci	2.26E-05			
Total For Above	Ci	5.10E-05			

II. TABLES

C. SOLID WASTE DISPOSITION REPORT

January 1, 2002 to December 31, 2002
(5 pages of Tables)

A. Solid waste shipped offsite for burial or disposal (not irradiated fuel)
 1/1/02 - 12/31/02

1.	Type of waste	Unit	12 Month Period	Estimated Error %
a.	Spent resin, filters, m(3) sludges, evaporator Ci bottoms, etc.		52.95 4.94E+02	25%
b.	Dry compressible m(3) waste, contaminated Ci equipment, etc.		433.74 4.81E+00	25%
c.	Irradiated components, control rods, etc.	None	None	
d.	Other (Describe)	None	None	

B. Number of Shipments of Each Class Type 1/1/02 - 12/31/02

Category A - 26 shipments Type A LSA
 Category A - 3 shipments > Type A LSA
 Category A - 1 shipment Type B
 Category B - 44 shipments Type A LSA
 Category C - No Shipments Made
 Category D - No Shipments Made

Estimate of Major Nuclide Composition (By Waste Type)

Category A - Spent Resin, Filters, Sludges, Evaporator Bottoms, etc.

Isotope	Waste Class A Curies	Percent Abundance	Waste Class B Curies	Percent Abundance	Waste Class C Curies	Percent Abundance
C-14	2.02E-01	0.18%	3.40E-02	0.01%	7.74E-02	0.10%
Co-60	2.74E+01	24.04%	1.53E+02	50.12%	2.03E+01	27.12%
Cs-137	4.52E+00	3.96%	2.23E+00	0.73%	2.13E+00	2.85%
H-3	2.70E-01	0.24%	7.22E-02	0.02%	1.60E-01	0.21%
I-129	1.99E-02	0.02%	1.85E-03	0.00%	5.23E-03	0.01%
Mn-54	1.32E+01	11.58%	6.11E+01	20.01%	1.55E+01	20.71%
Ni-63	4.38E+00	3.84%	9.02E-01	0.30%	3.46E+00	4.62%
Pu-238	2.25E-03	0.00%	1.06E-03	0.00%	1.01E-03	0.00%
Pu-239	3.53E-05	0.00%	0.00E+00	0.00%	2.55E-07	0.00%
Pu-241	1.23E-03	0.00%	1.44E-02	0.00%	0.00E+00	0.00%
Sr-90	5.32E-02	0.05%	9.49E-02	0.03%	2.05E-02	0.03%
Tc-99	3.20E-01	0.28%	1.01E-01	0.03%	1.79E-01	0.24%
Zn-65	6.22E+01	54.56%	8.49E+01	27.81%	3.22E+01	43.03%
Cm-242	7.92E-02	0.07%	3.44E-04	0.00%	1.13E-04	0.00%
Cm-243	9.20E-02	0.08%	6.65E-05	0.00%	2.57E-04	0.00%
Co-58	7.38E-01	0.65%	2.00E+00	0.66%	7.97E-01	1.06%
Cr-51	4.00E-01	0.35%	0.00E+00	0.00%	1.48E-03	0.00%
Ce-144	1.03E-01	0.09%	4.13E-01	0.14%	0.00E+00	0.00%
Fe-55	1.16E-01	0.10%	1.29E-01	0.04%	4.47E-03	0.01%
Cs-134	7.03E-02	0.06%	2.97E-01	0.10%	0.00E+00	0.00%
Fe-59	1.57E-01	0.14%	0.00E+00	0.00%	2.35E-03	0.00%
Co-57	2.69E-05	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
Ni-59	1.07E-03	0.00%	0.00E+00	0.00%	1.20E-03	0.00%
Am-241	1.77E-07	0.00%	1.18E-04	0.00%	2.27E-07	0.00%
Sb-125	1.49E-04	0.00%	0.00E+00	0.00%	0.00E-00	0.00%
TOTALS	1.14E+02	100.00%	3.05E+02	100.00%	7.48E+01	100.00%

Activity is estimated

Estimate of Major Nuclide Composition (By Waste Type)

Category B - Dry Compressible Waste, Contaminated Equipment, etc.

Isotope	Waste Class A Curies	Percent Abundance
H-3	2.17E-03	0.05%
Cr-51	1.03E+00	21.41%
Mn-54	3.44E-01	7.15%
Fe-55	3.25E-01	6.75%
Co-58	3.13E-01	6.51%
Co-60	1.64E+00	34.09%
Ni-63	3.75E-01	7.79%
Zn-65	6.54E-01	13.59%
Cs-137	1.11E-02	0.23%
Ce-144	3.77E-02	0.78%
Fe-59	6.51E-02	1.35%
Sr-89	6.82E-03	0.14%
Sr-90	8.91E-04	0.02%
Tc-99	4.87E-05	0.00%
I-129	3.50E-06	0.00%
Pu-238	7.39E-05	0.00%
Cm-242	2.32E-05	0.00%
Cm-243/44	5.20E-06	0.00%
Nb-95	6.48E-03	0.13%
Am-241	1.44E-05	0.00%
Sb-124	4.60E-06	0.00%
Zr-95	5.10E-06	0.00%
Pu-239	5.20E-06	0.00%
TOTALS	4.81E+00	100.00%

Activity is estimated

c. Solid Waste (Disposition)

<u>Number of Shipments Made</u>	<u>Mode of Transportation</u>	<u>Destination</u>
5	Truck	Studsvik (THOR) to Barnwell
17	Truck	Studsvik (THOR) to Envirocare
34	Truck	Duratek to Envirocare
10	Truck	US Ecology to Envirocare
1	Truck	Limerick Generating Station to Barnwell
7	Truck	Limerick Generating Station to Envirocare

Comments:

33 Shipments were made from Limerick to Duratek for processing.
 2 Shipments were made from Limerick to US Ecology for processing.
 1 Shipment was made from Limerick to Alaron (DAW) for processing.
 11 Shipments were made from Limerick to Studsvik (THOR) for processing
 No solidifications were performed.

D. Irradiated Fuel Shipments (Disposition)

<u>Number of Shipments Made</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

E. Major Changes to Plant Radwaste Systems

There were no major changes to plant Radwaste Systems.

F. Changes to procedure RW-C-100, "Solid Radwaste System Process Control Program (PCP)"

There were no changes to the Solid Radwaste System Process Control Program (PCP) in 2002.

II. TABLES

D. OFFSITE RADIATION DOSE ASSESSMENT

January 1, 2002 to December 31, 2002
(1 page Table)

LIMERICK GENERATING STATION - Units 1 & 2
SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR PERIOD:
01/01/02 0:00 TO 12/31/02 23:59

EFFLUENT	APPLICABLE ORGAN	EST. DOSE (MREM)	AGE GROUP	LOCATION DIST (M)	DIR (TOWARD)	% OF APPLICABLE LIMIT	LIMIT (MREM)
LIQUID	TOTAL BODY	2.56E-03	ADULT	RECEPTOR 1		4.27E-02	6.0
LIQUID	LIVER	3.42E-03	TEEN	RECEPTOR 1		1.71E-02	20.0
NOBLE GAS	AIR DOSE (GAMMA-MRAD)	4.15E-01	ALL	762.	ESE	2.08E+00	20.0
NOBLE GAS	AIR DOSE (BETA-MRAD)	2.48E-01	ALL	762.	ESE	6.20E-01	40.0
NOBLE GAS	T.BODY (GAMMA)	2.70E-01	ALL	762.	ESE	1.35E+00	20.0
NOBLE GAS	SKIN (BETA)	5.06E-01	ALL	762.	ESE	1.27E+00	40.0
IODINE, PARTICULATE, And TRITIUM DOSE	THYROID	2.26E-02	CHILD	805.	ESE	7.53E-02	30.0

II. TABLES

E. RADIATION DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR
ACTIVITIES INSIDE SITE BOUNDARY

January 1, 2002 to December 31, 2002
(2 pages of Tables)

RADIATION DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR
ACTIVITIES INSIDE SITE BOUNDARY

Per ODCM Control 3.6, the Annual Effluent Release Report shall include an assessment of the radiation doses from radioactive liquid and gaseous effluents to members of the public due to activities inside the Site Boundary during the report period. ODCM Controls state that Members of the Public shall include all persons not occupationally associated with the plant. This category does not include employees of the utility or contractors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational education, or other purposes not associated with the plant. The Limerick Information Center on Longview Road near the rear exit of the plant, Frick's Lock on the west shore of the river and the railroad tracks which run above the east shore of the Schuylkill River are all areas within the site boundary where radiation dose of this type could occur. The dose to LGS Guards, State Police and National Guard personnel around the location of the Security Checkpoint at the entrance to the parking lot is also included in this report. The radiation doses to Members of the Public have been estimated using methodology stated in the ODCM. The maximum gaseous dose to members of the public at these locations is based on the following assumptions:

1. Yearly average meteorology and actual effluent releases.
2. Beta air dose attributed to noble gas releases.
3. Highest exposed sector of the railroad tracks (W), and the sectors enclosing Security Checkpoint, Frick's Lock and the Information Center available for occupancy.
4. The maximum expected occupancy factor is 25% of a working year in all locations.
5. Distance to the railroad tracks, which pass through the Site Boundary in the W sector, is approximately 225 meters.
6. Distance to the Limerick Information Center is approximately 884 meters in the ESE sector.
7. Distance to Frick's Lock is approximately 450 meters in the WSW sector.
8. Distance to Security Checkpoint is approximately 682 meters in NNE sector.

A summary of gaseous radiation doses to members of the public at these locations is included in this Attachment.

RADIATION DOSE TO MEMBERS OF THE PUBLIC WITHIN LIMERICK GENERATING STATION SITE BOUNDARY FOR AFFECTED SECTORS AND DISTANCES

LOCATION	SECTOR	APPROX. DISTANCE (METERS)	GAMMA AIR DOSE, MRAD (1)	BETA AIR DOSE, MRAD (2)	IODINE/PART/H3 ORGAN DOSE, MREM (3)	IODINE/PART/H3 INGEST DOSE, MREM (4)
FRICK'S LOCK	WSW	450	2.61E-02	1.56E-02	1.42E-03	1.18E-03
INFO. CENTER	ESE	884	8.32E-02	4.96E-02	4.53E-03	3.78E-03
R.R. TRACKS	W	225	1.01E-01	6.00E-02	5.47E-03	4.56E-03
NATIONAL GUARD/ SECURITY CHECK POINT	NNE	682	5.81E-02	3.47E-02	3.16E-03	2.64E-03

Notes:

- (1) The limit for Gamma Air Dose = 20 mrad/y (ref. ODCM I3.3.3b)
- (2) The limit for Beta Air Dose = 40 mrad/y (ref. ODCM I3.3.3b)
- (3) The limit for Iodine/Particulate/H3 Organ Dose = 30 mrem/y (ref. ODCM I3.3.4b)
- (4) The limit for Iodine/Particulate/H3 Ingestion Dose = 30 mrem/y (ref. ODCM I3.3.4b)

III. ATTACHMENTS

A. SUPPLEMENTAL INFORMATION

Facility: Limerick Generating Station - Units 1 and 2
License : NPF-39 (Unit 1) and NPF-85 (Unit 2)

1. Regulatory Limits (Technical Specification Limits)

A. Noble Gases:

1. ≤ 500 mRem/y - total body - "instantaneous" limits
 ≤ 3000 mRem/y - skin per ODCM Control 3.3.2
2. ≤ 10 mRad - air gamma - quarterly air dose limits
 ≤ 20 mRad - air beta per ODCM Control 3.3.3
3. ≤ 20 mRad - air gamma - yearly air dose limits
 ≤ 40 mRad - air beta per ODCM Control 3.3.3

B. Iodines, tritium, particulates with half life > 8 days:

1. ≤ 1500 mRem/y - any organ - "instantaneous" limits
(inhalation path) per ODCM Control 3.3.2
2. ≤ 15 mRem - any organ - quarterly dose limits
per ODCM Control 3.3.4
3. ≤ 30 mRem - any organ - yearly dose limits
per ODCM Control 3.3.4

C. Liquid Effluents:

- Concentration - ≤ 10 CFR20 - "instantaneous" limits
Appendix B, Table II,
Col.2
- per ODCM Control 3.2.2
- ≤ 3 mRem - total body - quarterly dose limits
 ≤ 10 mRem - any organ per ODCM Control 3.2.3
- ≤ 6 mRem - total body - yearly dose limits
 ≤ 20 mRem - any organ per ODCM Control 3.2.3

III. ATTACHMENTS (continued)

2. Maximum Permissible Concentrations

Per LGS ODCM Control 3.2.2, MPCs are not used to calculate permissible release rates and concentrations for gaseous releases. The MPCs specified in 10CFR20, Appendix B, Table II, Column 2 for identified nuclides are used to calculate permissible release rates and concentrations for liquid releases.

III. ATTACHMENTS (continued)

3. Measurements and Approximations of Total Radioactivity

A. Fission and Activation Gases in Gaseous Effluents:

The method used for Gamma Isotopic Analysis is the Canberra Genie System with a gas Marinelli beaker. Noble gas releases are continuously monitored by a radiation monitoring system with the data stored on a computer system (RMDS). The monitor data is analyzed to report noble gas effluent activities. When no activity is found in the Isotopic Analysis, the isotopic mixture is assumed to be that evaluated in the UFSAR (section 11.5, Table 11.5-4). If activity is found in the Isotopic Analysis, the isotopic mixture for the noble gas monitor is determined from the Isotopic Analysis.

B. Iodine in Gaseous Effluents:

The method used is the Canberra Genie System with a charcoal cartridge.

C. Particulate in Gaseous Effluents:

The method used is the Canberra Genie System with an air particulate sample, 47 mm filter.

D. Gamma Isotopic Analysis in Liquid Effluents:

The method used is the Canberra Genie System using a 1.0 liter Marinelli beaker. A Radwaste Liquid Discharge Pre-Release report is generated to ensure that the dose and activity to be released is within limits.

E. Tritium in Liquid and Gaseous Effluents:

Tritium in Liquid Effluents is analyzed using a Liquid Scintillation Counter.

Air from stack effluents is passed through two bubblers in series and an aliquot of the water from each bubbler analyzed using a Liquid Scintillation Counter.

III. ATTACHMENTS (continued)

4. Batch Liquid Releases Summary

January 1, 2002 to December 31, 2002
(1 page Table)

III. ATTACHMENTS (continued)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2002
 DATE: 02/05/2003 9:52:46 AM
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO
 SCHULYKILL RIVER

	Batch Mode			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of Batch Releases	3.80E+01	2.70E+01	2.60E+01	2.60E+01
Total time period for batch releases (min)	2.76E+03	1.76E+03	1.71E+03	1.74E+03
Maximum time period for batch release (min)	9.58E+01	8.39E+01	8.79E+01	7.54E+01
Average time period for batch release (min)	7.27E+01	6.51E+01	6.58E+01	6.69E+01
Minimum time period for batch release (min)	3.08E+01	3.45E+01	3.44E+01	3.03E+01
Average stream flow (Schuylkill River) during periods of release of effluents into a flowing stream (gpm)	5.49E+05	8.98E+05	1.98E+05	1.26E+06

III. ATTACHMENTS (continued)

5. Batch Gaseous Release (January 1, 2002 to December 31, 2002)
(1 page Table)

- Oil Incineration
- Other Batch Releases
- Average Energy of Release

III. ATTACHMENTS (continued)

GASEOUS EFFLUENTS FOR RELEASE POINT - OTHER BATCH RELEASES

	Batch Mode			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of Batch Releases	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total time period for batch releases (min)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Maximum time period for batch release (min)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average time period for batch release (min)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Minimum time period for batch release (min)	0.00E+00	0.00E+00	0.00E+00	0.00E+00

AVERAGE ENERGY OF DECAY FOR ACTIVATION AND FISSION GASES FOR 2002

Average Beta Energy of decay:	3.01E-01 MeV
Average Gamma Energy of decay:	5.08E-01 MeV

III. ATTACHMENTS (continued)

6. Abnormal Releases

A. Liquid

There were no significant abnormal liquid releases for year 2002. There was one unplanned release which is described on page 39.

B. Gaseous

There were no significant abnormal gaseous releases for year 2002.

7. Description of LGS Effluent Release Points

Gaseous Release Point = North Stack, Common

Gaseous Release Point = Unit 1 South Stack

Gaseous Release Point = Unit 2 South Stack

Gaseous Release Point = Hot Maintenance Shop

Gaseous Release Point = Oil Incineration - Aux Boiler A

Gaseous Release Point = Other Batch Releases

Liquid Release Point = Liquid Radwaste Discharge

8. Description of LGS Liquid Dose Receptors

Receptor 1 = LGS Liquid Radwaste Discharge Point

Receptor 2 = Citizens Home Water Company

Receptor 3 = Phoenixville Water Company

Receptor 4 = Philadelphia Suburban Water Company

Receptor 5 = City of Philadelphia Crew Course

B. RADIATION MONITORS OUT-OF-SERVICE CONDITION

There are no radiation monitor out-of-service conditions to report.

III. ATTACHMENTS (continued)

C. REVISION TO PREVIOUS SUBMITTAL

Two of the tables from the 2001 Annual Radioactive Effluent Release Report contained several typographical errors. The first table with errors is on page 22 of the 2001 report. The "Total For Above" activities listed were actually from the 2000 report. The second table with errors is on page 28 of the 2001 report. The headings on two columns were listed as "Class A". They should have been "Class B" and "Class C". The corrected pages for the 2001 report are listed on the next three pages.

III. ATTACHMENTS (continued)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2001
 DATE: 02/13/2002 2:59:24 PM
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO
 SCHULYKILL RIVER

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
AG-110M	Ci	0.00E+00	0.00E+00	9.48E-07	0.00E+00
BA-139	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	2.87E-05	3.56E-04	6.17E-06	0.00E+00
CO-60	Ci	5.06E-04	9.92E-04	4.84E-04	2.08E-04
CR-51	Ci	4.45E-04	4.76E-04	2.44E-05	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	5.07E-06	2.23E-05	0.00E+00	2.17E-05
CS-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CU-64	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	1.80E-05	0.00E+00	0.00E+00
H-3	Ci	1.37E+01	1.60E+01	8.74E+00	3.43E+00
I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	Ci	0.00E+00	6.50E-06	0.00E+00	0.00E+00
LA-142	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	2.70E-05	6.49E-04	5.69E-05	0.00E+00
MN-56	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	Ci	0.00E+00	5.19E-06	3.21E-07	0.00E+00
NA-24	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

III. ATTACHMENTS (continued)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2
 EFFLUENT REPORT - 2001
 DATE: 02/13/2002 2:59:24 PM
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO
 SCHULYKILL RIVER

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
NI-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NP-239	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-105	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-92	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-101	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-99M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W-187	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-92	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-93	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	7.84E-04	2.17E-03	2.40E-05	4.64E-05
ZN-69	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-97	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total For Above	Ci	1.37E+01	1.60E+01	8.74E+00	3.43E+00

III Attachments (continued)

Estimate of Major Nuclide Composition (By Waste Type)

Category C - Irradiated Components, Control Rods, etc.

Isotope	Waste Class B Curies	Percent Abundance	Waste Class C Curies	Percent Abundance
H-3	4.50E-05	0.00%	2.33E-01	0.00%
C-14	3.60E-05	0.00%	3.18E+00	0.00%
Cr-51	4.90E+00	32.92%	4.77E+02	0.64%
Mn-54	3.46E-01	2.32%	1.15E+03	1.55%
Fe-55	2.84E+00	19.08%	3.46E+04	46.69%
Ni-59	0.00E+00	0.00%	1.16E+01	0.02%
Co-60	4.78E+00	32.11%	3.48E+04	46.96%
Ni-63	0.00E+00	0.00%	2.09E+03	2.82%
Zn-65	2.02E+00	13.57%	0.00E+00	0.00%
Zr-95	0.00E+00	0.00%	4.96E+00	0.01%
Tc-99	1.94E-04	0.00%	1.14E-02	0.00%
Sb-125	0.00E+00	0.00%	9.68E+02	1.31%
I-129	2.91E-06	0.00%	0.00E+00	0.00%
Pu-238	0.00E+00	0.00%	1.08E-02	0.00%
PU-239/40	0.00E+00	0.00%	1.83E-05	0.00%
Pu-241	0.00E+00	0.00%	3.36E-03	0.00%
Am-241	0.00E+00	0.00%	6.28E-06	0.00%
Cm-242	0.00E+00	0.00%	1.14E-03	0.00%
Cm-243/44	0.00E+00	0.00%	5.05E-04	0.00%
Nb-94	0.00E+00	0.00%	6.94E-02	0.00%
U-235	0.00E+00	0.00%	7.63E-08	0.00%
Np-237	0.00E+00	0.00%	7.89E-07	0.00%
Pu-242	0.00E+00	0.00%	1.27E-06	0.00%
Am-243	0.00E+00	0.00%	6.24E-07	0.00%
TOTALS	1.49E+01	100.00%	7.41E+04	100.00%

Activity is estimated

III. ATTACHMENTS (continued)

D. OFFSITE DOSE CALCULATION MANUAL REVISIONS

The ODCM was not revised during the year 2002.

E. UNPLANNED RELEASES

1. Traces of Tritium found in Holding Pond

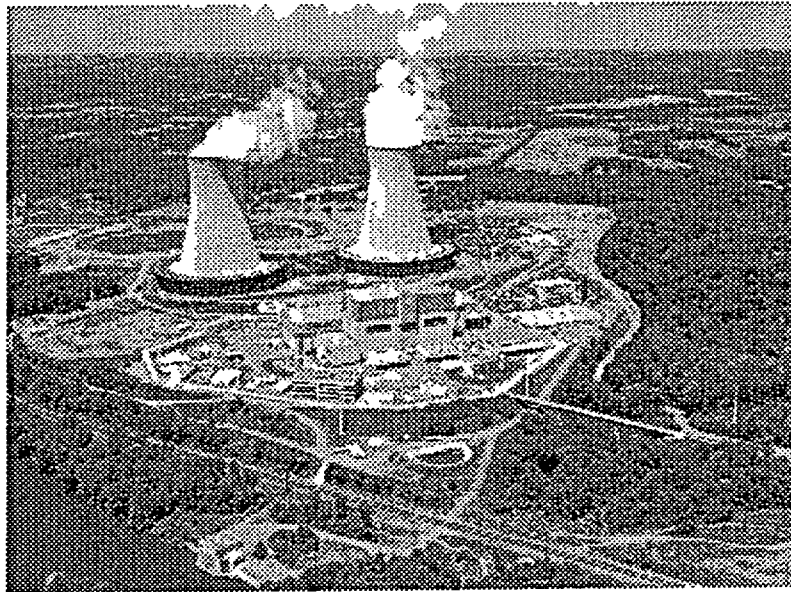
On two occasions during 2002, Tritium was found at very low concentration levels in the Waste Water Holding Pond. On February 15, 2002, Tritium was detected at a concentration of $8.49\text{E-}6$ uCi/cc and on November 15, 2002, Tritium was again detected at a concentration of $1.14\text{E-}6$ uCi/ml. The Tritium activity was discovered as part of a routine test (RT-5-104-800-0) to look for tritium in normally clean systems. Both of these events were traced to a break in the Unit 2 CST steam heating return line to the auxiliary boilers. With the break in the Unit 2 CST steam heating return line, boiler blowdowns and various vents in the steam heating system, an unplanned release of small amounts of tritium to the environment resulted. The amount of tritium released was reduced as much as possible through various station preventative and corrective actions.

Based on Holding Pond and Auxiliary Boiler analyses, the total amount of Tritium released to the environment from the two unplanned releases was 0.139 Curies. This value represents less than 0.2% of the annual amount of tritium released from other planned releases at LGS and is well below allowable limits.

The Unit 2 CST steam heating line was repaired during the 2003 Unit 2 refuel outage.

Exelon

Nuclear



Joint Frequency Distribution of Wind Speed
and Direction by Atmospheric Stability Class

2002

Limerick Generating Station

Exelon Nuclear
LIMERICK GENERATING STATION

DOCKET NO. 50-352 (Unit 1)
DOCKET NO. 50-353 (Unit 2)

Tower No. 1
Joint Frequency Distributions of
Wind Speed and Direction by
Atmospheric Stability Class
2002
Report No. 18

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating License NPF-39 (Unit 1)
and NPF-85 (Unit 2)

2002

ANNUAL DISPERSION CALCULATIONS
AT SPECIFIC POINTS OF INTEREST

Table 1
Limerick Generating Station
2002 Annual Dispersion Calculations at Specific Points of Interest
North Vent, Flow = 363,000 cfm

Type of Location	Direction	Distance		X/Q No Decay Undepleted	X/Q 8.05 Day Decay Depleted	D/Q
		(miles)	(meters)	(sec/m ³)	(sec/m ³)	(m ⁻²)
Site Boundary	S	0.47	762	3.169E-7	2.909E-7	2.426E-9
Site Boundary	SSW	0.47	762	2.110E-7	1.936E-7	1.209E-9
Site Boundary	SW	0.55	884	1.509E-7	1.371E-7	1.086E-9
Site Boundary	WSW	0.53	854	2.013E-7	1.834E-7	1.249E-9
Site Boundary	W	0.53	854	2.288E-7	2.083E-7	1.792E-9
Site Boundary	WNW	0.49	793	1.414E-7	1.294E-7	1.149E-9
Site Boundary	NW	0.47	762	1.368E-7	1.255E-7	1.013E-9
Site Boundary	NNW	0.55	884	2.220E-7	2.021E-7	1.800E-9
Site Boundary	N	0.55	884	4.908E-7	4.468E-7	3.521E-9
Site Boundary	NNE	0.49	793	8.924E-7	8.182E-7	5.275E-9
Site Boundary	NE	0.49	793	7.182E-7	6.596E-7	4.145E-9
Site Boundary	ENE	0.49	793	6.845E-7	6.284E-7	3.864E-9
Site Boundary	E	0.47	762	1.057E-6	9.722E-7	8.508E-9
Site Boundary	ESE	0.47	762	2.023E-6	1.855E-6	1.439E-8
Site Boundary	SE	0.47	762	9.713E-7	8.910E-7	9.037E-9
Site Boundary	SSE	0.63	1006	3.551E-7	3.199E-7	2.868E-9
Railroad Tracks	S	0.19	300	1.425E-6	1.366E-6	8.664E-9
Railroad Tracks	SSW	0.14	225	1.544E-6	1.493E-6	6.498E-9
Railroad Tracks	SW	0.14	225	1.307E-6	1.264E-6	7.347E-9
Railroad Tracks	WSW	0.14	225	1.662E-6	1.607E-6	7.615E-9
Railroad Tracks	W	0.14	225	1.914E-6	1.851E-6	1.210E-8
Railroad Tracks	WNW	0.21	345	5.247E-7	5.033E-7	3.894E-9
Railroad Tracks	NW	0.28	450	2.973E-7	2.799E-7	2.039E-9
Information Ctr.	ESE	0.55	884	1.619E-6	1.471E-6	1.164E-8
Fricks Lock	WSW	0.28	450	5.071E-7	4.775E-7	2.900E-9
Nat'l Guard Sta.	NNE	0.42	682	1.116E-6	1.031E-6	6.507E-9

Table 1
Limerick Generating Station
2002 Annual Dispersion Calculations at Specific Points of Interest
North Vent, Flow = 363,000 cfm

Type of Location	Direction	Distance		X/Q No Decay Undepleted	X/Q 8 05 Day Decay Depleted	D/Q
		(miles)	(meters)	(sec/m ³)	(sec/m ³)	(m ⁻²)
Site Boundary	S	0.47	762	3.169E-7	2.909E-7	2.426E-9
Site Boundary	SSW	0.47	762	2.110E-7	1.936E-7	1.209E-9
Site Boundary	SW	0.55	884	1.509E-7	1.371E-7	1.086E-9
Site Boundary	WSW	0.53	854	2.013E-7	1.834E-7	1.249E-9
Site Boundary	W	0.53	854	2.288E-7	2.083E-7	1.792E-9
Site Boundary	WNW	0.49	793	1.414E-7	1.294E-7	1.149E-9
Site Boundary	NW	0.47	762	1.368E-7	1.255E-7	1.013E-9
Site Boundary	NNW	0.55	884	2.220E-7	2.021E-7	1.800E-9
Site Boundary	N	0.55	884	4.908E-7	4.468E-7	3.521E-9
Site Boundary	NNE	0.49	793	8.924E-7	8.182E-7	5.275E-9
Site Boundary	NE	0.49	793	7.182E-7	6.596E-7	4.145E-9
Site Boundary	ENE	0.49	793	6.845E-7	6.284E-7	3.864E-9
Site Boundary	E	0.47	762	1.057E-6	9.722E-7	8.508E-9
Site Boundary	ESE	0.47	762	2.023E-6	1.855E-6	1.439E-8
Site Boundary	SE	0.47	762	9.713E-7	8.910E-7	9.037E-9
Site Boundary	SSE	0.63	1006	3.551E-7	3.199E-7	2.868E-9
Railroad Tracks	S	0.19	300	1.425E-6	1.366E-6	8.664E-9
Railroad Tracks	SSW	0.14	225	1.544E-6	1.493E-6	6.498E-9
Railroad Tracks	SW	0.14	225	1.307E-6	1.264E-6	7.347E-9
Railroad Tracks	WSW	0.14	225	1.662E-6	1.607E-6	7.615E-9
Railroad Tracks	W	0.14	225	1.914E-6	1.851E-6	1.210E-8
Railroad Tracks	WNW	0.21	345	5.247E-7	5.033E-7	3.894E-9
Railroad Tracks	NW	0.28	450	2.973E-7	2.799E-7	2.039E-9
Information Ctr.	ESE	0.55	884	1.619E-6	1.471E-6	1.164E-8
Fricks Lock	WSW	0.28	450	5.071E-7	4.775E-7	2.900E-9
Nat'l Guard Sta.	NNE	0.42	682	1.116E-6	1.031E-6	6.507E-9

Table 2
Limerick Generating Station
2002 Annual Dispersion Calculations at Specific Points of Interest
South Vent, Flow = 144,000 cfm

Type of Location	Direction	Distance		X/Q No Decay Undepleted	X/Q 8.05 Day Decay Depleted	D/Q
		(miles)	(meters)	(sec/m ³)	(sec/m ³)	(m ⁻²)
Site Boundary	S	0.47	762	3.524E-7	3.235E-7	2.627E-9
Site Boundary	SSW	0.47	762	2.317E-7	2.127E-7	1.319E-9
Site Boundary	SW	0.55	884	1.673E-7	1.520E-7	1.208E-9
Site Boundary	WSW	0.53	854	2.212E-7	2.016E-7	1.524E-9
Site Boundary	W	0.53	854	2.571E-7	2.343E-7	2.169E-9
Site Boundary	WNW	0.49	793	1.616E-7	1.479E-7	1.285E-9
Site Boundary	NW	0.47	762	1.544E-7	1.418E-7	1.119E-9
Site Boundary	NNW	0.55	884	2.544E-7	2.322E-7	1.918E-9
Site Boundary	N	0.55	884	5.541E-7	5.056E-7	3.738E-9
Site Boundary	NNE	0.49	793	9.948E-7	9.134E-7	6.096E-9
Site Boundary	NE	0.49	793	8.069E-7	7.424E-7	5.032E-9
Site Boundary	ENE	0.49	793	7.766E-7	7.142E-7	5.219E-9
Site Boundary	E	0.47	762	1.184E-6	1.090E-6	1.040E-8
Site Boundary	ESE	0.47	762	2.205E-6	2.022E-6	1.517E-8
Site Boundary	SE	0.47	762	1.058E-6	9.705E-7	9.945E-9
Site Boundary	SSE	0.63	1006	3.913E-7	3.526E-7	3.260E-9
Railroad Tracks	S	0.19	300	1.581E-6	1.515E-6	9.623E-9
Railroad Tracks	SSW	0.14	225	1.687E-6	1.631E-6	7.148E-9
Railroad Tracks	SW	0.14	225	1.441E-6	1.394E-6	8.088E-9
Railroad Tracks	WSW	0.14	225	1.814E-6	1.754E-6	8.346E-9
Railroad Tracks	W	0.14	225	2.137E-6	2.067E-6	1.357E-8
Railroad Tracks	WNW	0.21	345	5.997E-7	5.719E-7	4.403E-9
Railroad Tracks	NW	0.28	450	3.339E-7	3.144E-7	2.285E-9
Information Ctr.	ESE	0.55	884	1.768E-6	1.607E-6	1.223E-8
Fricks Lock	WSW	0.28	450	5.543E-7	5.219E-7	3.254E-9
Nat'l Guard Sta.	NNE	0.42	682	1.236E-6	1.143E-6	7.521E-9

Table 3
Limerick Generating Station
2002 Annual Dispersion Calculations for Inhalation Pathway Receptors
North Vent, Flow = 363,000 cfm

Direction	Distance		X/Q No Decay Undepleted	X/Q 8.05 Day Decay Depleted	D/Q
	(miles)	(meters)	(sec/m ³)	(sec/m ³)	(m ⁻²)
N	0.60	965	4.355E-7	3.944E-7	3.138E-9
NNE	0.50	805	8.736E-7	8.003E-7	5.167E-9
NE	0.80	1287	3.845E-7	3.469E-7	2.205E-9
ENE	0.60	965	5.208E-7	4.731E-7	2.986E-9
E	0.60	965	7.614E-7	6.912E-7	6.106E-9
ESE	0.50	805	1.864E-6	1.703E-6	1.330E-8
SE	1.00	1609	3.214E-7	2.828E-7	3.041E-9
SSE	1.00	1609	1.842E-7	1.626E-7	1.559E-9
S	0.80	1287	1.491E-7	1.329E-7	1.249E-9
SSW	1.00	1609	7.724E-8	6.854E-8	5.983E-10
SW	0.60	965	1.330E-7	1.201E-7	9.850E-10
WSW	0.80	1287	1.161E-7	1.038E-7	9.041E-10
W	0.60	965	1.915E-7	1.729E-7	1.555E-9
WNW	0.70	1126	8.565E-8	7.671E-8	7.150E-10
NW	1.30	2092	4.322E-8	3.870E-8	3.134E-10
NNW	0.90	1448	1.243E-7	1.116E-7	9.475E-10

Table 4
Limerick Generating Station
2002 Annual Dispersion Calculations for Inhalation Pathway Receptors
South Vent, Flow = 144,000 cfm

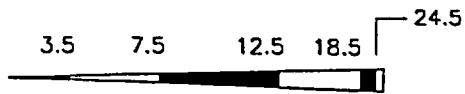
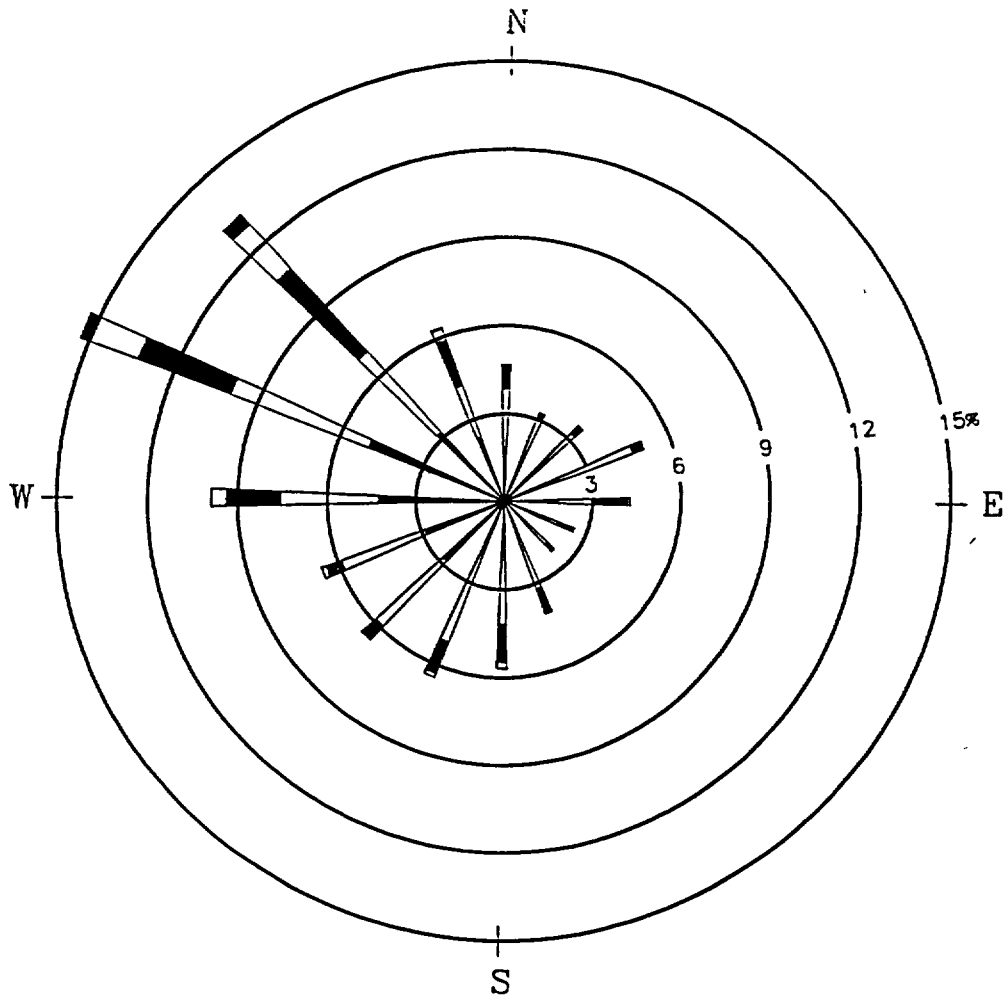
Direction	Distance		X/Q No Decay Undepleted	X/Q 8 05 Day Decay Depleted	D/Q
	(miles)	(meters)	(sec/m ³)	(sec/m ³)	(m ⁻²)
N	0.60	965	4.956E-7	4.503E-7	3.318E-9
NNE	0.50	805	9.747E-7	8.943E-7	5.969E-9
NE	0.80	1287	4.583E-7	4.167E-7	2.677E-9
ENE	0.60	965	5.980E-7	5.449E-7	4.060E-9
E	0.60	965	8.656E-7	7.882E-7	7.424E-9
ESE	0.50	805	2.032E-6	1.858E-6	1.401E-8
SE	1.00	1609	3.553E-7	3.132E-7	3.247E-9
SSE	1.00	1609	2.080E-7	1.842E-7	1.697E-9
S	0.80	1287	1.670E-7	1.491E-7	1.330E-9
SSW	1.00	1609	9.110E-8	8.150E-8	6.599E-10
SW	0.60	965	1.481E-7	1.338E-7	1.168E-9
WSW	0.80	1287	1.346E-7	1.212E-7	1.188E-9
W	0.60	965	2.161E-7	1.953E-7	1.902E-9
WNW	0.70	1126	9.846E-8	8.825E-8	8.535E-10
NW	1.30	2092	5.583E-8	5.061E-8	3.334E-10
NNW	0.90	1448	1.524E-7	1.381E-7	9.880E-10

Table 5
 Limerick Generating Station
 2002 Annual Dispersion Calculations for Ingestion Pathway Receptors
 North Vent, Flow = 363,000 cfm

Direction	Vegetation Pathway			Meat Pathway			Cow Pathway			Goat Pathway		
	Distance		D/Q	Distance		D/Q	Distance		D/Q	Distance		D/Q
	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)
N	1.60	2574	7.983E-10	2.12	3414	5.911E-10	4.70	7562	2.767E-10	-	-	-
NNE	0.50	805	5.167E-9	0.98	1585	2.001E-9	-	-	-	-	-	-
NE	1.50	2414	9.511E-10	0.68	1097	2.713E-9	-	-	-	-	-	-
ENE	1.80	2896	6.670E-10	2.41	3871	4.232E-10	-	-	-	-	-	-
E	1.10	1770	2.442E-9	1.17	1890	2.205E-9	-	-	-	-	-	-
ESE	1.20	1931	3.563E-9	2.80	4511	9.351E-10	1.10	1770	4.096E-9	1.10	1770	4.096E-9
SE	1.10	1770	2.637E-9	4.50	7241	2.756E-10	-	-	-	-	-	-
SSE	1.20	1931	1.214E-9	4.49	7224	2.064E-10	4.70	7562	2.067E-10	-	-	-
S	1.20	1931	7.622E-10	1.88	3018	4.885E-10	2.30	3701	3.521E-10	-	-	-
SSW	1.40	2253	4.084E-10	0.89	1433	6.431E-10	1.80	2896	2.909E-10	-	-	-
SW	0.60	965	9.850E-10	1.76	2835	3.801E-10	3.00	4827	2.051E-10	-	-	-
WSW	0.80	1287	9.041E-10	1.33	2134	6.691E-10	2.80	4505	2.659E-10	-	-	-
W	2.20	3540	3.230E-10	2.54	4084	2.697E-10	-	-	-	-	-	-
WNW	0.70	1126	7.150E-10	-	-	-	-	-	-	-	-	-
NW	1.60	2574	2.402E-10	4.14	6660	9.153E-11	-	-	-	-	-	-
NNW	1.20	1931	6.407E-10	3.93	6325	2.057E-10	-	-	-	-	-	-

Table 6
Limerick Generating Station
2002 Annual Dispersion Calculations for Ingestion Pathway Receptors
South Vent, Flow = 144,000 cfm

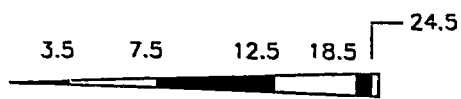
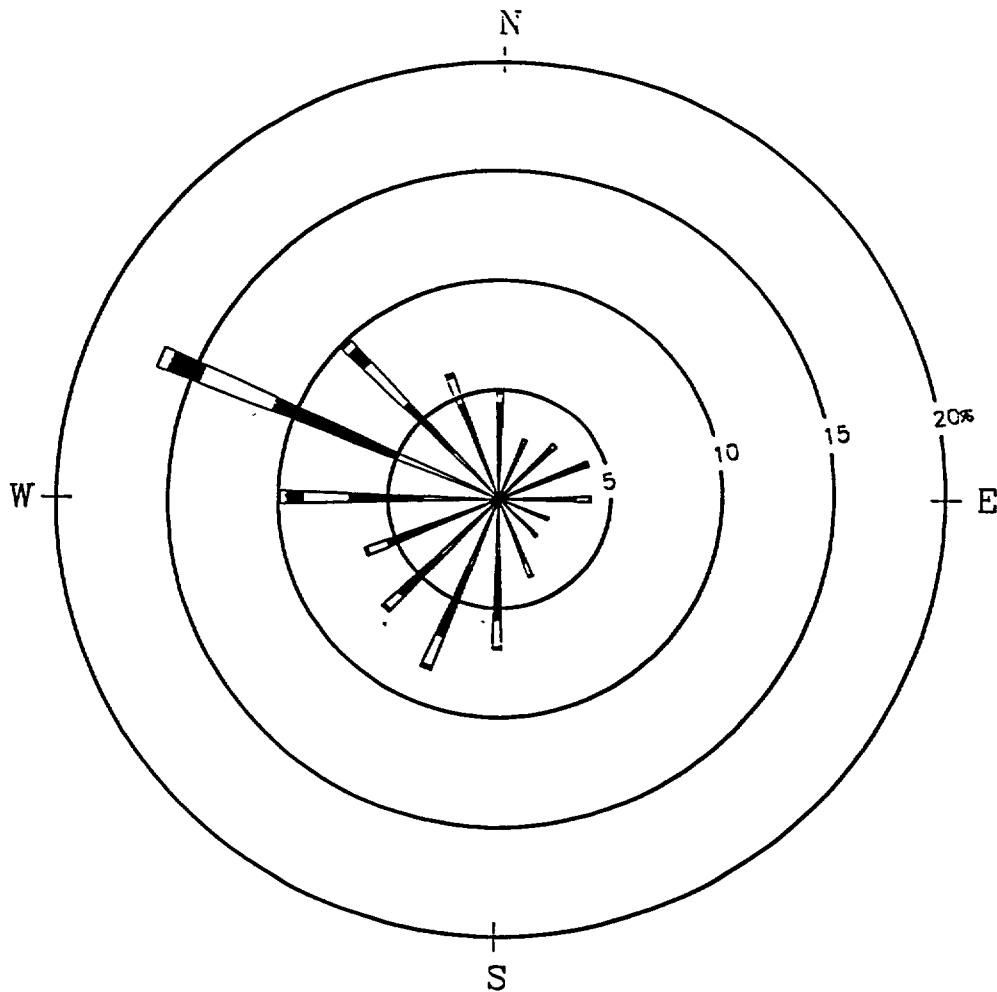
Direction	Vegetation Pathway			Meat Pathway			Cow Pathway			Goat Pathway		
	Distance		D/Q	Distance		D/Q	Distance		D/Q	Distance		D/Q
	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)	(miles)	(meters)	(m ²)
N	1.60	2574.	9.345E-10	2.12	3414.	8.129E-10	4.70	7562.	2.784E-10	-	-	-
NNE	0.50	805.	5.969E-9	0.98	1585.	2.405E-9	-	-	-	-	-	-
NE	1.50	2414.	1.046E-9	0.68	1097.	3.345E-9	-	-	-	-	-	-
ENE	1.80	2896.	7.078E-10	2.41	3871.	4.363E-10	-	-	-	-	-	-
E	1.10	1770.	2.830E-9	1.17	1890.	2.540E-9	-	-	-	-	-	-
ESE	1.20	1931.	3.609E-9	2.80	4511.	9.699E-10	1.10	1770	4.154E-9	1.10	1770	4.154E-9
SE	1.10	1770.	2.794E-9	4.50	7241.	2.791E-10	-	-	-	-	-	-
SSE	1.20	1931.	1.274E-9	4.49	7224.	2.388E-10	4.70	7562.	2.161E-10	-	-	-
S	1.20	1931.	8.818E-10	1.88	3018.	4.925E-10	2.30	3701.	3.727E-10	-	-	-
SSW	1.40	2253.	4.135E-10	0.89	1433.	7.521E-10	1.80	2896.	3.082E-10	-	-	-
SW	0.60	965.	1.168E-9	1.76	2835.	3.737E-10	3.00	4827.	2.142E-10	-	-	-
WSW	0.80	1287.	1.188E-9	1.33	2134.	6.543E-10	2.80	4505.	2.861E-10	-	-	-
W	2.20	3540.	3.474E-10	2.54	4084.	2.986E-10	-	-	-	-	-	-
WNNW	0.70	1126.	8.535E-10	-	-	-	-	-	-	-	-	-
NW	1.60	2574.	2.563E-10	4.14	6660.	1.160E-10	-	-	-	-	-	-
NNW	1.20	1931.	7.110E-10	3.93	6325.	2.100E-10	-	-	-	-	-	-



WIND SPEED CLASS BOUNDARIES
(MILES/HOJR)

NOTES:
 DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE - WIND IS BLOWING FROM THE NORTH 4.7 PERCENT OF THE TIME.

FIGURE 1
 Limerick Gen. Sta.
 Wind Level 1, 30-ft
 2002 Annual
 Wind Rose



WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

NOTES:
 DIAGRAM OF THE FREQUENCY OF OCCURRENCE OF EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE - WIND IS BLOWING FROM THE NORTH 4.9 PERCENT OF THE TIME.

FIGURE 2
 Limerick Gen. Sta.
 Wind Level 2, 175-ft
 2002 Annual
 Wind Rose

Attachment 1

Limerick Generating Station 2002 Annual Dispersion Calculations

Run 1 - Combined North Vent Annual X/Q Values

Run 2 - Combined North Vent Annual X/Q Values,
Depleted and Decayed with an 8.05 Day Half Life

Run 3 - Combined North Vent Annual D/Q Values

Run 4 - Unit 1 and Unit 2 South Vent Annual X/Q Values

Run 5 - Unit 1 and Unit 2 South Vent Annual X/Q Values,
Depleted and Decayed with an 8.05 Day Half Life

Run 6 - Unit 1 and Unit 2 South Vent Annual D/Q Values

DISTANCE METERS	SECTOR BEARING (DEGREES)								S
	NNE 22.5	NE 45.0	ENE 67.5	E 90.0	ESE 112.5	SE 135.0	SSE 157.5	S	
225.00	7.041E-06	5.528E-06	5.316E-06	7.589E-06	1.506E-05	6.996E-06	3.995E-06	2.329E-06	
300.00	4.318E-06	3.407E-06	3.270E-06	4.673E-06	9.239E-06	4.311E-06	2.447E-06	1.425E-06	
345.00	3.387E-06	2.681E-06	2.570E-06	3.673E-06	7.247E-06	3.388E-06	1.919E-06	1.117E-06	
450.00	2.131E-06	1.698E-06	1.624E-06	2.326E-06	4.558E-06	2.144E-06	1.207E-06	7.038E-07	
682.00	1.116E-06	8.953E-07	8.543E-07	1.244E-06	2.399E-06	1.149E-06	6.370E-07	3.745E-07	
762.00	9.440E-07	7.592E-07	7.240E-07	1.057E-06	2.023E-06	9.713E-07	5.377E-07	3.169E-07	
793.00	8.924E-07	7.182E-07	6.845E-07	1.000E-06	1.906E-06	9.154E-07	5.070E-07	2.991E-07	
805.00	8.736E-07	7.033E-07	6.702E-07	9.793E-07	1.864E-06	8.951E-07	4.958E-07	2.926E-07	
854.00	8.041E-07	6.484E-07	6.170E-07	9.019E-07	1.705E-06	8.191E-07	4.542E-07	2.684E-07	
884.00	7.662E-07	6.184E-07	5.880E-07	8.596E-07	1.619E-06	7.774E-07	4.314E-07	2.551E-07	
965.00	6.782E-07	5.492E-07	5.208E-07	7.614E-07	1.417E-06	6.800E-07	3.780E-07	2.241E-07	
975.00	6.687E-07	5.417E-07	5.135E-07	7.507E-07	1.395E-06	6.694E-07	3.722E-07	2.207E-07	
1006.00	6.407E-07	5.198E-07	4.921E-07	7.194E-07	1.331E-06	6.382E-07	3.551E-07	2.107E-07	
1097.00	5.725E-07	4.658E-07	4.397E-07	6.425E-07	1.177E-06	5.627E-07	3.140E-07	1.867E-07	
1126.00	5.536E-07	4.509E-07	4.251E-07	6.210E-07	1.134E-06	5.417E-07	3.025E-07	1.800E-07	
1287.00	4.678E-07	3.845E-07	3.588E-07	5.231E-07	9.377E-07	4.450E-07	2.500E-07	1.491E-07	
1433.00	4.110E-07	3.415E-07	3.145E-07	4.569E-07	8.065E-07	3.798E-07	2.149E-07	1.282E-07	
1448.00	4.060E-07	3.378E-07	3.106E-07	4.510E-07	7.949E-07	3.741E-07	2.118E-07	1.263E-07	
1555.00	3.666E-07	3.086E-07	2.795E-07	4.040E-07	7.038E-07	3.282E-07	1.877E-07	1.118E-07	
1609.00	3.609E-07	3.043E-07	2.750E-07	3.969E-07	6.902E-07	3.214E-07	1.842E-07	1.097E-07	
1770.00	3.270E-07	2.798E-07	2.483E-07	3.556E-07	6.142E-07	2.820E-07	1.644E-07	9.754E-08	
1890.00	3.065E-07	2.650E-07	2.319E-07	3.300E-07	5.682E-07	2.583E-07	1.529E-07	9.041E-08	
1931.00	3.001E-07	2.605E-07	2.268E-07	3.221E-07	5.542E-07	2.510E-07	1.495E-07	8.828E-08	
2092.00	2.784E-07	2.446E-07	2.093E-07	2.947E-07	5.077E-07	2.271E-07	1.383E-07	8.125E-08	
2134.00	2.734E-07	2.408E-07	2.052E-07	2.883E-07	4.973E-07	2.218E-07	1.359E-07	7.969E-08	
2253.00	2.603E-07	2.311E-07	1.946E-07	2.718E-07	4.704E-07	2.081E-07	1.297E-07	7.576E-08	
2414.00	2.447E-07	2.166E-07	1.820E-07	2.521E-07	4.392E-07	1.923E-07	1.230E-07	7.140E-08	
2574.00	2.469E-07	2.132E-07	1.735E-07	2.368E-07	4.082E-07	1.789E-07	1.185E-07	6.910E-08	
2835.00	2.575E-07	2.048E-07	1.622E-07	2.158E-07	3.657E-07	1.612E-07	1.134E-07	6.701E-08	
2896.00	2.615E-07	2.032E-07	1.599E-07	2.115E-07	3.570E-07	1.576E-07	1.126E-07	6.639E-08	
3018.00	2.714E-07	2.002E-07	1.557E-07	2.034E-07	3.407E-07	1.510E-07	1.112E-07	6.601E-08	
3414.00	3.184E-07	1.933E-07	1.450E-07	1.817E-07	2.975E-07	1.344E-07	1.091E-07	6.657E-08	
3540.00	3.333E-07	1.921E-07	1.424E-07	1.759E-07	2.861E-07	1.301E-07	1.090E-07	6.696E-08	
3701.00	3.457E-07	1.909E-07	1.395E-07	1.691E-07	2.727E-07	1.251E-07	1.094E-07	6.766E-08	
3871.00	3.464E-07	1.902E-07	1.368E-07	1.625E-07	2.597E-07	1.204E-07	1.101E-07	6.865E-08	
4084.00	3.288E-07	1.908E-07	1.337E-07	1.544E-07	2.447E-07	1.145E-07	1.093E-07	6.947E-08	
4505.00	2.847E-07	1.966E-07	1.264E-07	1.379E-07	2.183E-07	1.027E-07	9.781E-08	6.763E-08	
4511.00	2.841E-07	1.966E-07	1.263E-07	1.377E-07	2.179E-07	1.026E-07	9.767E-08	6.761E-08	
4827.00	2.561E-07	1.979E-07	1.220E-07	1.273E-07	2.012E-07	9.504E-08	9.034E-08	6.662E-08	
6325.00	1.688E-07	1.511E-07	1.215E-07	9.887E-08	1.584E-07	7.116E-08	7.174E-08	5.712E-08	
6660.00	1.573E-07	1.409E-07	1.228E-07	9.645E-08	1.565E-07	6.788E-08	7.043E-08	5.400E-08	
7224.00	1.405E-07	1.260E-07	1.183E-07	9.314E-08	1.555E-07	6.312E-08	6.828E-08	4.937E-08	
7241.00	1.400E-07	1.256E-07	1.180E-07	9.305E-08	1.555E-07	6.299E-08	6.821E-08	4.924E-08	
7562.00	1.318E-07	1.183E-07	1.114E-07	8.853E-08	1.522E-07	6.130E-08	6.697E-08	4.928E-08	
8047.00	1.207E-07	1.084E-07	1.024E-07	8.238E-08	1.478E-07	5.916E-08	6.491E-08	4.922E-08	
16093.00	4.749E-08	4.291E-08	4.091E-08	4.083E-08	3.321E-08	4.271E-08	2.921E-08	2.631E-08	
32187.00	1.790E-08	1.622E-08	1.549E-08	1.850E-08	3.218E-08	1.865E-08	1.092E-08	9.797E-09	
46280.00	1.030E-08	9.350E-09	8.905E-09	1.071E-08	1.870E-08	1.071E-08	6.302E-09	5.657E-09	
64374.00	7.116E-09	6.463E-09	6.173E-09	7.406E-09	1.296E-08	7.391E-09	4.331E-09	3.876E-09	
80467.00	5.312E-09	4.829E-09	4.624E-09	5.534E-09	9.701E-09	5.515E-09	3.216E-09	2.870E-09	

LGS 2002 EFFLUENT REPORT
ANNUAL DISPERSION CALCULATIONS
NORTH VENT; 363,000 cfm
Vs = 7.69 m/sec, VENT DIA = 5.33 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
225.00	1.544E-06	1.307E-06	1.622E-06	1.914E-06	1.096E-06	9.899E-07	2.005E-06	4.501E-06
300.00	9.437E-07	7.992E-07	1.020E-06	1.173E-06	6.699E-07	6.032E-07	1.224E-06	2.749E-06
345.00	7.389E-07	6.256E-07	8.006E-07	9.197E-07	5.247E-07	4.722E-07	9.577E-07	2.152E-06
450.00	4.646E-07	3.955E-07	5.071E-07	5.813E-07	3.303E-07	2.973E-07	6.012E-07	1.350E-06
682.00	2.488E-07	2.187E-07	2.786E-07	3.172E-07	1.768E-07	1.610E-07	3.201E-07	7.104E-07
793.00	1.993E-07	1.761E-07	2.371E-07	2.695E-07	1.497E-07	1.368E-07	2.717E-07	6.021E-07
805.00	1.951E-07	1.724E-07	2.192E-07	2.545E-07	1.414E-07	1.294E-07	2.573E-07	5.698E-07
854.00	1.792E-07	1.585E-07	2.013E-07	2.288E-07	1.271E-07	1.267E-07	2.521E-07	5.581E-07
884.00	1.705E-07	1.509E-07	1.915E-07	2.176E-07	1.209E-07	1.111E-07	2.326E-07	5.146E-07
965.00	1.500E-07	1.330E-07	1.687E-07	1.915E-07	1.063E-07	9.832E-07	2.220E-07	4.908E-07
975.00	1.478E-07	1.311E-07	1.663E-07	1.886E-07	1.047E-07	9.692E-07	1.949E-07	4.355E-07
1006.00	1.412E-07	1.254E-07	1.590E-07	1.803E-07	1.001E-07	9.285E-07	1.872E-07	4.119E-07
1097.00	1.254E-07	1.118E-07	1.418E-07	1.603E-07	8.880E-08	8.298E-08	1.685E-07	3.690E-07
1126.00	1.210E-07	1.080E-07	1.371E-07	1.547E-07	8.565E-08	8.025E-08	1.634E-07	3.571E-07
1287.00	1.009E-07	9.128E-08	1.161E-07	1.295E-07	7.124E-08	6.789E-08	1.404E-07	3.030E-07
1433.00	8.793E-08	8.086E-08	1.033E-07	1.131E-07	6.165E-08	5.987E-08	1.256E-07	2.671E-07
1448.00	8.682E-08	7.999E-08	1.023E-07	1.117E-07	6.081E-08	5.917E-08	1.243E-07	2.640E-07
1585.00	7.840E-08	7.364E-08	9.473E-08	1.007E-07	5.425E-08	5.380E-08	1.129E-07	2.390E-07
1609.00	7.724E-08	7.279E-08	9.376E-08	9.912E-08	5.329E-08	5.303E-08	1.143E-07	2.353E-07
1770.00	7.112E-08	6.862E-08	8.906E-08	9.031E-08	4.795E-08	4.873E-08	1.047E-07	2.139E-07
1890.00	6.813E-08	6.691E-08	8.721E-08	8.547E-08	4.497E-08	4.632E-08	9.984E-08	2.010E-07
1931.00	6.737E-08	6.655E-08	8.683E-08	8.408E-08	4.412E-08	4.562E-08	9.838E-08	1.970E-07
2092.00	6.527E-08	6.575E-08	8.591E-08	7.966E-08	4.146E-08	4.322E-08	9.325E-08	1.832E-07
2134.00	6.491E-08	6.567E-08	8.579E-08	7.871E-08	4.090E-08	4.267E-08	9.204E-08	1.800E-07
2253.00	6.426E-08	6.572E-08	8.572E-08	7.642E-08	3.957E-08	4.128E-08	8.888E-08	1.716E-07
2414.00	6.406E-08	6.629E-08	8.607E-08	7.404E-08	3.825E-08	3.972E-08	8.514E-08	1.616E-07
2574.00	6.190E-08	6.493E-08	8.378E-08	7.165E-08	3.645E-08	3.809E-08	8.673E-08	1.617E-07
2835.00	5.893E-08	6.302E-08	8.039E-08	6.859E-08	3.405E-08	3.584E-08	9.056E-08	1.642E-07
2896.00	5.831E-08	6.262E-08	7.964E-08	6.798E-08	3.358E-08	3.537E-08	9.165E-08	1.652E-07
3018.00	5.712E-08	6.182E-08	7.816E-08	6.684E-08	3.265E-08	3.447E-08	9.404E-08	1.673E-07
3414.00	5.361E-08	5.920E-08	7.348E-08	6.361E-08	3.004E-08	3.179E-08	1.075E-07	1.775E-07
3540.00	5.261E-08	5.842E-08	7.209E-08	6.272E-08	2.933E-08	3.103E-08	1.075E-07	1.821E-07
3701.00	5.138E-08	5.743E-08	7.035E-08	6.164E-08	2.848E-08	3.011E-08	1.127E-07	1.887E-07
3871.00	5.013E-08	5.641E-08	6.858E-08	6.054E-08	2.761E-08	2.918E-08	1.181E-07	1.955E-07
4084.00	4.977E-08	5.600E-08	6.729E-08	5.924E-08	2.667E-08	2.893E-08	1.223E-07	1.998E-07
4505.00	5.508E-08	5.933E-08	6.915E-08	5.690E-08	2.524E-08	3.305E-08	1.189E-07	1.907E-07
4511.00	5.516E-08	5.938E-08	6.918E-08	5.687E-08	2.522E-08	3.311E-08	1.189E-07	1.905E-07
4827.00	5.942E-08	6.176E-08	7.116E-08	5.536E-08	2.421E-08	3.710E-08	1.130E-07	1.765E-07
6325.00	5.272E-08	5.833E-08	7.861E-08	6.539E-08	1.935E-08	5.569E-08	7.705E-08	1.168E-07
6660.00	4.912E-08	5.551E-08	7.450E-08	7.150E-08	1.833E-08	5.454E-08	7.172E-08	1.087E-07
7224.00	4.388E-08	5.062E-08	7.349E-08	7.322E-08	1.681E-08	4.972E-08	6.398E-08	9.707E-08
7241.00	4.373E-08	5.047E-08	7.333E-08	7.307E-08	1.677E-08	4.956E-08	6.377E-08	9.675E-08
7562.00	4.165E-08	4.787E-08	7.048E-08	6.933E-08	1.729E-08	4.669E-08	6.006E-08	9.107E-08
8047.00	3.844E-08	4.394E-08	6.478E-08	6.358E-08	1.821E-08	4.277E-08	5.502E-08	8.342E-08
16093.00	1.491E-08	1.671E-08	2.487E-08	2.463E-08	1.595E-08	1.660E-08	2.144E-08	3.250E-08
32187.00	5.444E-09	6.030E-09	9.105E-09	9.109E-09	4.252E-09	6.182E-09	7.976E-09	1.208E-08
48280.00	3.120E-09	3.462E-09	5.163E-09	5.186E-09	2.434E-09	3.535E-09	4.576E-09	6.920E-09
64374.00	2.120E-09	2.340E-09	3.523E-09	3.556E-09	1.658E-09	2.431E-09	3.142E-09	4.751E-09
80467.00	1.560E-09	1.713E-09	2.605E-09	2.640E-09	1.223E-09	1.808E-09	2.333E-09	3.528E-09

SECTOR BEARING (DEGREES)

DISTANCE METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
225.00	6.809E-06	5.346E-06	5.141E-06	7.339E-06	1.456E-05	6.765E-06	3.864E-06	2.252E-06
300.00	4.140E-06	3.267E-06	3.135E-06	4.481E-06	8.855E-06	4.132E-06	2.346E-06	1.366E-06
345.00	3.231E-06	2.558E-06	2.451E-06	3.504E-06	6.909E-06	3.230E-06	1.829E-06	1.065E-06
450.00	2.008E-06	1.601E-06	1.530E-06	2.191E-06	4.291E-06	2.018E-06	1.137E-06	6.627E-07
682.00	1.031E-06	8.284E-07	7.902E-07	1.150E-06	2.213E-06	1.060E-06	5.881E-07	3.458E-07
762.00	8.675E-07	6.987E-07	6.661E-07	9.722E-07	1.855E-06	8.910E-07	4.934E-07	2.909E-07
793.00	8.182E-07	6.596E-07	6.284E-07	9.176E-07	1.744E-06	8.377E-07	4.641E-07	2.739E-07
805.00	8.003E-07	6.454E-07	6.148E-07	8.978E-07	1.703E-06	8.184E-07	4.535E-07	2.677E-07
854.00	7.342E-07	5.931E-07	5.642E-07	8.242E-07	1.553E-06	7.461E-07	4.139E-07	2.447E-07
884.00	6.982E-07	5.646E-07	5.367E-07	7.841E-07	1.471E-06	7.065E-07	3.922E-07	2.321E-07
965.00	6.149E-07	4.991E-07	4.731E-07	6.912E-07	1.280E-06	6.142E-07	3.415E-07	2.026E-07
975.00	6.058E-07	4.920E-07	4.662E-07	6.810E-07	1.259E-06	6.041E-07	3.360E-07	1.994E-07
1006.00	5.796E-07	4.714E-07	4.461E-07	6.516E-07	1.199E-06	5.747E-07	3.199E-07	1.900E-07
1097.00	5.165E-07	4.215E-07	3.976E-07	5.804E-07	1.056E-06	5.048E-07	2.818E-07	1.678E-07
1097.00	5.165E-07	4.215E-07	3.976E-07	5.804E-07	1.056E-06	5.048E-07	2.818E-07	1.678E-07
1126.00	4.991E-07	4.079E-07	3.841E-07	5.607E-07	1.016E-06	4.854E-07	2.712E-07	1.615E-07
1287.00	4.203E-07	3.469E-07	3.231E-07	4.704E-07	8.355E-07	3.962E-07	2.228E-07	1.329E-07
1433.00	3.683E-07	3.078E-07	2.825E-07	4.097E-07	7.152E-07	3.363E-07	1.906E-07	1.137E-07
1448.00	3.638E-07	3.044E-07	2.789E-07	4.043E-07	7.046E-07	3.310E-07	1.878E-07	1.120E-07
1585.00	3.279E-07	2.780E-07	2.505E-07	3.612E-07	6.215E-07	2.890E-07	1.657E-07	9.874E-08
1609.00	3.227E-07	2.742E-07	2.464E-07	3.548E-07	6.095E-07	2.828E-07	1.626E-07	9.681E-08
1770.00	2.921E-07	2.522E-07	2.221E-07	3.170E-07	5.400E-07	2.469E-07	1.446E-07	8.577E-08
1890.00	2.736E-07	2.389E-07	2.072E-07	2.937E-07	4.984E-07	2.253E-07	1.343E-07	7.933E-08
1931.00	2.679E-07	2.349E-07	2.026E-07	2.865E-07	4.858E-07	2.188E-07	1.312E-07	7.742E-08
2092.00	2.484E-07	2.208E-07	1.867E-07	2.617E-07	4.442E-07	1.973E-07	1.214E-07	7.117E-08
2134.00	2.440E-07	2.175E-07	1.831E-07	2.560E-07	4.350E-07	1.926E-07	1.192E-07	6.981E-08
2253.00	2.323E-07	2.089E-07	1.735E-07	2.411E-07	4.112E-07	1.805E-07	1.139E-07	6.639E-08
2414.00	2.185E-07	1.987E-07	1.622E-07	2.235E-07	3.837E-07	1.665E-07	1.082E-07	6.262E-08
2574.00	2.217E-07	1.934E-07	1.548E-07	2.098E-07	3.561E-07	1.547E-07	1.044E-07	6.081E-08
2835.00	2.338E-07	1.865E-07	1.450E-07	1.911E-07	3.182E-07	1.392E-07	1.005E-07	5.935E-08
2896.00	2.380E-07	1.851E-07	1.431E-07	1.873E-07	3.104E-07	1.360E-07	9.981E-08	5.920E-08
3018.00	2.484E-07	1.827E-07	1.395E-07	1.801E-07	2.958E-07	1.303E-07	9.883E-08	5.908E-08
3414.00	2.902E-07	1.773E-07	1.303E-07	1.610E-07	2.578E-07	1.160E-07	9.777E-08	5.979E-08
3540.00	2.991E-07	1.765E-07	1.281E-07	1.559E-07	2.477E-07	1.123E-07	9.798E-08	6.030E-08
3701.00	3.026E-07	1.758E-07	1.257E-07	1.498E-07	2.358E-07	1.081E-07	9.858E-08	6.112E-08
3871.00	2.937E-07	1.754E-07	1.235E-07	1.440E-07	2.243E-07	1.040E-07	9.960E-08	6.224E-08
4084.00	2.708E-07	1.759E-07	1.209E-07	1.368E-07	2.111E-07	9.891E-08	9.911E-08	6.318E-08
4505.00	2.299E-07	1.779E-07	1.147E-07	1.219E-07	1.876E-07	8.846E-08	8.852E-08	6.167E-08
4511.00	2.294E-07	1.779E-07	1.146E-07	1.217E-07	1.873E-07	8.833E-08	8.838E-08	6.165E-08
4827.00	2.046E-07	1.744E-07	1.108E-07	1.123E-07	1.724E-07	8.167E-08	8.162E-08	6.085E-08
6325.00	1.296E-07	1.196E-07	1.058E-07	8.702E-08	1.356E-07	6.067E-08	6.467E-08	5.219E-08
6660.00	1.200E-07	1.109E-07	1.029E-07	8.501E-08	1.345E-07	5.784E-08	6.352E-08	4.925E-08
7224.00	1.060E-07	9.823E-08	9.206E-08	8.226E-08	1.346E-07	5.375E-08	6.136E-08	4.488E-08
7241.00	1.056E-07	9.788E-08	9.169E-08	8.218E-08	1.347E-07	5.363E-08	6.128E-08	4.476E-08
7562.00	9.879E-08	9.166E-08	8.574E-08	7.803E-08	1.319E-07	5.226E-08	5.968E-08	4.479E-08
8047.00	8.961E-08	8.333E-08	7.774E-08	7.238E-08	1.283E-07	5.055E-08	5.660E-08	4.467E-08
16093.00	3.193E-08	3.005E-08	2.736E-08	3.399E-08	6.308E-07	3.494E-08	1.986E-08	1.808E-08
32187.00	1.023E-08	9.689E-09	8.816E-09	1.179E-08	2.073E-08	1.112E-08	6.351E-09	5.753E-09
48280.00	5.239E-09	4.755E-09	4.506E-09	6.015E-09	1.060E-08	5.660E-09	3.271E-09	2.962E-09
64374.00	3.286E-09	2.971E-09	2.834E-09	3.761E-09	6.635E-09	3.541E-09	2.046E-09	1.844E-09
80467.00	2.222E-09	2.007E-09	1.918E-09	2.531E-09	4.465E-09	2.385E-09	1.378E-09	1.237E-09

Run 2
North Vent XI/Q
Depleted and
Decayed

DEPLETED CHI/Q (SEC/M3)

LGS 2002 EFFLUENT REPORT
 ANNUAL DISPERSION CALCULATIONS
 NORTH WENT; 363,000 cfm, 8.05 DAY DECAY
 Vs = 7.69 m/sec, VENT DIA = 5.33 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
225.00	1.493E-06	1.264E-06	1.607E-06	1.851E-06	1.060E-06	9.573E-07	1.939E-06	4.353E-06
300.00	9.045E-07	7.660E-07	9.781E-07	1.125E-06	6.421E-07	5.786E-07	1.173E-06	2.635E-06
345.00	7.044E-07	5.965E-07	7.633E-07	8.769E-07	5.003E-07	4.502E-07	9.134E-07	2.052E-06
450.00	4.374E-07	3.723E-07	4.775E-07	5.473E-07	3.110E-07	2.799E-07	5.663E-07	1.271E-06
682.00	2.297E-07	2.018E-07	2.571E-07	2.927E-07	1.632E-07	1.486E-07	2.956E-07	6.561E-07
762.00	1.936E-07	1.708E-07	2.174E-07	2.471E-07	1.373E-07	1.255E-07	2.494E-07	5.528E-07
793.00	1.825E-07	1.611E-07	2.049E-07	2.329E-07	1.294E-07	1.185E-07	2.357E-07	5.220E-07
805.00	1.784E-07	1.576E-07	2.004E-07	2.277E-07	1.265E-07	1.159E-07	2.307E-07	5.109E-07
854.00	1.633E-07	1.444E-07	1.834E-07	2.083E-07	1.157E-07	1.063E-07	2.121E-07	4.694E-07
884.00	1.550E-07	1.371E-07	1.711E-07	1.977E-07	1.098E-07	1.011E-07	2.021E-07	4.468E-07
965.00	1.356E-07	1.201E-07	1.525E-07	1.729E-07	9.599E-08	8.891E-08	1.789E-07	3.944E-07
975.00	1.335E-07	1.183E-07	1.501E-07	1.702E-07	9.446E-08	8.759E-08	1.764E-07	3.887E-07
1006.00	1.273E-07	1.129E-07	1.433E-07	1.624E-07	9.006E-08	8.375E-08	1.692E-07	3.722E-07
1097.00	1.126E-07	1.003E-07	1.274E-07	1.438E-07	7.962E-08	7.463E-08	1.520E-07	3.326E-07
1126.00	1.086E-07	9.688E-08	1.230E-07	1.387E-07	7.671E-08	7.211E-08	1.473E-07	3.216E-07
1287.00	9.007E-08	8.149E-08	1.038E-07	1.155E-07	6.342E-08	6.077E-08	1.262E-07	2.719E-07
1433.00	7.819E-08	7.205E-08	9.230E-08	1.006E-07	5.463E-08	5.346E-08	1.128E-07	2.392E-07
1448.00	7.718E-08	7.127E-08	9.137E-08	9.929E-08	5.387E-08	5.283E-08	1.116E-07	2.363E-07
1585.00	6.958E-08	6.564E-08	8.473E-08	8.935E-08	4.790E-08	4.799E-08	1.024E-07	2.136E-07
1609.00	6.854E-08	6.490E-08	8.389E-08	8.792E-08	4.703E-08	4.729E-08	1.017E-07	2.103E-07
1770.00	6.313E-08	6.136E-08	7.998E-08	8.008E-08	4.223E-08	4.347E-08	9.410E-08	1.910E-07
1890.00	6.059E-08	6.004E-08	7.860E-08	7.583E-08	3.959E-08	4.136E-08	8.985E-08	1.793E-07
1931.00	5.996E-08	5.979E-08	7.835E-08	7.462E-08	3.885E-08	4.075E-08	8.857E-08	1.758E-07
2092.00	5.834E-08	5.940E-08	7.793E-08	7.086E-08	3.656E-08	3.870E-08	8.409E-08	1.635E-07
2134.00	5.809E-08	5.941E-08	7.792E-08	7.008E-08	3.610E-08	3.823E-08	8.304E-08	1.606E-07
2253.00	5.773E-08	5.970E-08	7.814E-08	6.819E-08	3.500E-08	3.706E-08	8.030E-08	1.532E-07
2414.00	5.785E-08	6.053E-08	7.879E-08	6.629E-08	3.395E-08	3.575E-08	7.706E-08	1.443E-07
2574.00	5.601E-08	5.942E-08	7.682E-08	6.431E-08	3.241E-08	3.435E-08	7.896E-08	1.452E-07
2835.00	5.347E-08	5.786E-08	7.386E-08	6.179E-08	3.036E-08	3.241E-08	8.313E-08	1.488E-07
2896.00	5.293E-08	5.752E-08	7.319E-08	6.129E-08	2.994E-08	3.200E-08	8.428E-08	1.499E-07
3018.00	5.190E-08	5.685E-08	7.187E-08	6.036E-08	2.916E-08	3.122E-08	8.674E-08	1.523E-07
3414.00	4.885E-08	5.458E-08	6.764E-08	5.769E-08	2.692E-08	2.887E-08	9.655E-08	1.633E-07
3540.00	4.796E-08	5.389E-08	6.636E-08	5.694E-08	2.630E-08	2.820E-08	1.003E-07	1.680E-07
3701.00	4.687E-08	5.301E-08	6.476E-08	5.602E-08	2.630E-08	2.738E-08	1.050E-07	1.735E-07
3871.00	4.576E-08	5.209E-08	6.311E-08	5.509E-08	2.481E-08	2.656E-08	1.091E-07	1.773E-07
4084.00	4.549E-08	5.175E-08	6.192E-08	5.396E-08	2.399E-08	2.639E-08	1.107E-07	1.770E-07
4505.00	5.068E-08	5.495E-08	6.369E-08	5.190E-08	2.275E-08	3.052E-08	1.034E-07	1.609E-07
4511.00	5.076E-08	5.500E-08	6.371E-08	5.187E-08	2.275E-08	3.059E-08	1.032E-07	1.606E-07
4827.00	5.480E-08	5.723E-08	6.554E-08	5.053E-08	2.185E-08	3.452E-08	9.466E-08	1.433E-07
6325.00	4.332E-08	5.018E-08	6.892E-08	5.992E-08	1.743E-08	4.712E-08	5.932E-08	8.991E-08
6660.00	4.016E-08	4.646E-08	6.586E-08	6.276E-08	1.648E-08	4.381E-08	5.487E-08	8.322E-08
7224.00	3.557E-08	4.037E-08	5.901E-08	5.720E-08	1.507E-08	3.774E-08	4.844E-08	7.353E-08
7241.00	3.544E-08	4.020E-08	5.879E-08	5.629E-08	1.504E-08	3.774E-08	4.827E-08	7.326E-08
7562.00	3.279E-08	3.688E-08	5.421E-08	5.223E-08	1.557E-08	3.502E-08	4.496E-08	6.847E-08
8047.00	2.932E-08	3.306E-08	4.839E-08	4.723E-08	1.648E-08	3.164E-08	4.072E-08	6.209E-08
16093.00	1.004E-08	1.118E-08	1.661E-08	1.645E-08	7.829E-09	1.110E-08	1.436E-08	2.184E-08
32187.00	3.123E-09	3.430E-09	5.166E-09	5.171E-09	2.435E-09	3.513E-09	4.548E-09	6.928E-09
48280.00	1.593E-09	1.749E-09	2.601E-09	2.614E-09	1.237E-09	1.785E-09	2.317E-09	3.534E-09
64374.00	9.822E-10	1.071E-09	1.607E-09	1.624E-09	7.660E-10	1.112E-09	1.444E-09	2.207E-09
80467.00	6.533E-10	7.073E-10	1.071E-09	1.088E-09	5.113E-10	7.469E-10	9.689E-10	1.485E-09

D/Q (/M2)

LGS 2002 EFFLUENT REPORT
ANNUAL DISPERSION CALCULATIONS
NORTH VENT; 363,000 cfm, 8.05 DAY DECAY
Vs = 7.69 m/sec, VENT DIA = 5.33 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
225.00	2.983E-08	2.114E-08	2.081E-08	4.693E-08	8.399E-08	5.365E-08	2.382E-08	1.261E-08
300.00	2.055E-08	1.480E-08	1.442E-08	2.218E-08	5.703E-08	3.636E-08	1.621E-08	8.664E-09
345.00	1.683E-08	1.227E-08	1.188E-08	2.627E-08	4.617E-08	2.942E-08	1.317E-08	7.103E-09
450.00	1.161E-08	8.701E-09	8.308E-09	1.800E-08	3.106E-08	1.976E-08	8.938E-09	4.928E-09
682.00	6.507E-09	5.061E-09	4.745E-09	9.966E-09	1.689E-08	1.065E-08	4.906E-09	2.812E-09
762.00	5.574E-09	4.368E-09	4.078E-09	8.508E-09	1.439E-08	9.037E-09	4.185E-09	2.426E-09
793.00	5.275E-09	4.145E-09	3.864E-09	8.041E-09	1.359E-08	8.522E-09	3.955E-09	2.304E-09
805.00	5.167E-09	4.064E-09	3.787E-09	7.872E-09	1.330E-08	8.337E-09	3.872E-09	2.259E-09
854.00	4.762E-09	3.759E-09	3.507E-09	7.238E-09	1.222E-08	7.660E-09	3.562E-09	2.093E-09
884.00	4.542E-09	3.601E-09	3.349E-09	6.904E-09	1.164E-08	7.287E-09	3.397E-09	2.003E-09
965.00	4.031E-09	3.216E-09	2.986E-09	6.106E-09	1.032E-08	6.452E-09	3.024E-09	1.800E-09
975.00	3.976E-09	3.173E-09	2.952E-09	6.035E-09	1.017E-08	6.363E-09	2.986E-09	1.778E-09
1006.00	3.810E-09	3.045E-09	2.830E-09	5.772E-09	9.724E-09	6.088E-09	2.868E-09	1.712E-09
1097.00	3.350E-09	2.713E-09	2.495E-09	5.049E-09	8.482E-09	5.320E-09	2.537E-09	1.522E-09
1126.00	3.223E-09	2.616E-09	2.401E-09	4.847E-09	8.145E-09	5.113E-09	2.450E-09	1.471E-09
1287.00	2.667E-09	2.205E-09	2.053E-09	3.958E-09	6.653E-09	4.205E-09	2.063E-09	1.249E-09
1433.00	2.304E-09	1.928E-09	1.737E-09	3.375E-09	5.663E-09	3.591E-09	1.817E-09	1.106E-09
1448.00	2.271E-09	1.904E-09	1.712E-09	3.329E-09	5.576E-09	3.540E-09	1.791E-09	1.094E-09
1585.00	2.001E-09	1.700E-09	1.517E-09	2.905E-09	4.801E-09	3.107E-09	1.559E-09	9.816E-10
1609.00	1.954E-09	1.664E-09	1.481E-09	2.836E-09	4.763E-09	3.041E-09	1.559E-09	9.620E-10
1770.00	1.711E-09	1.466E-09	1.288E-09	2.442E-09	4.096E-09	2.637E-09	1.364E-09	8.492E-10
1890.00	1.556E-09	1.330E-09	1.185E-09	2.205E-09	3.689E-09	2.397E-09	1.243E-09	7.816E-10
1931.00	1.517E-09	1.292E-09	1.153E-09	2.133E-09	3.563E-09	2.321E-09	1.214E-09	7.622E-10
2092.00	1.352E-09	1.151E-09	1.033E-09	1.894E-09	3.150E-09	2.065E-09	1.093E-09	6.968E-10
2134.00	1.317E-09	1.125E-09	1.004E-09	1.836E-09	3.033E-09	2.005E-09	1.063E-09	6.799E-10
2253.00	1.223E-09	1.042E-09	9.271E-10	1.692E-09	2.803E-09	1.849E-09	9.824E-10	6.472E-10
2414.00	1.115E-09	9.511E-10	8.417E-10	1.526E-09	2.516E-09	1.665E-09	8.926E-10	6.087E-10
2574.00	1.061E-09	8.732E-10	7.792E-10	1.392E-09	2.270E-09	1.503E-09	8.023E-10	5.728E-10
2835.00	9.506E-10	7.616E-10	6.835E-10	1.208E-09	1.946E-09	1.287E-09	6.787E-10	5.251E-10
2896.00	9.229E-10	7.371E-10	6.670E-10	1.168E-09	1.881E-09	1.244E-09	6.558E-10	5.114E-10
3018.00	8.665E-10	6.937E-10	6.296E-10	1.094E-09	1.762E-09	1.165E-09	6.127E-10	4.885E-10
3414.00	9.131E-10	5.726E-10	5.205E-10	9.112E-10	1.450E-09	9.536E-10	5.342E-10	4.016E-10
3540.00	8.019E-10	5.440E-10	4.914E-10	8.635E-10	1.371E-09	8.994E-10	5.098E-10	3.783E-10
3701.00	6.985E-10	5.188E-10	4.571E-10	8.059E-10	1.278E-09	8.379E-10	4.819E-10	3.521E-10
3871.00	6.404E-10	5.278E-10	4.232E-10	7.524E-10	1.192E-09	7.801E-10	4.557E-10	3.322E-10
4084.00	8.301E-10	5.695E-10	3.885E-10	6.933E-10	1.093E-09	7.185E-10	4.234E-10	3.172E-10
4505.00	7.977E-10	5.026E-10	3.305E-10	5.888E-10	9.371E-10	6.123E-10	3.596E-10	2.789E-10
4511.00	7.969E-10	5.003E-10	3.298E-10	5.875E-10	9.351E-10	6.108E-10	3.588E-10	2.784E-10
4827.00	7.323E-10	4.156E-10	2.967E-10	5.251E-10	8.376E-10	5.470E-10	3.206E-10	2.556E-10
6325.00	4.643E-10	3.191E-10	2.649E-10	3.347E-10	5.531E-10	3.480E-10	2.047E-10	1.668E-10
6350.00	4.246E-10	2.944E-10	2.833E-10	3.063E-10	5.083E-10	3.184E-10	1.890E-10	1.528E-10
7224.00	3.688E-10	2.600E-10	2.376E-10	2.672E-10	4.423E-10	2.767E-10	2.064E-10	1.330E-10
7241.00	3.673E-10	2.591E-10	2.403E-10	2.661E-10	4.412E-10	2.756E-10	2.077E-10	1.325E-10
7562.00	3.408E-10	2.429E-10	2.240E-10	2.470E-10	4.091E-10	2.553E-10	2.067E-10	1.230E-10
8047.00	3.068E-10	2.220E-10	2.150E-10	3.682E-10	3.682E-10	2.297E-10	1.961E-10	1.151E-10
16093.00	9.255E-11	8.063E-11	7.071E-11	7.942E-11	1.880E-10	1.003E-10	6.619E-11	5.218E-11
32187.00	2.793E-11	2.728E-11	2.126E-11	3.797E-11	6.210E-11	3.520E-11	1.995E-11	1.599E-11
48280.00	1.383E-11	1.169E-11	1.053E-11	1.845E-11	3.012E-11	1.720E-11	9.871E-12	7.884E-12
64374.00	8.010E-12	6.797E-12	6.099E-12	1.061E-11	1.725E-11	9.915E-12	5.737E-12	4.587E-12
80467.00	5.219E-12	4.428E-12	3.973E-12	6.867E-12	1.112E-11	6.434E-12	3.749E-12	3.002E-12

Run 3
North Vent D/Q

SECTOR BEARING (DEGREES)

DISTANCE METERS

	NNE 22.5	NE 45.0	ENE 67.5	E 90.0	ESE 112.5	SE 135.0	SSE 157.5	S 180.0
225.00	7.720E-06	6.053E-06	5.891E-06	8.338E-06	1.638E-05	7.621E-06	4.390E-06	2.582E-06
300.00	4.736E-06	3.738E-06	3.630E-06	5.137E-06	1.005E-05	4.696E-06	2.690E-06	1.581E-06
345.00	3.717E-06	2.946E-06	2.856E-06	4.041E-06	7.885E-06	3.691E-06	2.109E-06	1.239E-06
450.00	2.342E-06	1.873E-06	1.811E-06	2.564E-06	4.961E-06	2.335E-06	1.328E-06	7.810E-07
682.00	1.236E-06	9.978E-07	9.630E-07	1.386E-06	2.613E-06	1.251E-06	7.008E-07	4.163E-07
762.00	1.050E-06	8.509E-07	8.200E-07	1.184E-06	2.205E-06	1.058E-06	5.915E-07	3.524E-07
793.00	9.948E-07	8.069E-07	7.766E-07	1.122E-06	2.078E-06	9.971E-07	5.578E-07	3.326E-07
805.00	9.747E-07	7.909E-07	7.609E-07	1.100E-06	2.032E-06	9.750E-07	5.455E-07	3.254E-07
854.00	9.006E-07	7.329E-07	7.029E-07	1.017E-06	1.861E-06	8.924E-07	4.997E-07	2.986E-07
884.00	8.602E-07	7.015E-07	6.712E-07	9.712E-07	1.768E-06	8.471E-07	4.747E-07	2.838E-07
965.00	7.671E-07	6.297E-07	5.980E-07	8.656E-07	1.551E-06	7.415E-07	4.162E-07	2.494E-07
975.00	7.570E-07	6.219E-07	5.901E-07	8.540E-07	1.528E-06	7.300E-07	4.099E-07	2.456E-07
1006.00	7.275E-07	5.993E-07	5.668E-07	8.202E-07	1.459E-06	6.962E-07	3.913E-07	2.346E-07
1097.00	6.547E-07	5.429E-07	5.091E-07	7.363E-07	1.293E-06	6.146E-07	3.465E-07	2.081E-07
1126.00	6.346E-07	5.275E-07	4.930E-07	7.129E-07	1.247E-06	5.918E-07	3.340E-07	2.007E-07
1287.00	5.432E-07	4.583E-07	4.199E-07	6.053E-07	1.037E-06	4.877E-07	2.775E-07	1.670E-07
1433.00	4.820E-07	4.130E-07	3.706E-07	5.319E-07	8.972E-07	4.177E-07	2.402E-07	1.446E-07
1448.00	4.766E-07	4.090E-07	3.662E-07	5.253E-07	8.849E-07	4.115E-07	2.369E-07	1.426E-07
1585.00	4.334E-07	3.773E-07	3.311E-07	4.725E-07	7.877E-07	3.625E-07	2.116E-07	1.273E-07
1609.00	4.270E-07	3.726E-07	3.259E-07	4.645E-07	7.736E-07	3.553E-07	2.080E-07	1.251E-07
1770.00	3.891E-07	3.466E-07	2.953E-07	4.172E-07	6.916E-07	3.134E-07	1.876E-07	1.127E-07
1890.00	3.654E-07	3.269E-07	2.762E-07	3.876E-07	6.419E-07	2.882E-07	1.757E-07	1.055E-07
1931.00	3.581E-07	3.214E-07	2.702E-07	3.784E-07	6.267E-07	2.805E-07	1.722E-07	1.033E-07
2092.00	3.324E-07	3.016E-07	2.494E-07	3.463E-07	5.757E-07	2.550E-07	1.607E-07	9.620E-08
2134.00	3.264E-07	2.969E-07	2.445E-07	3.389E-07	5.643E-07	2.493E-07	1.581E-07	9.461E-08
2253.00	3.106E-07	2.845E-07	2.318E-07	3.193E-07	5.346E-07	2.346E-07	1.517E-07	9.059E-08
2414.00	2.917E-07	2.695E-07	2.166E-07	2.960E-07	4.998E-07	2.177E-07	1.446E-07	8.608E-08
2574.00	2.954E-07	2.610E-07	2.066E-07	2.799E-07	4.644E-07	2.032E-07	1.399E-07	8.416E-08
2835.00	3.108E-07	2.499E-07	1.933E-07	2.530E-07	4.156E-07	1.838E-07	1.347E-07	8.246E-08
2896.00	3.163E-07	2.477E-07	1.906E-07	2.478E-07	4.056E-07	1.799E-07	1.338E-07	8.225E-08
3018.00	3.294E-07	2.438E-07	1.857E-07	2.382E-07	3.868E-07	1.726E-07	1.323E-07	8.199E-08
3414.00	3.772E-07	2.351E-07	1.732E-07	2.122E-07	3.369E-07	1.539E-07	1.301E-07	8.230E-08
3540.00	3.847E-07	2.335E-07	1.702E-07	2.053E-07	3.237E-07	1.490E-07	1.300E-07	8.275E-08
3701.00	3.821E-07	2.319E-07	1.670E-07	1.972E-07	3.082E-07	1.433E-07	1.304E-07	8.359E-08
3871.00	3.651E-07	2.305E-07	1.642E-07	1.894E-07	2.932E-07	1.378E-07	1.313E-07	8.480E-08
4084.00	3.377E-07	2.297E-07	1.607E-07	1.798E-07	2.759E-07	1.311E-07	1.305E-07	8.573E-08
4505.00	2.903E-07	2.300E-07	1.520E-07	1.599E-07	2.454E-07	1.172E-07	1.155E-07	8.302E-08
4511.00	2.897E-07	2.299E-07	1.519E-07	1.597E-07	2.450E-07	1.170E-07	1.153E-07	8.298E-08
4827.00	2.606E-07	2.235E-07	1.463E-07	1.472E-07	2.258E-07	1.081E-07	1.061E-07	8.139E-08
6325.00	1.713E-07	1.557E-07	1.367E-07	1.138E-07	1.782E-07	8.034E-08	8.221E-08	6.779E-08
6660.00	1.595E-07	1.451E-07	1.336E-07	1.110E-07	1.766E-07	7.663E-08	8.017E-08	6.380E-08
7224.00	1.425E-07	1.296E-07	1.221E-07	1.070E-07	1.761E-07	7.124E-08	7.665E-08	5.792E-08
7241.00	1.420E-07	1.292E-07	1.217E-07	1.069E-07	1.762E-07	7.109E-08	7.654E-08	5.775E-08
7562.00	1.336E-07	1.216E-07	1.146E-07	1.015E-07	1.723E-07	6.924E-08	7.446E-08	5.736E-08
8047.00	1.224E-07	1.114E-07	1.049E-07	9.409E-08	1.669E-07	6.692E-08	7.109E-08	5.652E-08
16093.00	4.808E-08	4.378E-08	4.143E-08	4.485E-08	1.670E-08	4.655E-08	2.965E-08	2.673E-08
32187.00	1.813E-08	1.648E-08	1.570E-08	1.911E-08	3.339E-08	1.894E-08	1.106E-08	9.904E-09
48280.00	1.043E-08	9.454E-09	9.027E-09	1.100E-08	1.929E-08	1.086E-08	6.377E-09	5.711E-09
64374.00	7.208E-09	6.534E-09	6.258E-09	7.596E-09	1.335E-08	7.493E-09	4.380E-09	3.910E-09
80467.00	5.381E-09	4.883E-09	4.687E-09	5.670E-09	9.975E-09	5.589E-09	3.252E-09	2.894E-09

LGS 2002 EFFLUENT REPORT
ANNUAL DISPERSION CALCULATIONSSOUTH VENT; 144,000 CFM
Vs = 7.32 m/sec, VENT DIA = 3.44 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	SECTOR BEARING (DEGREES)						N
	SSW	SW	WSW	W	NW	NNW	
225.00	1.687E-06	1.441E-06	1.814E-06	2.137E-06	1.110E-06	2.243E-06	4.961E-06
300.00	1.031E-06	8.811E-07	1.146E-06	1.311E-06	6.769E-07	1.369E-06	3.031E-06
345.00	8.073E-07	6.898E-07	8.746E-07	1.028E-06	5.298E-07	1.071E-06	2.373E-06
450.00	5.083E-07	4.361E-07	5.543E-07	6.499E-07	3.339E-07	6.722E-07	1.490E-06
682.00	2.732E-07	2.414E-07	3.050E-07	3.554E-07	1.813E-07	3.599E-07	7.903E-07
792.00	2.317E-07	2.059E-07	2.598E-07	3.022E-07	1.544E-07	3.073E-07	6.731E-07
805.00	2.189E-07	1.947E-07	2.456E-07	2.856E-07	1.463E-07	2.918E-07	6.385E-07
854.00	1.970E-07	1.755E-07	2.404E-07	2.796E-07	1.433E-07	2.862E-07	6.259E-07
884.00	1.874E-07	1.673E-07	2.212E-07	2.571E-07	1.324E-07	2.656E-07	5.794E-07
965.00	1.653E-07	1.481E-07	2.086E-07	2.447E-07	1.264E-07	2.544E-07	5.541E-07
975.00	1.628E-07	1.460E-07	1.842E-07	2.130E-07	1.127E-07	2.290E-07	4.956E-07
1006.00	1.558E-07	1.399E-07	1.767E-07	2.039E-07	1.069E-07	2.262E-07	4.893E-07
1097.00	1.388E-07	1.257E-07	1.592E-07	1.821E-07	9.643E-08	1.987E-07	4.249E-07
1126.00	1.342E-07	1.218E-07	1.545E-07	1.761E-07	9.356E-08	1.934E-07	4.122E-07
1287.00	1.135E-07	1.051E-07	1.346E-07	1.493E-07	8.084E-08	1.694E-07	3.546E-07
1433.00	1.007E-07	9.544E-08	1.237E-07	1.322E-07	7.276E-08	1.538E-07	3.162E-07
1448.00	9.970E-08	9.468E-08	1.278E-07	1.307E-07	7.207E-08	1.524E-07	3.128E-07
1585.00	9.208E-08	8.943E-08	1.172E-07	1.196E-07	6.676E-08	1.417E-07	2.856E-07
1609.00	9.110E-08	8.879E-08	1.166E-07	1.180E-07	6.599E-08	1.401E-07	2.815E-07
1770.00	8.625E-08	8.604E-08	1.139E-07	1.092E-07	6.347E-08	1.307E-07	2.575E-07
1890.00	8.423E-08	8.531E-08	1.131E-07	1.045E-07	5.524E-08	1.250E-07	2.425E-07
1931.00	8.377E-08	8.524E-08	1.130E-07	1.031E-07	5.43E-08	1.232E-07	2.379E-07
2092.00	8.264E-08	8.533E-08	1.128E-07	9.866E-08	5.186E-08	1.167E-07	2.213E-07
2134.00	8.248E-08	8.542E-08	1.127E-07	9.769E-08	5.132E-08	1.151E-07	2.174E-07
2253.00	8.230E-08	8.585E-08	1.127E-07	9.526E-08	5.001E-08	1.109E-07	2.071E-07
2414.00	8.251E-08	8.671E-08	1.127E-07	9.261E-08	4.868E-08	1.059E-07	2.017E-07
2574.00	7.959E-08	8.459E-08	1.090E-07	8.964E-08	4.643E-08	1.077E-07	1.947E-07
2835.00	7.530E-08	8.137E-08	1.031E-07	8.551E-08	4.327E-08	1.119E-07	1.968E-07
2896.00	7.437E-08	8.065E-08	1.018E-07	8.464E-08	4.261E-08	1.131E-07	1.976E-07
3018.00	7.256E-08	7.922E-08	9.949E-08	8.296E-08	4.134E-08	1.159E-07	1.996E-07
3414.00	6.716E-08	7.466E-08	9.153E-08	7.807E-08	3.991E-08	1.273E-07	2.108E-07
3540.00	6.560E-08	7.329E-08	8.946E-08	7.669E-08	3.878E-08	1.315E-07	2.156E-07
3701.00	6.369E-08	7.160E-08	8.649E-08	7.499E-08	3.740E-08	1.366E-07	2.214E-07
3871.00	6.176E-08	6.987E-08	8.372E-08	7.330E-08	3.604E-08	1.408E-07	2.254E-07
4084.00	6.083E-08	6.880E-08	8.148E-08	7.133E-08	3.545E-08	1.415E-07	2.235E-07
4505.00	6.600E-08	7.156E-08	8.296E-08	6.797E-08	4.003E-08	1.403E-07	2.011E-07
4511.00	6.607E-08	7.160E-08	8.300E-08	6.793E-08	4.011E-08	1.301E-07	2.007E-07
4827.00	6.958E-08	7.316E-08	8.542E-08	6.593E-08	4.505E-08	1.190E-07	1.810E-07
6325.00	5.527E-08	6.220E-08	8.780E-08	7.629E-08	5.976E-08	7.801E-08	1.184E-07
7224.00	5.141E-08	5.829E-08	8.409E-08	7.975E-08	5.618E-08	7.260E-08	1.102E-07
7241.00	4.580E-08	5.212E-08	7.626E-08	7.478E-08	5.015E-08	6.474E-08	9.838E-08
7562.00	4.301E-08	4.883E-08	7.150E-08	7.013E-08	4.998E-08	6.453E-08	9.805E-08
8047.00	3.938E-08	4.462E-08	6.537E-08	6.416E-08	4.298E-08	6.070E-08	9.224E-08
16093.00	1.505E-08	1.679E-08	2.497E-08	2.477E-08	2.065E-08	4.298E-08	8.443E-08
32187.00	5.489E-09	6.060E-09	9.142E-09	9.163E-09	4.289E-09	6.206E-09	1.219E-08
48280.00	3.146E-09	3.479E-09	5.185E-09	5.217E-09	2.454E-09	3.549E-09	6.987E-09
64374.00	2.137E-09	2.352E-09	3.538E-09	3.578E-09	1.672E-09	3.162E-09	4.797E-09
80467.00	1.572E-09	1.721E-09	2.616E-09	2.656E-09	1.815E-09	2.347E-09	3.562E-09

DISTANCE METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
SECTOR BEARING (DEGREES)								
225.00	7.466E-06	5.855E-06	5.697E-06	8.064E-06	1.584E-05	7.370E-06	4.245E-06	2.497E-06
300.00	4.540E-06	3.585E-06	3.480E-06	4.926E-06	9.634E-06	4.501E-06	2.578E-06	1.515E-06
345.00	3.545E-06	2.811E-06	2.725E-06	3.854E-06	7.517E-06	3.519E-06	2.011E-06	1.182E-06
450.00	2.207E-06	1.766E-06	1.707E-06	2.416E-06	4.670E-06	2.199E-06	1.250E-06	7.355E-07
682.00	1.143E-06	9.243E-07	8.917E-07	1.283E-06	2.411E-06	1.155E-06	6.470E-07	3.844E-07
762.00	9.663E-07	7.843E-07	7.555E-07	1.090E-06	2.022E-06	9.705E-07	5.428E-07	3.235E-07
793.00	9.134E-07	7.424E-07	7.142E-07	1.032E-06	1.902E-06	9.125E-07	5.106E-07	3.046E-07
805.00	8.943E-07	7.273E-07	6.992E-07	1.010E-06	1.858E-06	8.915E-07	4.989E-07	2.978E-07
854.00	8.239E-07	6.722E-07	6.441E-07	9.312E-07	1.695E-06	8.129E-07	4.554E-07	2.722E-07
884.00	7.856E-07	6.424E-07	6.141E-07	8.881E-07	1.607E-06	7.699E-07	4.316E-07	2.582E-07
965.00	6.976E-07	5.746E-07	5.449E-07	7.882E-07	1.402E-06	6.699E-07	3.762E-07	2.256E-07
975.00	6.881E-07	5.673E-07	5.374E-07	7.773E-07	1.379E-06	6.589E-07	3.701E-07	2.220E-07
1006.00	6.604E-07	5.460E-07	5.155E-07	7.455E-07	1.315E-06	6.272E-07	3.526E-07	2.116E-07
1097.00	5.933E-07	4.941E-07	4.621E-07	6.679E-07	1.161E-06	5.515E-07	3.112E-07	1.871E-07
1287.00	5.747E-07	4.800E-07	4.473E-07	6.463E-07	1.119E-06	5.305E-07	2.997E-07	1.802E-07
1433.00	4.349E-07	3.755E-07	3.346E-07	4.796E-07	7.977E-07	4.345E-07	2.476E-07	1.491E-07
1448.00	4.299E-07	3.719E-07	3.306E-07	4.735E-07	7.865E-07	4.364E-07	2.135E-07	1.285E-07
1585.00	3.906E-07	3.431E-07	2.985E-07	4.250E-07	6.978E-07	3.198E-07	1.875E-07	1.128E-07
1609.00	3.847E-07	3.388E-07	2.938E-07	4.177E-07	6.850E-07	3.132E-07	1.842E-07	1.108E-07
1770.00	3.502E-07	3.134E-07	2.657E-07	3.743E-07	6.105E-07	2.751E-07	1.657E-07	9.314E-08
1890.00	3.287E-07	2.974E-07	2.482E-07	3.472E-07	5.655E-07	2.522E-07	1.520E-07	9.123E-08
1931.00	3.220E-07	2.924E-07	2.427E-07	3.387E-07	5.517E-07	2.453E-07	1.551E-07	8.497E-08
2134.00	2.934E-07	2.703E-07	2.195E-07	3.027E-07	5.061E-07	2.224E-07	1.418E-07	8.011E-08
2253.00	2.928E-07	2.591E-07	2.079E-07	2.850E-07	4.696E-07	2.044E-07	1.396E-07	8.358E-08
2414.00	2.622E-07	2.452E-07	1.942E-07	2.639E-07	4.388E-07	1.894E-07	1.280E-07	7.623E-08
2574.00	2.659E-07	2.382E-07	1.854E-07	2.477E-07	4.070E-07	1.767E-07	1.242E-07	7.480E-08
2835.00	2.835E-07	2.285E-07	1.737E-07	2.253E-07	3.632E-07	1.596E-07	1.194E-07	7.373E-08
2896.00	2.893E-07	2.267E-07	1.713E-07	2.207E-07	3.542E-07	1.562E-07	1.194E-07	7.363E-08
3018.00	3.024E-07	2.234E-07	1.671E-07	2.120E-07	3.374E-07	1.498E-07	1.183E-07	7.358E-08
3414.00	3.349E-07	2.164E-07	1.564E-07	1.888E-07	2.931E-07	1.336E-07	1.171E-07	7.439E-08
3540.00	3.347E-07	2.150E-07	1.539E-07	1.827E-07	2.814E-07	1.294E-07	1.174E-07	7.496E-08
3701.00	3.227E-07	2.132E-07	1.513E-07	1.755E-07	2.675E-07	1.245E-07	1.180E-07	7.590E-08
3871.00	2.999E-07	2.109E-07	1.490E-07	1.685E-07	2.542E-07	1.197E-07	1.191E-07	7.718E-08
4084.00	2.740E-07	2.082E-07	1.461E-07	1.599E-07	2.388E-07	1.138E-07	1.183E-07	7.819E-08
4505.00	2.327E-07	2.014E-07	1.383E-07	1.419E-07	2.116E-07	1.014E-07	1.048E-07	7.581E-08
4511.00	2.322E-07	2.012E-07	1.383E-07	1.416E-07	2.112E-07	1.012E-07	1.046E-07	7.578E-08
4827.00	2.070E-07	1.889E-07	1.331E-07	1.303E-07	1.941E-07	9.335E-08	9.607E-08	7.439E-08
6325.00	1.309E-07	1.197E-07	1.137E-07	1.005E-07	1.530E-07	6.876E-08	7.407E-08	6.182E-08
6620.00	1.211E-07	1.109E-07	1.062E-07	9.811E-08	1.523E-07	6.555E-08	7.187E-08	5.805E-08
7224.00	1.070E-07	9.801E-08	9.218E-08	9.464E-08	1.529E-07	6.091E-08	6.170E-08	5.248E-08
7241.00	1.066E-07	9.766E-08	9.182E-08	9.454E-08	1.529E-07	6.078E-08	6.704E-08	5.233E-08
7562.00	9.970E-08	9.135E-08	8.580E-08	8.951E-08	1.496E-07	5.928E-08	6.407E-08	5.189E-08
8047.00	9.042E-08	8.290E-08	7.777E-08	8.269E-08	1.449E-07	5.741E-08	6.407E-08	5.063E-08
16093.00	3.21E-08	2.960E-08	2.770E-08	3.621E-08	6.284E-08	3.630E-08	2.004E-08	5.111E-08
32187.00	1.035E-08	9.499E-09	8.931E-09	1.146E-08	2.036E-08	1.090E-08	6.380E-09	5.719E-09
48280.00	5.304E-09	4.788E-09	4.566E-09	5.845E-09	1.039E-08	5.559E-09	3.281E-09	2.937E-09
64374.00	3.329E-09	3.003E-09	2.871E-09	3.658E-09	6.507E-09	3.480E-09	2.050E-09	1.825E-09
80467.00	2.250E-09	2.028E-09	1.943E-09	2.465E-09	4.383E-09	2.347E-09	1.379E-09	1.222E-09

LGS 2002 EFFLUENT REPORT
 ANNUAL DISPERSION CALCULATIONS
 SOUTH VENT; 144,000 cfm, 8.05 DAY DECAY
 Vs = 7.32 m/sec, VENT DIA = 3.44 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	SSW	SW	WSW	W	WNW	NW	RNW	N
	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
225.00	1.631E-06	1.394E-06	1.754E-06	2.067E-06	1.212E-06	1.073E-06	2.170E-06	4.798E-06
300.00	9.880E-07	8.445E-07	1.069E-06	1.256E-06	7.342E-07	6.489E-07	1.313E-06	2.905E-06
345.00	7.696E-07	6.576E-07	8.338E-07	9.797E-07	5.719E-07	5.051E-07	1.022E-06	2.263E-06
450.00	4.786E-07	4.106E-07	5.219E-07	6.118E-07	3.554E-07	3.144E-07	6.332E-07	1.403E-06
682.00	2.522E-07	2.228E-07	2.816E-07	3.280E-07	1.864E-07	1.674E-07	3.325E-07	7.303E-07
762.00	2.127E-07	1.888E-07	2.384E-07	2.722E-07	1.569E-07	1.418E-07	2.824E-07	6.188E-07
793.00	2.005E-07	1.782E-07	2.248E-07	2.614E-07	1.479E-07	1.340E-07	2.676E-07	5.857E-07
805.00	1.961E-07	1.743E-07	2.199E-07	2.556E-07	1.446E-07	1.312E-07	2.623E-07	5.738E-07
854.00	1.796E-07	1.599E-07	2.016E-07	2.342E-07	1.323E-07	1.207E-07	2.427E-07	5.296E-07
884.00	1.705E-07	1.520E-07	1.917E-07	2.225E-07	1.256E-07	1.151E-07	2.322E-07	5.056E-07
965.00	1.495E-07	1.338E-07	1.690E-07	1.953E-07	1.099E-07	1.021E-07	2.081E-07	4.503E-07
975.00	1.472E-07	1.318E-07	1.665E-07	1.923E-07	1.082E-07	1.007E-07	2.056E-07	4.443E-07
1006.00	1.405E-07	1.262E-07	1.595E-07	1.838E-07	1.032E-07	9.665E-08	1.981E-07	4.269E-07
1097.00	1.249E-07	1.130E-07	1.434E-07	1.637E-07	9.150E-08	8.704E-08	1.802E-07	3.847E-07
1126.00	1.206E-07	1.095E-07	1.391E-07	1.582E-07	8.825E-08	8.442E-08	1.753E-07	3.730E-07
1287.00	1.016E-07	9.426E-08	1.212E-07	1.336E-07	7.360E-08	7.281E-08	1.534E-07	3.202E-07
1433.00	9.005E-08	8.567E-08	1.116E-07	1.181E-07	6.416E-08	6.552E-08	1.393E-07	2.851E-07
1448.00	8.911E-08	8.501E-08	1.108E-07	1.169E-07	6.416E-08	6.552E-08	1.381E-07	2.820E-07
1585.00	8.236E-08	8.051E-08	1.062E-07	1.068E-07	5.717E-08	6.490E-08	1.285E-07	2.573E-07
1609.00	8.150E-08	7.999E-08	1.056E-07	1.053E-07	5.629E-08	6.015E-08	1.257E-07	2.536E-07
1770.00	7.739E-08	7.787E-08	1.037E-07	9.765E-08	5.155E-08	5.948E-08	1.187E-07	2.318E-07
1890.00	7.580E-08	7.750E-08	1.034E-07	9.353E-08	4.904E-08	5.375E-08	1.135E-07	2.183E-07
1931.00	7.548E-08	7.755E-08	1.034E-07	9.236E-08	4.834E-08	5.293E-08	1.119E-07	2.140E-07
2092.00	7.481E-08	7.801E-08	1.036E-07	8.861E-08	4.620E-08	5.061E-08	1.061E-07	1.991E-07
2134.00	7.475E-08	7.818E-08	1.036E-07	8.780E-08	4.575E-08	5.004E-08	1.047E-07	1.956E-07
2253.00	7.484E-08	7.883E-08	1.038E-07	8.581E-08	4.470E-08	4.857E-08	1.010E-07	1.864E-07
2414.00	7.535E-08	7.991E-08	1.041E-07	8.365E-08	4.367E-08	4.682E-08	9.647E-08	1.752E-07
2574.00	7.275E-08	7.805E-08	1.006E-07	8.112E-08	4.170E-08	4.482E-08	9.851E-08	1.760E-07
2835.00	6.891E-08	7.516E-08	9.523E-08	7.757E-08	3.893E-08	4.192E-08	1.030E-07	1.789E-07
2896.00	6.806E-08	7.451E-08	9.401E-08	7.681E-08	3.834E-08	4.129E-08	1.043E-07	1.798E-07
3018.00	6.642E-08	7.321E-08	9.162E-08	7.536E-08	3.723E-08	4.008E-08	1.071E-07	1.821E-07
3414.00	6.151E-08	6.903E-08	8.437E-08	7.109E-08	3.397E-08	3.648E-08	1.183E-07	1.936E-07
3540.00	6.008E-08	6.776E-08	8.224E-08	6.986E-08	3.305E-08	3.544E-08	1.218E-07	1.969E-07
3701.00	5.832E-08	6.618E-08	7.962E-08	6.835E-08	3.193E-08	3.419E-08	1.249E-07	1.992E-07
3871.00	5.653E-08	6.456E-08	7.699E-08	6.684E-08	3.081E-08	3.294E-08	1.261E-07	1.986E-07
4084.00	5.569E-08	6.354E-08	7.484E-08	6.506E-08	2.956E-08	3.245E-08	1.231E-07	1.911E-07
4505.00	6.057E-08	6.606E-08	7.608E-08	6.201E-08	2.759E-08	3.697E-08	1.080E-07	1.634E-07
4511.00	6.064E-08	6.609E-08	7.611E-08	6.197E-08	2.756E-08	3.705E-08	1.078E-07	1.630E-07
4827.00	6.330E-08	7.045E-08	7.833E-08	6.016E-08	2.620E-08	4.188E-08	9.545E-08	1.444E-07
6325.00	4.333E-08	5.041E-08	7.260E-08	6.745E-08	2.014E-08	4.734E-08	5.964E-08	9.060E-08
6660.00	4.006E-08	4.593E-08	6.711E-08	6.598E-08	1.898E-08	4.290E-08	5.515E-08	8.382E-08
7224.00	3.534E-08	3.972E-08	5.795E-08	5.640E-08	1.727E-08	3.767E-08	4.866E-08	7.402E-08
7241.00	3.521E-08	3.956E-08	5.770E-08	5.618E-08	1.722E-08	3.753E-08	4.849E-08	7.375E-08
7562.00	3.262E-08	3.674E-08	5.354E-08	5.239E-08	1.722E-08	3.500E-08	4.529E-08	6.892E-08
8047.00	2.941E-08	3.313E-08	4.834E-08	4.738E-08	1.856E-08	3.169E-08	4.103E-08	6.246E-08
16093.00	1.007E-08	1.122E-08	1.668E-08	1.654E-08	7.861E-09	1.114E-08	1.443E-08	2.200E-08
32187.00	3.127E-09	3.441E-09	5.187E-09	5.201E-09	2.449E-09	3.526E-09	4.570E-09	6.981E-09
48280.00	1.593E-09	1.754E-09	2.611E-09	2.629E-09	1.247E-09	1.791E-09	2.331E-09	3.566E-09
64374.00	9.816E-10	1.074E-09	1.613E-09	1.633E-09	7.723E-10	1.117E-09	1.453E-09	2.228E-09
80467.00	6.523E-10	7.088E-10	1.076E-09	1.094E-09	5.155E-10	7.497E-10	9.748E-10	1.499E-09

DISTANCE METERS	SECTOR BEARING (DEGREES)						S	
	NNE 22.5	NE 45.0	ENE 67.5	E 90.0	ESE 112.5	SE 135.0		SSE 157.5
225.00	3.422E-08	2.604E-08	2.639E-08	5.435E-08	8.974E-08	5.777E-08	2.643E-08	1.405E-08
300.00	2.365E-08	1.837E-08	1.869E-08	3.784E-08	6.085E-08	3.934E-08	1.810E-08	9.623E-09
345.00	1.941E-08	1.525E-08	1.557E-08	3.115E-08	4.922E-08	3.150E-08	1.472E-08	7.866E-09
450.00	1.343E-08	1.077E-08	1.109E-08	2.168E-08	3.301E-08	2.152E-08	1.001E-08	5.417E-09
682.00	7.521E-09	6.167E-09	6.394E-09	1.215E-08	1.784E-08	1.169E-08	5.492E-09	3.055E-09
762.00	6.441E-09	5.308E-09	5.505E-09	1.040E-08	1.517E-08	9.945E-09	4.681E-09	2.627E-09
793.00	6.096E-09	5.032E-09	5.219E-09	9.838E-09	1.431E-08	9.386E-09	4.422E-09	2.492E-09
805.00	5.969E-09	4.931E-09	5.113E-09	9.632E-09	1.401E-08	9.183E-09	4.328E-09	2.443E-09
854.00	5.524E-09	4.620E-09	4.722E-09	8.844E-09	1.286E-08	8.458E-09	4.025E-09	2.258E-09
884.00	5.308E-09	4.425E-09	4.493E-09	8.416E-09	1.223E-08	8.052E-09	3.845E-09	2.159E-09
965.00	4.704E-09	4.012E-09	4.060E-09	7.424E-09	1.078E-08	7.120E-09	3.437E-09	1.934E-09
975.00	4.670E-09	3.954E-09	4.004E-09	7.316E-09	1.063E-08	7.015E-09	3.392E-09	1.909E-09
1006.00	4.485E-09	3.797E-09	3.826E-09	7.021E-09	1.015E-08	6.706E-09	3.260E-09	1.836E-09
1097.00	4.004E-09	3.345E-09	3.344E-09	6.087E-09	8.827E-09	5.852E-09	2.870E-09	1.627E-09
1126.00	3.886E-09	3.224E-09	3.205E-09	5.832E-09	8.465E-09	5.617E-09	2.761E-09	1.571E-09
1287.00	3.199E-09	2.677E-09	2.605E-09	4.692E-09	6.816E-09	4.573E-09	2.316E-09	1.330E-09
1433.00	2.752E-09	2.280E-09	2.204E-09	3.956E-09	5.818E-09	3.879E-09	2.003E-09	1.185E-09
1448.00	2.728E-09	2.254E-09	2.167E-09	3.891E-09	5.726E-09	3.817E-09	1.979E-09	1.174E-09
1585.00	2.405E-09	1.979E-09	1.884E-09	3.384E-09	4.971E-09	3.328E-09	1.739E-09	1.084E-09
1609.00	2.350E-09	1.930E-09	1.841E-09	3.301E-09	4.850E-09	3.247E-09	1.697E-09	1.063E-09
1770.00	2.038E-09	1.668E-09	1.574E-09	2.830E-09	4.154E-09	2.794E-09	1.458E-09	9.635E-10
1890.00	1.851E-09	1.508E-09	1.415E-09	2.540E-09	3.737E-09	2.520E-09	1.318E-09	9.042E-10
1931.00	1.797E-09	1.456E-09	1.371E-09	2.452E-09	3.609E-09	2.438E-09	1.266E-09	8.818E-10
2092.00	1.600E-09	1.305E-09	1.209E-09	2.159E-09	3.173E-09	2.147E-09	1.126E-09	8.219E-10
2134.00	1.548E-09	1.265E-09	1.170E-09	2.089E-09	3.074E-09	2.079E-09	1.090E-09	8.040E-10
2253.00	1.438E-09	1.157E-09	1.069E-09	1.911E-09	2.822E-09	1.908E-09	9.991E-10	7.571E-10
2414.00	1.285E-09	1.046E-09	9.543E-10	1.710E-09	2.571E-09	1.712E-09	8.955E-10	7.039E-10
2574.00	1.162E-09	9.504E-10	8.583E-10	1.537E-09	2.321E-09	1.538E-09	8.031E-10	6.396E-10
2835.00	9.860E-10	8.056E-10	7.313E-10	1.313E-09	2.002E-09	1.312E-09	6.934E-10	5.456E-10
2896.00	9.698E-10	7.807E-10	7.078E-10	1.269E-09	1.937E-09	1.266E-09	6.830E-10	5.269E-10
3018.00	1.138E-09	7.332E-10	6.596E-10	1.189E-09	1.815E-09	1.182E-09	6.621E-10	4.925E-10
3414.00	8.433E-10	6.680E-10	5.362E-10	9.725E-10	1.502E-09	9.666E-10	5.851E-10	4.019E-10
3540.00	7.620E-10	7.139E-10	5.098E-10	9.159E-10	1.421E-09	9.106E-10	5.542E-10	3.806E-10
3701.00	6.985E-10	7.538E-10	4.699E-10	8.505E-10	1.328E-09	8.467E-10	5.139E-10	3.727E-10
3871.00	9.604E-10	7.038E-10	4.363E-10	7.888E-10	1.239E-09	7.869E-10	4.781E-10	3.708E-10
4084.00	9.888E-10	6.134E-10	4.066E-10	7.236E-10	1.143E-09	7.237E-10	4.389E-10	3.513E-10
4505.00	8.399E-10	4.621E-10	4.012E-10	6.129E-10	9.721E-10	6.162E-10	3.730E-10	3.007E-10
4511.00	8.383E-10	4.603E-10	4.013E-10	6.116E-10	9.699E-10	6.148E-10	3.722E-10	3.000E-10
4827.00	7.474E-10	3.875E-10	4.319E-10	5.454E-10	8.675E-10	5.503E-10	3.327E-10	2.686E-10
6325.00	4.683E-10	3.872E-10	2.438E-10	3.436E-10	5.708E-10	3.505E-10	2.306E-10	1.717E-10
6660.00	4.282E-10	3.543E-10	2.222E-10	3.144E-10	5.221E-10	3.205E-10	2.543E-10	1.571E-10
7224.00	3.718E-10	3.080E-10	2.760E-10	2.749E-10	4.537E-10	2.802E-10	2.388E-10	1.367E-10
7241.00	3.703E-10	3.068E-10	2.756E-10	2.742E-10	4.518E-10	2.791E-10	2.374E-10	1.361E-10
7562.00	3.435E-10	2.848E-10	2.573E-10	2.545E-10	4.193E-10	2.627E-10	2.161E-10	1.373E-10
8047.00	3.084E-10	2.560E-10	2.321E-10	2.287E-10	3.790E-10	2.468E-10	1.898E-10	1.497E-10
16093.00	9.286E-11	7.816E-11	7.074E-11	1.054E-10	1.921E-10	1.084E-10	6.665E-11	5.257E-11
32187.00	2.793E-11	2.379E-11	2.126E-11	4.011E-11	6.647E-11	3.263E-11	2.003E-11	1.578E-11
48280.00	1.383E-11	1.173E-11	1.053E-11	1.928E-11	3.188E-11	1.610E-11	9.917E-12	7.804E-12
64374.00	8.010E-12	6.797E-12	6.099E-12	1.098E-11	1.810E-11	9.320E-12	5.754E-12	4.533E-12
80467.00	5.219E-12	4.428E-12	3.973E-12	7.041E-12	1.157E-11	6.068E-12	3.754E-12	2.960E-12

LGS 2002 EFFLUENT REPORT
 ANNUAL DISPERSION CALCULATIONS
 SOUTH VENT; 144,000 cfm, 8.05 DAY DECAY
 Vs = 7.32 m/sec, VENT DIA = 3.44 m

SECTOR BEARING (DEGREES)

DISTANCE METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
225.00	7.148E-09	8.088E-09	8.346E-09	1.357E-08	8.044E-09	6.082E-09	1.357E-08	2.635E-08
300.00	4.880E-09	5.486E-09	5.737E-09	9.249E-09	5.446E-09	4.143E-09	9.203E-09	1.792E-08
345.00	3.977E-09	4.445E-09	4.693E-09	7.513E-09	4.403E-09	3.363E-09	7.449E-09	1.454E-08
450.00	2.721E-09	3.001E-09	3.254E-09	5.112E-09	2.952E-09	2.285E-09	5.012E-09	9.832E-09
682.00	1.530E-09	1.662E-09	1.911E-09	2.882E-09	1.598E-09	1.292E-09	2.746E-09	5.387E-09
762.00	1.319E-09	1.432E-09	1.673E-09	2.489E-09	1.360E-09	1.119E-09	2.350E-09	4.601E-09
793.00	1.252E-09	1.360E-09	1.598E-09	2.363E-09	1.285E-09	1.065E-09	2.225E-09	4.350E-09
805.00	1.228E-09	1.334E-09	1.571E-09	2.318E-09	1.258E-09	1.045E-09	2.180E-09	4.260E-09
854.00	1.145E-09	1.253E-09	1.524E-09	2.169E-09	1.164E-09	9.709E-10	2.010E-09	3.921E-09
884.00	1.105E-09	1.208E-09	1.493E-09	2.086E-09	1.144E-09	9.312E-10	1.918E-09	3.738E-09
965.00	1.043E-09	1.168E-09	1.451E-09	1.902E-09	1.009E-09	8.440E-10	1.708E-09	3.318E-09
975.00	1.030E-09	1.154E-09	1.450E-09	1.878E-09	9.978E-10	8.343E-10	1.685E-09	3.273E-09
1006.00	1.021E-09	1.155E-09	1.434E-09	1.824E-09	9.766E-10	8.046E-10	1.617E-09	3.148E-09
1097.00	9.516E-10	1.089E-09	1.340E-09	1.628E-09	8.753E-10	7.234E-10	1.422E-09	2.766E-09
1126.00	9.286E-10	1.092E-09	1.306E-09	1.573E-09	8.535E-10	6.995E-10	1.369E-09	2.661E-09
1287.00	8.223E-10	9.963E-10	1.188E-09	1.336E-09	7.330E-10	5.968E-10	1.138E-09	2.201E-09
1433.00	7.521E-10	9.124E-10	1.089E-09	1.181E-09	6.553E-10	5.296E-10	9.977E-10	1.907E-09
1448.00	7.468E-10	1.056E-10	1.076E-09	1.174E-09	6.530E-10	5.239E-10	9.880E-10	1.882E-09
1585.00	6.762E-10	8.438E-10	9.783E-10	1.051E-09	5.929E-10	4.714E-10	8.892E-10	1.670E-09
1609.00	6.599E-10	8.254E-10	9.594E-10	1.029E-09	5.793E-10	4.617E-10	8.736E-10	1.632E-09
1770.00	5.816E-10	7.168E-10	8.417E-10	9.015E-10	5.021E-10	4.073E-10	7.787E-10	1.428E-09
1890.00	5.295E-10	6.517E-10	7.628E-10	8.164E-10	4.623E-10	3.781E-10	7.266E-10	1.312E-09
1931.00	5.149E-10	6.314E-10	7.426E-10	7.916E-10	4.475E-10	3.674E-10	7.110E-10	1.272E-09
2092.00	4.595E-10	5.650E-10	6.718E-10	7.036E-10	4.022E-10	3.334E-10	6.612E-10	1.153E-09
2134.00	4.465E-10	5.477E-10	6.543E-10	6.829E-10	3.904E-10	3.249E-10	6.410E-10	1.128E-09
2253.00	4.135E-10	5.060E-10	6.033E-10	6.349E-10	3.648E-10	3.028E-10	5.945E-10	1.048E-09
2414.00	3.772E-10	4.602E-10	5.478E-10	5.758E-10	3.300E-10	2.813E-10	5.485E-10	9.546E-10
2574.00	3.498E-10	4.216E-10	5.027E-10	5.218E-10	2.997E-10	2.563E-10	5.338E-10	9.345E-10
2835.00	3.142E-10	3.737E-10	4.491E-10	4.498E-10	2.596E-10	2.237E-10	4.661E-10	8.307E-10
2896.00	3.082E-10	3.639E-10	4.403E-10	4.355E-10	2.515E-10	2.170E-10	4.546E-10	7.998E-10
3018.00	2.972E-10	3.490E-10	4.248E-10	4.077E-10	2.380E-10	2.045E-10	4.260E-10	7.505E-10
3414.00	2.629E-10	3.237E-10	3.868E-10	3.567E-10	2.001E-10	1.716E-10	4.357E-10	8.129E-10
3540.00	2.491E-10	3.199E-10	3.726E-10	3.474E-10	1.897E-10	1.631E-10	4.357E-10	8.028E-10
3701.00	2.375E-10	3.056E-10	3.594E-10	3.347E-10	1.782E-10	1.536E-10	3.861E-10	6.725E-10
3871.00	2.239E-10	2.894E-10	3.435E-10	3.182E-10	1.670E-10	1.443E-10	3.332E-10	5.762E-10
4084.00	2.108E-10	2.693E-10	3.246E-10	2.986E-10	1.555E-10	1.338E-10	2.902E-10	5.045E-10
4505.00	1.841E-10	2.349E-10	2.861E-10	2.588E-10	1.327E-10	1.240E-10	2.799E-10	5.797E-10
4511.00	1.840E-10	2.344E-10	2.854E-10	2.582E-10	1.324E-10	1.239E-10	2.791E-10	5.830E-10
4827.00	2.093E-10	2.142E-10	2.579E-10	2.332E-10	1.190E-10	1.125E-10	3.020E-10	5.992E-10
6325.00	1.465E-10	1.514E-10	1.862E-10	1.905E-10	7.657E-11	1.003E-10	2.100E-10	3.794E-10
6660.00	1.343E-10	1.534E-10	1.735E-10	1.599E-10	7.020E-11	1.160E-10	1.921E-10	3.469E-10
7224.00	1.173E-10	1.480E-10	1.749E-10	1.751E-10	6.123E-11	1.030E-10	1.668E-10	3.013E-10
7241.00	1.168E-10	1.474E-10	1.754E-10	1.752E-10	6.099E-11	1.026E-10	1.661E-10	3.001E-10
7562.00	1.143E-10	1.394E-10	1.705E-10	1.640E-10	5.954E-11	9.578E-11	1.543E-10	2.784E-10
8047.00	1.047E-10	1.260E-10	1.541E-10	1.481E-10	5.412E-11	8.610E-11	1.386E-10	2.500E-10
16093.00	3.187E-11	3.811E-11	4.658E-11	4.459E-11	2.589E-11	2.590E-11	4.172E-11	7.535E-11
32187.00	9.578E-12	1.146E-11	1.400E-11	1.340E-11	7.787E-12	7.787E-12	1.254E-11	2.265E-11
48280.00	4.742E-12	6.932E-12	6.932E-12	6.345E-12	3.855E-12	3.855E-12	6.209E-12	1.121E-11
64374.00	2.747E-12	3.286E-12	4.016E-12	3.844E-12	2.233E-12	2.233E-12	3.597E-12	6.496E-12
80467.00	1.790E-12	2.141E-12	2.616E-12	2.504E-12	1.455E-12	1.455E-12	2.343E-12	4.232E-12

Attachment 2

Limerick Generating Station 2002 Annual Joint Frequency Distributions of Wind Speed, Wind Direction and Atmospheric Stability Class

Level 1 - Meteorological Tower No. 1, 30-ft Level

Level 2 - Meteorological Tower No. 1, 175-ft Level

LIMERICK GENERATING STATION

DIGLAPSE VERSION 1.0

LAPSE RATE WIND ROSE PROGRAM TO COMPUTE
JOINT FREQUENCY DISTRIBUTIONS OF WIND DIRECTION
AND SPEED BY ATMOSPHERIC STABILITY CLASS

DIGLAPSE ALSO COMPUTES THE JOINT DATA RECOVERY RATE AS REQUIRED BY REGULATORY GUIDE 1.23. FOR BOTH THE JOINT FREQUENCY DISTRIBUTION AND DATA RECOVERY CALCULATIONS BOTH THE PRIMARY AND BACKUP SENSORS SPECIFIED IN TABLE I3.1-1 OF THE LGS OFFSITE DOSE CALCULATION MANUAL ARE USED.

THE PRIMARY AND BACK UP SENSORS USED IN THE ATTACHED DISTRIBUTIONS ARE AS FOLLOWS:

<u>PARAMETER</u>	<u>TOWER 1</u> (PRIMARY)	<u>TOWER 2</u> (BACKUP)
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WIND SPEED

LEVEL 1	30 FT.	OR	159 FT.
LEVEL 2	175 FT.	OR	304 FT.

WIND DIRECTION

LEVEL 1	30 FT.	OR	159 FT.
LEVEL 2	175 FT.	OR	304 FT.

DELTA TEMPERATURE

LEVELS 1 & 2	266-26 FT.	OR	300-26 FT.
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LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT				
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT		SUM PERCENT					
N	0	0	3	5	1	0	0	0	0	0	0	0	0	9	0.1
NNE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
NE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
ENE	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.0
E	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0.0
ESE	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0
SSE	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0.0
S	0	0	9	3	0	0	0	0	0	0	0	0	0	6	0.1
SSW	0	0	13	15	0	0	0	0	0	0	0	0	0	12	0.1
SW	0	0	15	7	0	0	0	0	0	0	0	0	0	28	0.3
WSW	0	0	6	2	5	0	0	0	0	0	0	0	0	22	0.3
W	0	0	21	7	0	0	0	0	0	0	0	0	0	13	0.1
WNW	0	0	3	3	0	0	0	0	0	0	0	0	0	28	0.3
NW	0	0	2	1	1	0	0	0	0	0	6	0	0	12	0.1
NNW	0	0	0	1	3	0	0	0	0	0	0	0	0	5	0.1
	0	0	79	48	10	0.5	0.1	0.1	0.1	0.1	7	0	0	144	1.6

MEAN WIND SPEED: 8.2
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND: LEVEL 1
DELTA T: (266-26FT)

WIND SPEED GROUPS (MPH)

DIRECTION	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT
N	0	0.0	5	0.1	0	0	0	11
NNE	0	0.0	5	0.0	0	0	0	5
NE	0	0.0	2	0.0	0	0	0	3
ENE	0	0.0	2	0.0	0	0	0	2
E	0	0.0	0	0.0	1	0	0	4
ESE	0	0.0	0	0.0	0	0	0	0
SE	0	0.0	2	0.0	0	0	0	2
SSE	0	0.0	1	0.0	0	0	0	1
S	0	0.0	3	0.0	0	0	0	5
SSW	0	0.0	11	0.1	1	0	0	15
SW	0	0.0	20	0.2	0	0	0	24
WSW	0	0.0	18	0.2	2	0	0	28
W	0	0.0	19	0.2	2	0	0	28
WNW	0	0.0	9	0.1	17	0	0	36
NW	0	0.0	13	0.1	10	7	0	44
NNW	0	0.0	3	0.0	2	0	0	23
	0	0.0	113	1.3	35	10	0	231

MEAN WIND SPEED: 8.8
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: -1.6 TO -1.5 DEG C/100M
CLASS C

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT			
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT				
N	0	0	10	9	0	0	0	0	0	0	0	0	19	0.2
NNE	0	0	5	3	0	0	0	0	0	0	0	0	8	0.1
NE	0	2	5	0	0	0	0	0	0	0	0	0	7	0.1
ENE	0	0	8	4	0	0	0	0	0	0	0	0	12	0.1
E	0	3	3	3	0	0	0	0	0	0	0	0	9	0.1
ESE	0	1	3	4	3	0	0	0	0	0	0	0	11	0.1
SE	0	1	1	4	0	0	0	0	0	0	0	0	3	0.0
SSE	0	4	1	1	0	0	0	0	0	0	0	0	7	0.1
S	0	1	5	2	0	0	0	0	0	0	0	0	17	0.2
SSW	0	0	29	12	1	0	0	0	0	0	0	0	41	0.5
SW	0	5	41	9	0	0	0	0	0	0	0	0	55	0.6
WSW	0	4	32	14	2	0	0	0	0	0	0	0	52	0.6
W	0	6	25	20	3	0	0	0	0	0	0	0	54	0.6
WNW	0	0	22	23	18	0.2	0.2	5	0.1	0	0	0	68	0.8
NW	0	0	23	43	19	0.2	0.2	4	0.0	0	0	0	89	1.0
NNW	0	0	10	28	4	0.3	0.3	1	0.0	0	0	0	43	0.5
	0	0	27	185	50	2.1	2.1	10	0.1	0	0	0	495	5.7

MEAN WIND SPEED: 8.2
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT			
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT				
N	0	0.0	0.0	1.4	49	0.6	2	0.0	0	0.0	0	0.0	217	2.5
NNE	0	0.0	0.5	76	15	0.2	0	0.0	0	0.0	0	0.0	139	1.6
NE	0	0.0	0.6	119	30	0.3	1	0.0	0	0.0	0	0.0	199	2.3
ENE	0	0.0	0.7	201	31	0.4	0	0.0	0	0.0	0	0.0	290	3.3
E	0	0.0	0.4	37	87	1.0	7	0.1	0	0.0	0	0.0	231	2.6
ESE	0	0.0	0.3	53	41	0.5	0	0.0	0	0.0	0	0.0	121	1.4
SE	0	0.0	0.3	46	23	0.3	0	0.0	0	0.0	0	0.0	95	1.1
SSE	0	0.0	0.2	95	1.1	46	0.5	4	0.0	0.0	0	0.0	166	1.9
S	0	0.0	0.5	97	75	0.9	14	0.2	1	0.0	0	0.0	232	2.6
SSW	0	0.0	0.6	122	1.4	61	10	0.1	0	0.0	0	0.0	242	2.8
SW	0	0.0	0.8	105	1.2	32	1	0.0	0	0.0	0	0.0	208	2.4
WSW	0	0.0	0.5	135	1.5	28	3	0.0	0	0.0	0	0.0	206	2.4
W	0	0.0	0.7	127	1.5	123	36	0.4	1	0.0	0	0.0	349	4.0
WNW	0	0.0	0.8	66	2.7	235	110	1.3	16	0.2	1	0.0	661	7.5
NW	0	0.0	0.6	184	2.1	259	146	1.7	26	0.3	0	0.0	666	7.6
NNW	0	0.0	0.5	103	1.2	94	26	0.3	1	0.0	0	0.0	268	3.1
	0	0.0	735	1918	21.9	1229	360	4.1	47	0.5	1	0.0	4290	49.0

MEAN WIND SPEED: 7.1
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT					
	0 0-0.5	0 0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT						
N	1	0.0	49	0.6	29	0.3	2	0.0	0	0.0	0	0.0	0	0.0	81	0.9
NNE	0	0.0	45	0.5	20	0.2	2	0.0	0	0.0	0	0.0	0	0.0	67	0.8
NE	0	0.0	34	0.4	16	0.2	2	0.0	0	0.0	0	0.0	0	0.0	52	0.6
ENE	0	0.0	43	0.5	19	0.2	1	0.0	0	0.0	0	0.0	0	0.0	63	0.7
E	1	0.0	42	0.5	27	0.3	8	0.1	0	0.0	0	0.0	0	0.0	78	0.9
ESE	0	0.0	32	0.4	18	0.2	0	0.0	1	0.0	0	0.0	0	0.0	51	0.6
SE	0	0.0	28	0.3	25	0.3	3	0.0	0	0.0	0	0.0	0	0.0	56	0.6
SSE	1	0.0	41	0.5	54	0.6	23	0.3	0	0.0	0	0.0	0	0.0	119	1.4
S	0	0.0	39	0.4	94	1.1	25	0.3	2	0.0	0	0.0	0	0.0	160	1.8
SSW	0	0.0	82	0.9	68	0.8	11	0.1	0	0.0	0	0.0	0	0.0	161	1.8
SW	1	0.0	103	1.2	69	0.8	3	0.0	0	0.0	0	0.0	0	0.0	176	2.0
WSW	0	0.0	101	1.2	57	0.7	0	0.0	0	0.0	0	0.0	0	0.0	158	1.8
W	0	0.0	130	1.5	78	0.9	5	0.1	1	0.0	0	0.0	0	0.0	214	2.4
WNW	0	0.0	128	1.5	131	1.5	21	0.2	2	0.0	0	0.0	0	0.0	282	3.2
NW	0	0.0	63	0.7	80	0.9	19	0.2	1	0.0	0	0.0	0	0.0	163	1.9
NNW	1	0.0	48	0.5	40	0.5	5	0.1	0	0.0	0	0.0	0	0.0	94	1.1
	5	0.1	1008	11.5	825	9.4	130	1.5	7	0.1	0	0.0	0	0.0	1975	22.6

MEAN WIND SPEED: 3.9
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT					
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT		SUM PERCENT						
N	4	0.0	30	0.3	6	0.1	0	0.0	0	0.0	0	0.0	0	0.0	40	0.5
NNE	0	0.0	33	0.4	5	0.1	0	0.0	0	0.0	0	0.0	0	0.0	38	0.4
NE	1	0.0	32	0.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	33	0.4
ENE	1	0.0	45	0.5	4	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50	0.6
E	0	0.0	29	0.3	6	0.1	0	0.0	0	0.0	0	0.0	0	0.0	35	0.4
ESE	0	0.0	16	0.2	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18	0.2
SE	0	0.0	15	0.2	10	0.1	0	0.0	0	0.0	0	0.0	0	0.0	25	0.3
SSE	0	0.0	15	0.2	13	0.1	1	0.0	0	0.0	0	0.0	0	0.0	29	0.3
S	0	0.0	21	0.2	23	0.3	0	0.0	0	0.0	0	0.0	0	0.0	44	0.5
SSW	1	0.0	31	0.4	15	0.2	0	0.0	0	0.0	0	0.0	0	0.0	47	0.5
SW	1	0.0	42	0.5	14	0.2	1	0.0	0	0.0	0	0.0	0	0.0	58	0.7
WSW	1	0.0	67	0.8	14	0.2	0	0.0	0	0.0	0	0.0	0	0.0	82	0.9
W	3	0.0	118	1.3	17	0.2	0	0.0	0	0.0	0	0.0	0	0.0	138	1.6
WNW	3	0.0	148	1.7	22	0.3	1	0.0	0	0.0	0	0.0	0	0.0	174	2.0
NW	1	0.0	93	1.1	9	0.1	3	0.0	0	0.0	0	0.0	0	0.0	106	1.2
NNW	2	0.0	53	0.6	6	0.1	0	0.0	0	0.0	0	0.0	0	0.0	61	0.7
	18	0.2	788	9.0	166	1.9	6	0.1	0	0.0	0	0.0	0	0.0	978	11.2

MEAN WIND SPEED: 2.4
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT						
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT							
N	0	0.0	0.4	1	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	35	0.4
NNE	1	0.0	0.3	2	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	26	0.3
NE	0	0.0	0.2	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	20	0.2
ENE	0	0.0	0.3	2	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	24	0.3
E	0	0.0	0.2	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	15	0.2
ESE	0	0.0	0.2	5	0.1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	20	0.2
SE	0	0.0	0.2	5	0.1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	24	0.3
SSE	0	0.0	0.1	15	0.2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	28	0.3
S	0	0.0	0.2	15	0.2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	29	0.3
SSW	0	0.0	0.2	18	0.2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	34	0.4
SW	0	0.0	0.3	5	0.1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	31	0.4
WSW	0	0.0	0.4	3	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	40	0.5
W	1	0.0	0.6	4	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	61	0.7
WNW	2	0.0	1.0	18	0.2	1.0	0.0	0.0	0	0.0	0	0.0	0	0.0	109	1.2	
NW	4	0.0	0.8	14	0.2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	88	1.0	
NNW	2	0.0	0.6	3	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59	0.7	
	10	0.1	522	6.0	110	1.3	1	0.0	0	0.0	0	0.0	0	0.0	643	7.3	

MEAN WIND SPEED: 2.3
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

ALL STABILITY CLASSES

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT				
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT					
N	5	158	1.8	176	2.0	70	0.8	3	0.0	0	0.0	0	0.0	412	4.7
NNE	1	149	1.7	113	1.3	20	0.2	0	0.0	0	0.0	0	0.0	283	3.2
NE	1	138	1.6	142	1.6	32	0.4	1	0.0	0	0.0	0	0.0	314	3.6
ENE	1	168	1.9	237	2.7	36	0.4	0	0.0	0	0.0	0	0.0	442	5.0
E	1	126	1.4	136	1.6	103	1.2	8	0.1	0	0.0	0	0.0	374	4.3
ESE	0	91	1.0	81	0.9	47	0.5	4	0.0	0	0.0	0	0.0	223	2.5
SE	0	89	1.0	89	1.0	27	0.3	0	0.0	0	0.0	0	0.0	205	2.3
SSE	1	92	1.1	185	2.1	72	0.8	4	0.0	2	0.0	0	0.0	356	4.1
S	0	120	1.4	246	2.8	115	1.3	17	0.2	1	0.0	0	0.0	499	5.7
SSW	1	178	2.0	276	3.2	102	1.2	11	0.1	0	0.0	0	0.0	568	6.5
SW	2	246	2.8	269	3.1	56	0.6	1	0.0	0	0.0	0	0.0	574	6.6
WSW	1	250	2.9	265	3.0	51	0.6	12	0.1	0	0.0	0	0.0	579	6.6
W	4	374	4.3	291	3.3	160	1.8	42	0.5	1	0.0	0	0.0	872	10.0
WNW	5	430	4.9	438	5.0	291	3.3	147	1.7	30	0.3	1	0.0	1342	15.3
NW	5	277	3.2	325	3.7	339	3.9	177	2.0	38	0.4	0	0.0	1161	13.3
NNW	5	199	2.3	165	1.9	146	1.7	35	0.4	2	0.0	0	0.0	552	6.3
	33	3085	35.2	3434	39.2	1667	19.0	462	5.3	74	0.8	1	0.0	8756	100.0

MISSING HOURS: 4

MEAN WIND SPEED: 5.6

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 1
DELTA T: (266-26FT)

DIRECTION VS SPEED ONLY

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT			
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT				
N	5	158	176	70	3	0	0	0	0	0	0	0	412	4.7
NNE	1	150	113	20	0	0	0	0	0	0	0	0	284	3.2
NE	1	138	142	32	1	0	0	0	0	0	0	0	314	3.6
ENE	1	168	237	36	0	0	0	0	0	0	0	0	442	5.0
E	1	126	136	103	8	0	0	0	0	0	0	0	374	4.3
ESE	0	91	81	47	4	0	0	0	0	0	0	0	223	2.5
SE	0	89	89	27	0	0	0	0	0	0	0	0	205	2.3
SSE	1	92	185	72	4	0	0	0	0	0	0	0	356	4.1
S	0	120	246	115	17	1	0	0	0	0	0	0	499	5.7
SSW	1	178	276	102	11	0	0	0	0	0	0	0	568	6.5
SW	2	246	269	56	1	0	0	0	0	0	0	0	574	6.6
WSW	1	250	265	51	0	0	0	0	0	0	0	0	579	6.6
W	4	374	438	160	12	0	0	0	0	0	0	0	872	10.0
WNW	5	430	291	291	42	1	0	0	0	0	0	0	1342	15.3
NW	5	277	325	339	147	30	0.3	1	0.0	1	0.0	0	1161	13.3
NNW	5	199	165	146	35	2	0.4	0	0.0	0	0.0	0	552	6.3
	33	3086	3434	1667	462	74	0.8	1	0.0	1	0.0	0	8757	100.0

MISSING HOURS: 3

MEAN WIND SPEED: 5.6

LIMERICK GENERATING STATION
DATA RECOVERY SUMMARY

LEVEL 1 - TOWER 1 30' OR TOWER 2 159'

PARAMETER	COUNT	PERCENT
PRIMARY SPEED GOOD HOURS	8283	94.55%
BACKUP SPEED GOOD HOURS	8147	93.00%
BACKUP SPEED HOURS USED	474	5.41%
TOTAL AVAILABLE SPEED HOURS	8757	99.97%
PRIMARY DIRECTION GOOD HOURS	8312	94.89%
BACKUP DIRECTION GOOD HOURS	8147	93.00%
BACKUP DIRECTION HOURS USED	445	5.08%
TOTAL AVAILABLE DIRECTION HOURS	8757	99.97%
PRIMARY (266-26') DELTA TEMP HOURS	5274	60.21%
BACKUP (300-26') DELTA TEMP HOURS	8142	92.95%
BACKUP DELTA TEMP HOURS USED	3482	39.75%
TOTAL AVAILABLE DELTA TEMP HOURS	8756	99.95%

LEVEL 1 JOINT DATA RECOVERY: 8756 99.95%

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

LAPSE RATE: LE -1.9 DEG C/100M
CLASS A

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT					
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT						
N	0	0.0	0	0.0	0	0.0	2	0.0	0	0.0	1	0.0	0	0.0	9	0.1
NNE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ENE	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
E	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
ESE	0	0.0	0	0.0	3	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.0
SE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SSE	0	0.0	0	0.0	4	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	0.1
S	0	0.0	0	0.0	6	0.1	2	0.0	0	0.0	0	0.0	0	0.0	10	0.1
SSW	0	0.0	0	0.0	14	0.2	12	0.1	1	0.0	1	0.0	0	0.0	31	0.4
SW	0	0.0	0	0.0	11	0.1	6	0.1	1	0.0	1	0.0	1	0.0	24	0.3
WSW	0	0.0	0	0.0	9	0.1	3	0.0	3	0.0	3	0.0	0	0.0	17	0.2
W	0	0.0	0	0.0	17	0.2	8	0.1	0	0.0	0	0.0	1	0.0	27	0.3
WNW	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	5	0.1	7	0.1
NW	0	0.0	0	0.0	2	0.0	1	0.0	1	0.0	0	0.0	0	0.0	3	0.0
NNW	0	0.0	0	0.0	1	0.0	2	0.0	2	0.0	2	0.0	0	0.0	5	0.1
	0	0.0	0	0.0	75	0.9	37	0.4	9	0.1	7	0.1	144	1.6		

MEAN WIND SPEED: 12.4
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

LAPSE RATE: -1.8 TO -1.7 DEG C/100M
CLASS B

WIND: LEVEL 2
DELTA T: (266-26FT)

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT			
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT				
N	0	0.0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	0.2
NNE	0	0.0	0	0.0	0.1	1	0.0	0	0.0	0	0.0	0	7	0.1
NE	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	1	0.0
ENE	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	2	0.0
E	0	0.0	0	0.0	0.0	2	0.0	1	0.0	0	0.0	0	4	0.0
ESE	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0
SE	0	0.0	0	0.0	0.0	1	0.0	0	0.0	0	0.0	0	2	0.0
SSE	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	1	0.0
S	0	0.0	0	0.0	0.0	0	0.0	2	0.0	0	0.0	0	6	0.1
SSW	0	0.0	0	0.0	0.0	4	0.0	0	0.0	0	0.0	0	16	0.2
SW	0	0.0	0	0.0	0.1	8	0.1	3	0.0	1	0.0	0	29	0.3
WSW	0	0.0	0	0.0	0.1	12	0.1	7	0.1	1	0.0	0	25	0.3
W	0	0.0	0	0.0	0.2	14	0.2	4	0.0	2	0.0	1	35	0.4
WNW	0	0.0	0	0.0	0.1	13	0.1	6	0.1	5	0.1	3	30	0.3
NW	0	0.0	0	0.0	0.0	8	0.1	8	0.1	9	0.1	5	36	0.4
NNW	0	0.0	0	0.0	0.0	2	0.0	13	0.1	6	0.1	5	22	0.3
	0	0.0	2	0.0	0.0	12	0.1	6	0.1	2	0.0	0	231	2.6

MEAN WIND SPEED: 12.7
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

LAPSE RATE: -1.4 TO -0.5 DEG C/100M
CLASS D

WIND SPEED GROUPS (MPH)

DIRECTION	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT
N	0	29	70	106	29	1	0	235
NNE	0	20	57	64	14	2	0	157
NE	0	22	68	109	20	0	1	220
ENE	0	15	122	121	6	0	0	264
E	0	13	63	102	49	3	0	230
ESE	0	11	32	51	24	1	0	119
SE	0	6	43	42	21	0	0	112
SSE	0	6	50	72	34	6	0	168
S	0	19	66	114	56	10	2	267
SSW	0	20	63	110	72	12	1	278
SW	0	20	83	75	30	7	1	216
WSW	0	10	37	94	46	4	0	191
W	0	19	66	120	120	59	13	397
WNW	0	14	96	235	228	108	30	711
NW	0	24	49	131	172	67	25	468
NNW	0	19	60	92	77	9	0	257
	0	267	1025	1638	998	289	73	4290
	0	3.0	11.7	18.7	11.4	3.3	0.8	49.0

MEAN WIND SPEED: 10.7
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

LAPSE RATE: -0.4 TO 1.5 DEG C/100M
CLASS E

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT					
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT						
N	0	0.0	9	0.1	24	0.3	36	0.4	1	0.0	0	0.0	0	0.0	70	0.8
NNE	0	0.0	11	0.1	25	0.3	14	0.2	3	0.0	0	0.0	0	0.0	53	0.6
NE	0	0.0	14	0.2	23	0.3	16	0.2	1	0.0	0	0.0	0	0.0	54	0.6
ENE	0	0.0	17	0.2	21	0.2	12	0.1	0	0.0	0	0.0	0	0.0	50	0.6
E	0	0.0	19	0.2	27	0.3	14	0.2	5	0.1	0	0.0	0	0.0	65	0.7
ESE	0	0.0	8	0.1	24	0.3	16	0.2	4	0.0	1	0.0	0	0.0	53	0.6
SE	0	0.0	12	0.1	25	0.3	14	0.2	2	0.0	0	0.0	0	0.0	53	0.6
SSE	0	0.0	11	0.1	30	0.3	40	0.5	21	0.2	0	0.0	0	0.0	102	1.2
S	0	0.0	6	0.1	67	0.8	96	1.1	29	0.3	0	0.0	0	0.0	198	2.3
SSW	0	0.0	11	0.1	87	1.0	89	1.0	25	0.3	2	0.0	0	0.0	214	2.4
SW	0	0.0	13	0.1	87	1.0	70	0.8	11	0.1	0	0.0	0	0.0	181	2.1
WSW	0	0.0	8	0.1	50	0.6	74	0.8	12	0.1	0	0.0	0	0.0	144	1.6
W	0	0.0	8	0.1	65	0.7	93	1.1	18	0.2	0	0.0	0	0.0	184	2.1
WNW	0	0.0	14	0.2	93	1.1	151	1.7	38	0.4	2	0.0	0	0.0	298	3.4
NW	0	0.0	23	0.3	41	0.5	64	0.7	12	0.1	0	0.0	0	0.0	140	1.6
NNW	0	0.0	8	0.1	44	0.5	57	0.7	7	0.1	0	0.0	0	0.0	116	1.3
	0	0.0	192	2.2	733	8.4	856	9.8	189	2.2	5	0.1	0	0.0	1975	22.6

MEAN WIND SPEED: 8.0
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

LAPSE RATE: 1.6 TO 4.0 DEG C/100M
CLASS F

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT				
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT					
N	0	0.0	22	0.3	0.3	14	0.2	0	0.0	0	0.0	0	0.0	58	0.7
NNE	0	0.0	8	0.1	0.1	4	0.0	1	0.0	0	0.0	0	0.0	21	0.2
NE	0	0.0	13	0.1	0.1	9	0.0	0	0.0	0	0.0	0	0.0	22	0.3
ENE	0	0.0	9	0.1	0.1	13	0.0	1	0.0	0	0.0	0	0.0	23	0.3
E	0	0.0	13	0.1	0.1	5	0.1	6	0.0	0	0.0	0	0.0	24	0.3
ESE	0	0.0	3	0.0	0.1	11	0.1	3	0.0	0	0.0	0	0.0	17	0.2
SE	0	0.0	10	0.1	0.1	12	0.1	1	0.0	0	0.0	0	0.0	23	0.3
SSE	0	0.0	14	0.2	0.1	11	0.1	8	0.1	1	0.0	0	0.0	34	0.4
S	0	0.0	6	0.1	0.3	27	0.2	20	0.2	3	0.0	0	0.0	56	0.6
SSW	0	0.0	20	0.2	0.4	34	0.4	30	0.3	4	0.0	0	0.0	88	1.0
SW	0	0.0	9	0.1	0.4	33	0.4	14	0.2	1	0.0	1	0.0	58	0.7
WSW	0	0.0	11	0.1	0.4	37	0.4	30	0.3	5	0.1	0	0.0	83	0.9
W	0	0.0	17	0.2	0.6	52	0.6	27	0.3	1	0.0	0	0.0	97	1.1
WNW	0	0.0	22	0.3	1.2	102	1.2	80	0.9	8	0.1	0	0.0	212	2.4
NW	0	0.0	13	0.1	0.7	57	0.7	19	0.2	2	0.0	0	0.0	91	1.0
NNW	0	0.0	8	0.1	0.6	52	0.6	11	0.1	0	0.0	0	0.0	71	0.8
	0	0.0	198	2.3	5.5	268	3.1	26	0.3	1	0.0	0	0.0	978	11.2

MEAN WIND SPEED: 6.2
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

LAPSE RATE: GT 4.0 DEG C/100M
CLASS G

WIND SPEED GROUPS (MPH)

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT				
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT					
N	0	0.0	0.1	3	0.0	0	0.0	0	0.0	0	0.0	0	0.0	15	0.2
NNE	0	0.0	1	2	0.0	1	0.0	0	0.0	0	0.0	0	0.0	9	0.1
NE	0	0.0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0
ENE	0	0.0	12	9	0.1	0	0.0	0	0.0	0	0.0	0	0.0	21	0.2
E	0	0.0	11	14	0.1	0	0.0	0	0.0	0	0.0	0	0.0	25	0.3
ESE	0	0.0	3	4	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	0.1
SE	0	0.0	10	4	0.0	1	0.0	0	0.0	0	0.0	0	0.0	15	0.2
SSE	0	0.0	7	7	0.1	8	0.1	6	0.1	0	0.0	0	0.0	21	0.2
S	0	0.0	5	5	0.1	25	0.3	12	0.1	0	0.0	0	0.0	42	0.5
SSW	0	0.0	7	7	0.1	33	0.4	36	0.4	1	0.0	0	0.0	77	0.9
SW	0	0.0	13	13	0.1	34	0.4	20	0.2	1	0.0	0	0.0	68	0.8
WSW	0	0.0	16	16	0.2	25	0.3	18	0.2	0	0.0	0	0.0	59	0.7
W	0	0.0	15	15	0.2	38	0.4	10	0.1	1	0.0	0	0.0	64	0.7
WNW	0	0.0	20	20	0.2	67	0.8	33	0.4	6	0.1	0	0.0	126	1.4
NW	0	0.0	18	18	0.2	34	0.4	12	0.1	1	0.0	0	0.0	65	0.7
NNW	0	0.0	5	5	0.1	17	0.2	4	0.0	1	0.0	0	0.0	27	0.3
	0	0.0	148	1.7	326	3.7	157	1.8	12	0.1	0	0.0	0	643	7.3

MEAN WIND SPEED: 5.9
MISSING: 0

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
BY ATMOSPHERIC STABILITY CLASS

WIND: LEVEL 2
DELTA T: (266-26FT)

ALL STABILITY CLASSES

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT		
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT			
N	0	66	131	190	2.2	38	0.4	2	0.0	0	0.0	427	4.9
NNE	0	40	105	88	1.0	20	0.2	2	0.0	0	0.0	255	2.9
NE	0	50	108	126	1.4	21	0.2	0	0.0	0	0.0	306	3.5
ENE	0	54	172	141	1.6	7	0.1	0	0.0	0	0.0	374	4.3
E	0	56	114	128	1.5	56	0.6	4	0.0	0	0.0	358	4.1
ESE	0	25	72	74	0.8	35	0.4	2	0.0	0	0.0	208	2.4
SE	0	38	86	60	0.7	24	0.3	0	0.0	0	0.0	208	2.4
SSE	0	38	101	134	1.5	56	0.6	6	0.1	0	0.0	335	3.8
S	0	37	194	258	2.9	104	1.2	10	0.1	2	0.0	605	6.9
SSW	0	59	235	308	3.5	126	1.4	17	0.2	1	0.0	746	8.5
SW	0	55	266	230	2.6	67	0.8	11	0.1	4	0.0	633	7.2
WSW	0	48	164	263	3.0	79	0.9	13	0.1	1	0.0	568	6.5
W	0	62	242	294	3.4	178	2.0	72	0.8	22	0.3	870	9.9
WNW	0	70	369	532	6.1	313	3.6	135	1.5	43	0.5	1462	16.7
NW	0	78	184	266	3.0	222	2.5	79	0.9	34	0.4	863	9.9
NNW	0	40	178	192	2.2	111	1.3	16	0.2	1	0.0	538	6.1

MEAN WIND SPEED: 9.4

MISSING HOURS: 4

LIMERICK MET DATA 1/02-12/02

JOINT DISTRIBUTION OF WIND DIRECTION AND SPEED
 BY ATMOSPHERIC STABILITY CLASS
 WIND: LEVEL 2
 DELTA T: (266-26FT)

DIRECTION VS SPEED ONLY

DIRECTION	WIND SPEED GROUPS (MPH)										SUM PERCENT
	0.0-0.5	0.6-3.5	3.6-7.5	7.6-12.5	12.6-18.5	18.6-24.5	GE 24.6	SUM PERCENT	SUM PERCENT	SUM PERCENT	
N	0	66	131	190	38	2	0	0.0	0.0	427	4.9
NNE	0	40	106	88	20	2	0	0.0	0.0	256	2.9
NE	0	50	108	126	21	0	1	0.0	0.0	306	3.5
ENE	0	54	172	141	7	0	0	0.0	0.0	374	4.3
E	0	56	114	128	56	4	0	0.0	0.0	358	4.1
ESE	0	25	72	74	35	2	0	0.0	0.0	208	2.4
SE	0	38	86	60	24	0	0	0.0	0.0	208	2.4
SSE	0	38	101	134	56	6	0	0.0	0.0	335	3.8
S	0	37	194	258	104	10	2	0.0	0.0	605	6.9
SSW	0	59	235	308	126	17	1	0.0	0.0	746	8.5
SW	0	55	266	300	67	11	4	0.0	0.0	633	7.2
WSW	0	48	164	263	79	13	1	0.0	0.0	568	6.5
W	0	62	242	294	178	72	22	0.3	0.3	870	9.9
WNW	0	70	369	532	313	135	43	0.5	0.5	1462	16.7
NW	0	78	184	266	222	79	34	0.4	0.4	863	9.9
NNW	0	40	178	192	111	16	1	0.0	0.0	538	6.1
	0	816	2722	3284	1457	369	109	1.2	1.2	8757	100.0

MISSING HOURS: 3

MEAN WIND SPEED: 9.4

LIMERICK GENERATING STATION
DATA RECOVERY SUMMARY

LEVEL 2 - TOWER 1 175' OR TOWER 2 304'

PARAMETER	COUNT	PERCENT
PRIMARY SPEED GOOD HOURS	8315	94.92%
BACKUP SPEED GOOD HOURS	8147	93.00%
BACKUP SPEED HOURS USED	442	5.05%
TOTAL AVAILABLE SPEED HOURS	8757	99.97%
PRIMARY DIRECTION GOOD HOURS	8315	94.92%
BACKUP DIRECTION GOOD HOURS	8147	93.00%
BACKUP DIRECTION HOURS USED	442	5.05%
TOTAL AVAILABLE DIRECTION HOURS	8757	99.97%
PRIMARY (266-26') DELTA TEMP HOURS	5274	60.21%
BACKUP (300-26') DELTA TEMP HOURS	8142	92.95%
BACKUP DELTA TEMP HOURS USED	3482	39.75%
TOTAL AVAILABLE DELTA TEMP HOURS	8756	99.95%
LEVEL 2 JOINT DATA RECOVERY:	8756	99.95%