



**Goole Nuclear Plant
Nuclear Generation Group**

**Annual Radioactive
Effluent Release Report**

January 1, 2005 through December 31, 2005



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I. INTRODUCTION

This report discusses the radioactive discharges from Unit 1 and Unit 2 of the Donald C. Cook Nuclear Plant (CNP) during 2005. This is in accordance with the requirements of CNP Technical Specification 5.6.3.

The table below summarizes the pertinent statistics concerning the Plant's operation during the period from January 1, 2005, to December 31, 2005. The data in this table and the descriptive information on plant operation are based upon the respective Unit's Monthly Operating Reports, Performance Indicators and Control Room Logs for 2005.

Parameter	Unit 1	Unit 2
Gross Electrical Energy Generation (MWH)	8,336,729	9,720,540
Unit Service Factor (%)	90.7	98.2
Unit Capacity Factor - MDC Net (%)	92.0	101.4

Unit 1 entered the reporting period in Mode 1 at Nominal Full Power (NFP). Small power adjustments were made to facilitate main turbine valve testing throughout the year. The unit entered scheduled Unit 1 Cycle 20 refueling outage on March 26, 2005. The unit attained criticality on April 25, 2005, and subsequently tripped on an intermediate range High Flux signal on April 26, 2005. The unit attained criticality on April 26, 2005, and returned to NFP on April 30, 2005. The unit reduced power to 8 percent on June 18, 2005, to repair the Main Generator Voltage Regulator and returned to NFP on June 20, 2005. The unit was shutdown on September 25, 2005, to repair an oil leak on Reactor Coolant Pump 13. The unit attained criticality on September 25, 2005, and NFP was achieved on September 27, 2005. The unit exited the reporting period at NFP.

Unit 2 entered the reporting period in Mode 1 at NFP. Small power adjustments were made to facilitate main turbine valve testing throughout the year. The unit was shutdown on September 22, 2005, to repair an oil leak on Reactor Coolant Pump 21. The unit attained criticality on September 23, 2005, and NFP was achieved on September 24, 2005. The unit experienced an automatic reactor trip due to a Reactor Coolant Pump bus under voltage signal on November 8, 2005. Repairs were made and the unit attained criticality on November 10, 2005, and returned to NFP on November 12, 2005. The unit exited the reporting period at NFP.

II. RADIOACTIVE RELEASES AND RADIOLOGICAL IMPACT ON MAN

Since a number of release points are common to both units, the release data from both units are combined to form this two-unit, Annual Radioactive Effluent Release Report. Appendix A1.1 through A2.4 of this report present the information in accordance with Section 5.6.3 of Appendix A to the Facility Operating Licenses, as specified in the Technical Specifications, Regulatory Guide 1.21 and 10 CFR Part 50, Appendix I.

The "MIDAS System" is a computer code that calculates doses due to radionuclides that were released from CNP.

All liquid and gaseous releases were well within Offsite Dose Calculation Manual limits and Federal Limits.

There were no abnormal liquid or gaseous releases.

Liquid Releases

During 2005 there were 55 liquid batch releases performed. During the first quarter there were 16 liquid batch releases. During the second quarter there were 16. During the third quarter there were 11. During the fourth quarter there were 12.

Estimated doses (in millirem) to maximally exposed individuals via the liquid release pathways are given in Appendix 1.2 of this report.

Gaseous Releases

During the first quarter of 2005 there were four batch releases from Waste Gas Decay Tanks (GDT), one Containment Purge release and 63 Containment Pressure Reliefs (CPR). During the second quarter there was one batch release from a GDT and 55 CPR. During the third quarter there were two batch releases from GDT and 64 CPR. During the fourth quarter there was one batch release from GDT and 66 CPR. CPR continue to be listed as batch releases in accordance with Nuclear Regulatory Commission Inspections 50-315/89016 (DRSS) and 50-316/8917 (DRSS). Doses continue to be calculated utilizing continuous criteria as allowed by NUREG-0133. There were a total of eight GDT, one containment purge and 248 CPR gaseous batch releases made during 2005.

In calculating the dose consequences for continuous and batch gaseous releases during 2005, the meteorological data measured at the time of the release were used.

The estimated doses (in millirem) to maximally exposed individuals via the gaseous release pathways are given in Appendix 1.2 of this report.

Solid Waste Disposition

There were 68 shipments of radioactive waste made during 2005. This included shipments made from the site and the various radioactive waste processors to the ultimate disposal site.

III. METEOROLOGICAL

Appendices A2.1, A2.2, A2.3, and A2.4 of this report contain the cumulative joint frequency distribution tables of wind speed and wind direction, corresponding to the various atmospheric stability classes for the first, second, third and fourth quarters of 2005. Hourly meteorological data is available for review and/or inspection upon request.

IV. OFFSITE DOSE CALCULATION MANUAL (ODCM) CHANGES

The Offsite Dose Calculation Manual, PMP-6010-OSD-001, was changed during the report period. Copies of Revisions 18 and 19 are included as part of the report.

V. TOTAL DOSE

Section 3.2.5 of the ODCM requires that the dose or dose commitment to a real individual from all uranium fuel cycle sources in Berrien County be limited to no more than 25 millirem to the total body or any organ (except the thyroid, which is limited to no more than 75 millirem) over a period of 12 consecutive months to show conformance with the requirements of 40 CFR Part 190. The maximum cumulative dose to an individual from liquid and gaseous effluents during 2005 was well within the ODCM limits. Measurements using thermoluminescent dosimeters at 11 offsite stations indicate that the dose due to direct radiation is consistent with preoperational and current control (background) levels. This is fully evaluated in the Annual Radiological Environmental Operating Report.

The annual dose to the maximum individual will be estimated by first, summing the quarterly total body air dose, the quarterly skin air dose, the quarterly critical organ dose from iodines and particulates, the quarterly total body dose from liquid effluents, the quarterly critical organ dose from liquid effluents, and the Radiological Environmental Monitoring Program onsite direct radiation TLD data. These quarterly values will be summed and compared to the annual limit. The table that follows here represents the above verbal description:

Dose	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Total Body or any organ. (I&P)	1.68E-02	3.73E-02	6.85E-02	1.82E-02
Total Body (Air)	2.20E-04	2.80E-04	7.70E-04	1.80E-04
Skin (Air)	6.40E-04	5.30E-04	7.40E-03	7.70E-04
Total Body (liquid)	8.07E-03	4.17E-03	2.66E-03	2.28E-03
Maximum organ (liquid)	1.12E-02	4.29E-03	2.66E-03	2.29E-03
Direct Radiation	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.69E-02	4.66E-02	8.20E-02	2.37E-02
Cumulative Total Dose (Total Body or any other organ) mrem				1.89E-01
Annual Dose Limit (mrem)				2.50E+01
Percent of Limit				7.57E-01

For individuals that are within the site boundary, the occupancy time is sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary.

VI. RADIATION MONITORS INOPERABLE GREATER THAN 30 DAYS

There were no radiation monitors inoperable for greater than 30 days while there was a release via that pathway.

VII. CONCLUSION

Based on the information presented in this report, it is concluded that the CNP Units 1 and 2 performed their intended design function with no demonstrable adverse affect on the health and safety of the general public.

2005 Effluent and Waste Disposal Annual Report

SUPPLEMENTAL INFORMATION

Facility: Donald C. Cook Nuclear Plant
Licensee: Indiana Michigan Power Company

1 REGULATORY LIMITS

1.1 Noble Gases

The air dose in unrestricted areas due to noble gases released in gaseous effluents shall be limited to the following:

1.1.1 During any calendar quarter, to ≤ 5 mrad for gamma radiation and ≤ 10 mrad for beta radiation.

1.1.2 During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.

1.2 Iodines - Particulates

The dose to a member of the public from radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives greater than eight days in gaseous effluents released to unrestricted areas shall be limited to the following:

1.2.1 During any calendar quarter to ≤ 7.5 mrem to any organ.

1.2.2 During any calendar year to ≤ 15 mrem to any organ.

1.3 Liquid Effluents

The dose or dose commitment to an individual from radioactive material in liquid effluents released to unrestricted areas shall be limited:

1.3.1 During any calendar quarter to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ.

1.3.2 During any calendar year to ≤ 3 mrem to the total body and to ≤ 10 mrem to any organ.

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1.4 Total Dose

The dose or dose commitment to a real individual from all uranium fuel cycle sources is limited to ≤ 25 mrem to the total body or any organ (except the thyroid, which is limited to ≤ 75 mrem) over a period of 12 consecutive months.

2 MAXIMUM PERMISSIBLE CONCENTRATIONS

2.1 Gaseous Effluents

The dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to the following:

2.1.1 For noble gases: ≤ 500 mrem/yr to the total body and ≤ 3000 mrem/yr to the skin.

2.1.2 For all radioiodines and for all radioactive materials in particulate form and radionuclides (other than noble gases) with half-lives greater than eight days: ≤ 1500 mrem/yr to any organ.

The above limits are provided to insure that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area to annual average concentrations exceeding the limits in 10 CFR Part 20, Appendix B, Table 2, Column 1.

2.2 Liquid Effluents

The concentration of radioactive material released at any time from the site to unrestricted areas shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} $\mu\text{Ci/ml}$ total activity.

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3 AVERAGE ENERGY

The average energy (\bar{E}) of the radionuclide mixture in releases of fission and activation gases as defined in Regulatory Guide 1.21, Appendix B, Section A.3 is not applicable because the limits used for gaseous releases are based on calculated dose to members of the public.

4 MEASUREMENTS and APPROXIMATIONS of TOTAL RADIOACTIVITY

4.1 Fission and Activation Gases

Sampled and analyzed on a 4096 channel analyzer and HpGe detector. Tritium analysis is performed using liquid scintillation counter.

4.2 Iodines

Sampled on iodine adsorbing media and analyzed on a 4096 channel analyzer and HpGe detector.

4.3 Particulates

Sampled on a glass filter and analyzed on a 4096 channel analyzer and HpGe detector. Sr-89 and Sr-90 analyses performed by offsite vendor.

4.4 Liquid Effluents

Sampled and analyzed on a 4096 channel analyzer and HpGe detector. Tritium analysis is performed using liquid scintillation counter. Fe-55, Sr-89 and Sr-90 analyses performed by offsite vendor.

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5 BATCH RELEASES

5.1 Liquid

5.1.1 Number of batch releases:

16 releases in the 1st quarter, 2005
16 releases in the 2nd quarter, 2005
11 releases in the 3rd quarter, 2005
12 releases in the 4th quarter, 2005

5.1.2 Total time period for batch releases:

9449 minutes

5.1.3 Maximum time for a batch release:

265 minutes

5.1.4 Average time period for batch release:

172 minutes

5.1.5 Minimum time period for a batch release:

104 minutes

5.1.6 Average stream flow during periods of release of effluent into a flowing stream:

8.47E+5 gpm circulating water

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5.2 Gaseous

5.2.1 Number of batch releases:

68 releases in the 1st quarter, 2005
56 releases in the 2nd quarter, 2005
66 releases in the 3rd quarter, 2005
67 releases in the 4th quarter, 2005

5.2.2 Total time period for batch releases:

11815 minutes

5.2.3 Maximum time for a batch release:

408 minutes

5.2.4 Average time period for batch release:

46.0 minutes

5.2.5 Minimum time period for a batch release:

18 minutes

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6 ABNORMAL RELEASES

6.1 Liquid

6.1.1 Number of Releases:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
0	0	0	0

6.1.2 Total activity released (Ci):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
0	0	0	0

6.2 Gaseous

6.2.1 Number of Releases:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
0	0	0	0

6.2.2 Total activity released (Ci):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
0	0	0	0

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

CONTINUOUS MODE

Nuclides Released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1. FISSION GASES					
H3	Ci	3.05E+01	4.09E+01	3.35E+01	2.59E+01
KR85	Ci	4.83E-02	-----	5.02E+00	-----
XE131m	Ci	2.25E-02	-----	-----	-----
XE133m	Ci	2.95E-02	-----	-----	-----
XE133	Ci	4.89E+00	1.86E+00	-----	-----
XE135m	Ci	2.34E-04	-----	-----	-----
XE135	Ci	1.97E-02	-----	-----	-----
Total for Period	Ci	3.55E+01	4.28E+01	3.85E+01	2.59E+01

Nuclides Released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2. IODINES					
I131	Ci	7.60E-06	5.43E-05	-----	-----
I132	Ci	-----	-----	-----	-----
Total for Period	Ci	7.60E-06	5.43E-05	-----	-----

3. PARTICULATES					
CS137	Ci	1.93E-06	-----	-----	-----
Total for Period	Ci	1.93E-06	-----	-----	-----

* DENOTES SUPPLEMENTAL ISOTOPES

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

. BATCH MODE

Nuclides Released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1. FISSION GASES					
H3	Ci	2.02E-02	7.85E-02	1.41E-01	1.10E-01
AR41	Ci	6.37E-02	9.99E-02	1.45E-01	6.42E-02
KR85	Ci	5.61E-01	1.09E-01	3.06E-01	1.23E+00
XE131M	Ci	2.65E-02	1.28E-02	-----	6.05E-03
XE133M	Ci	5.40E-03	1.86E-03	-----	2.70E-03
XE133	Ci	1.96E+00	9.70E-01	3.77E-01	9.85E-01
XE135	Ci	9.80E-03	3.65E-03	3.55E-03	5.05E-03
Total for Period	Ci	2.65E+00	1.28E+00	9.73E-01	2.40E+00
2. IODINES					
I131	Ci	-----	3.50E-08	-----	-----
Total for Period	Ci	-----	3.50E-08	-----	-----
3. PARTICULATES					
CS137	Ci	5.89E-06	-----	-----	-----
Total for Period	Ci	5.89E-06	-----	-----	-----

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. FISSION AND ACTIVATION GASES						
1. Total Release	Ci	7.65E+00	3.06E+00	5.85E+00	2.29E+00	21.5
2. Average release rate for period	uCi/sec	9.84E-01	3.89E-01	7.36E-01	2.88E-01	
3. Percent of applicable limit	% Gamma Beta	9.44E-03 1.55E-02	9.50E-03 4.32E-03	2.68E-02 9.93E-02	6.08E-03 9.83E-03	
B. IODINES						
1. Total I-131	Ci	7.60E-06	5.43E-05	0.00E+00	0.00E+00	13.6
2. Average release rate for period	uCi/sec	9.77E-07	6.91E-06	0.00E+00	0.00E+00	
3. Percent of applicable limit	%	2.24E-01	4.97E-01	0.00E+00	0.00E+00	
C. PARTICULATES						
1. Particulates with half lives > 8 days	Ci	7.82E-06	0.00E+00	0.00E+00	0.00E+00	12.6
2. Average release rate for period	uCi/sec	1.01E-06	0.00E+00	0.00E+00	0.00E+00	
3. Percent of applicable limit	%	2.24E-01	0.00E+00	0.00E+00	0.00E+00	
4. Gross alpha radioactivity	Ci	<9.23E-07	<9.04E-07	<1.05E-06	<1.14E-06	
D. TRITIUM						
1. Total Release	Ci	3.05E+01	4.09E+01	3.37E+01	2.60E+01	10.8
2. Average release rate for period	uCi/sec	3.92E+00	5.20E+00	4.24E+00	3.27E+00	
3. Percent of applicable limit	%	2.24E-01	4.97E-01	9.13E-01	2.43E-01	

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID EFFLUENTS
CONTINUOUS MODE

Nuclides Released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
H3	Ci	1.65E-01	7.32E-02	1.19E-01	1.98E-01

BATCH MODE

Nuclides Released	Unit	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
H3	Ci	1.43E+02	1.77E+02	1.16E+02	8.90E+01
NA24	Ci	2.48E-06	-----	-----	-----
CR51	Ci	-----	3.04E-04	-----	-----
MN54	Ci	8.10E-05	5.79E-05	7.48E-07	1.52E-06
FE55	Ci	1.45E-03	5.84E-04	2.79E-04	-----
FE59	Ci	-----	8.93E-06	-----	-----
CO57	Ci	-----	4.31E-05	9.69E-06	1.87E-05
CO58	Ci	1.06E-03	1.83E-02	1.90E-03	8.40E-04
CO60	Ci	2.46E-03	1.26E-03	1.77E-04	1.93E-04
ZN65	Ci	2.32E-04	1.66E-04	-----	-----
ZR95	Ci	4.94E-05	2.28E-05	-----	-----
NB95	Ci	9.27E-05	4.16E-05	-----	-----
AG110M	Ci	8.30E-05	3.77E-05	-----	-----
SB124	Ci	1.27E-03	2.18E-04	-----	-----
SB125	Ci	5.43E-03	1.16E-03	5.52E-05	5.13E-06
I131	Ci	-----	1.79E-06	-----	-----
CS134	Ci	6.52E-05	3.97E-06	-----	-----
CS137	Ci	2.91E-03	5.58E-05	-----	-----
*SN113	Ci	9.06E-06	-----	-----	-----
*AG108M	Ci	2.91E-06	-----	-----	-----
*SN117M	Ci	1.88E-05	-----	-----	-----
*XE133	Ci	4.10E-05	9.91E-05	-----	-----

* DENOTES SUPPLEMENTAL ISOTOPES

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES
BATCH MODE

		Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A.	FISSION AND ACTIVATION PRODUCTS						
1.	Total Release	Ci	1.52E-02	2.23E-02	2.42E-03	1.06E-03	12.1
2.	Average diluted concentration during period	uCi/ml	1.76E-09	2.55E-09	3.71E-10	1.65E-10	
3.	Percent of applicable limit	%	4.99E-02	1.74E-02	2.44E-03	1.68E-03	
B.	TRITIUM						
1.	Total Release	Ci	1.43E+02	1.77E+02	1.16E+02	8.90E+01	10.1
2.	Average diluted concentration during period	uCi/ml	1.66E-05	2.03E-05	1.78E-05	1.38E-05	
3.	Percent of applicable limit	%	1.66E+00	2.03E+00	1.78E+00	1.38E+00	
C.	DISSOLVED AND ENTRAINED GASES						
1.	Total Release	Ci	4.10E-05	9.91E-05	0.00E+00	0.00E+00	14.7
2.	Average diluted concentration during period	uCi/ml	4.76E-12	1.14E-11	0.00E+00	0.00E+00	
3.	Percent of applicable limit	%	2.38E-06	5.68E-06	0.00E+00	0.00E+00	
D.	GROSS ALPHA RADIOACTIVITY TOTAL RELEASE	Ci	<7.92E-05	<7.93E-05	<5.91E-05	<6.55E-05	N/A
E.	VOLUME OF WASTE RELEASED	Liters	9.26E+05	9.27E+05	6.54E+05	7.18E+05	2.00
F.	VOLUME OF DILUTION WATER USED DURING PERIOD	Liters	8.62E+09	8.72E+09	6.52E+09	6.44E+09	3.48

2005 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES
CONTINUOUS MODE

		Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A.	FISSION AND ACTIVATION PRODUCTS						
1.	Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
2.	Average diluted concentration during period	uCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
3.	Percent of applicable limit	%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
B.	TRITIUM						
1.	Total Release	Ci	1.65E-01	7.32E-02	1.19E-01	1.98E-01	11.7
2.	Average diluted concentration during period	uCi/ml	2.23E-10	9.78E-11	1.38E-10	2.42E-10	
3.	Percent of applicable limit	%	2.23E-05	9.78E-06	1.38E-05	2.42E-05	
C.	DISSOLVED AND ENTRAINED GASES						
1.	Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
2.	Average diluted concentration during period	uCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
3.	Percent of applicable limit	%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
D.	GROSS ALPHA RADIOACTIVITY TOTAL RELEASE	Ci	<2.21E-02	<2.25E-02	<2.12E-02	<2.99E-02	N/A
E.	VOLUME OF WASTE RELEASED	Liters	4.66E+07	3.20E+07	3.49E+07	4.83E+07	2.00
F.	VOLUME OF DILUTION WATER USED DURING PERIOD	Liters	7.40E+11	7.48E+11	8.58E+11	8.16E+11	3.48

2005 Effluent and Waste Disposal Annual Report Solid Waste and Irradiated Fuel Shipments

Solid Waste Shipped Offsite for Burial or Disposal

1) Type of Waste	Unit	Estimated amount	Estimated Total Error, %
a) Spent resins, filters, sludge, evaporator bottoms, etc.	m ³ Curies	1.88E+01 3.42E+02	1.00E+00 3.75E+00
b) Dry compressible waste, contaminated equipment, etc.	m ³ Curies	1.72E+02 1.23E+00	1.00E+00 6.48E+00
c) Irradiated components, control rods, etc.	m ³ Curies	N/A	N/A
d) Other	m ³ Curies	N/A	N/A

2) Estimate of Principle Radionuclide Composition

a)	Cs-134	2 %	Ni-63	37 %	Sb-125	1 %
	Cs-137	8 %	Co58	8 %		
	Fe-55	18 %	H-3	3 %		
	Co-60	19 %	Mn-54	4 %		
b)	H-3	15 %	Mn-54	2 %	Fe-59	2 %
	Cs-137	5 %	Ni-63	26 %	Co-57	1 %
	Co-60	33 %	Fe-55	13 %		
	Co-58	1 %	Nb-95	2 %		

3) Solid Waste Disposition

No. of Shipments	Mode of Transportation	Destination
14	Truck	Barnwell, SC
54	Truck	Clive, UT

4) Type of Containers used for Shipment: Containers used are excepted packages, Type A, Sea Land, metal boxes, drums and high integrity containers.

5) Solidification Agent: There were no solidifications performed during this report period.

2005 Effluent and Waste Disposal Annual Report Yearly Release Rates

GASES		
Fission and Activation Gases	Total Release	1.89E+01 Curies
	Average Release Rate	5.98E-01 $\mu\text{Ci}/\text{sec}$
	% of Applicable Limits	γ 2.59E-02 % β 6.45E-02 %
Iodines	Total I-131 Release	6.19E-05 Curies
	Average Release Rate	1.96E-06 $\mu\text{Ci}/\text{sec}$
	% of Applicable Limit	9.39E-01 %
Particulates	Total Release	7.82E-06 Curies
	Average Release Rate	2.48E-07 $\mu\text{Ci}/\text{sec}$
	% of Applicable Limit	9.39E-01 %
LIQUIDS		
Fission and Activation Products	Total Release	4.10E-02 Curies
	Average Diluted Concentration	1.35E-9 $\mu\text{Ci}/\text{ml}$
	% of Applicable Limits	Total Body 5.73E-01 % Organ 2.04E-01 %

Site Boundary and Nearest Residence Listing

The following distances were used in the calculation of the maximum individual doses:

<u>Sector</u>	<u>Direction</u>	<u>Boundary (Meters)</u>	<u>Nearest Residence (Meters)</u>
A	N	651	659
B	NNE	617	660
C	NE	789	943
D	ENE	1497	1747
E	E	1274	1716
F	ESE	972	1643
G	SE	629	1640
H	SSE	594	964
J	S	594	997
K	SSW	629	942

Summary of Maximum Individual Doses

First Quarter 2005

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (M) (Toward)	% OF APPLICABLE LIMIT	LIMIT (mrem) QTR
Liquid	Total Body	8.07E-03	Adult	Receptor 1	5.38E-01	1.5E+0
Liquid	Liver	1.12E-02	Child	Receptor 1	2.24E-01	5.0E+0
Noble Gas	Air Dose (Gamma-mrad)	4.72E-04	Any Age	594 (SSE)	9.44E-03	5.0E+0
Noble Gas	Air dose (Beta-mrad)	1.55E-03	Any Age	629 (SSW)	1.55E-02	1.0E+1
Iodines and Particulates	Thyroid	1.68E-02	Child	964 (SSE)	2.24E-01	7.5E+0

Summary of Maximum Individual Doses

Second Quarter 2005

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (M) (Toward)	% OF APPLICABLE LIMIT	LIMIT (mrem) QTR
Liquid	Total Body	4.17E-03	Child	Receptor 1	2.78E-01	1.5E+0
Liquid	Liver	4.29E-03	Child	Receptor 1	8.58E-02	5.0E+0
Noble Gas	Air Dose (Gamma-mrad)	4.75E-04	Any Age	651 (N)	9.50E-03	5.0E+0
Noble Gas	Air dose (Beta-mrad)	4.32E-04	Any Age	594 (S)	4.32E-03	1.0E+1
Iodines and Particulates	Thyroid	3.73E-02	Child	964 (SSE)	4.97E-01	7.5E+0

Summary of Maximum Individual Doses

Third Quarter 2005

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (M) (Toward)	% OF APPLICABLE LIMIT	LIMIT (mrem) QTR
Liquid	Total Body	2.66E-03	Child	Receptor 1	1.77E-01	1.5E+0
Liquid	GI-Tract	2.66E-03	Child	Receptor 1	5.32E-02	5.0E+0
Noble Gas	Air Dose (Gamma-mrad)	1.34E-03	Any Age	651 (N)	2.68E-02	5.0E+0
Noble Gas	Air dose (Beta-mrad)	9.93E-03	Any Age	651 (N)	9.93E-02	1.0E+1
Iodines and Particulates	Total Body	6.85E-02	Child	659 (N)	9.13E-01	7.5E+0

Summary of Maximum Individual Doses

Fourth Quarter 2005

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mrem)	AGE GROUP	LOCATION DIST DIR (M) (Toward)	% OF APPLICABLE LIMIT	LIMIT (mrem) QTR
Liquid	Total Body	2.28E-03	Child	Receptor 1	1.52E-01	1.5E+0
Liquid	GI-Tract	2.29E-03	Child	Receptor 1	4.58E-02	5.0E+0
Noble Gas	Air Dose (Gamma-mrad)	3.04E-04	Any Age	651 (N)	6.08E-03	5.0E+0
Noble Gas	Air dose (Beta-mrad)	9.83E-04	Any Age	651 (N)	9.83E-03	1.0E+1
Iodines and Particulates	Total Body	1.82E-02	Child	659 (N)	2.43E-01	7.5E+0

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	2	14	0	0	0	0	16
NNE	3	6	1	0	0	0	10
NE	2	11	5	0	0	0	18
ENE	3	13	8	0	0	0	24
E	1	23	1	0	0	0	25
ESE	2	11	0	0	0	0	13
SE	3	13	10	0	0	0	26
SSE	0	21	13	5	0	0	39
S	1	1	7	2	0	0	11
SSW	0	2	0	0	0	0	2
SW	0	10	4	1	0	0	15
WSW	1	19	13	1	0	0	34
W	0	13	3	0	0	0	16
WNW	2	17	5	0	0	0	24
NW	3	39	5	0	0	0	47
NNW	1	38	14	0	0	0	53
TOTAL	24	251	89	9	0	0	373

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	1	4	4	0	0	0	9
NNE	0	4	0	0	0	0	4
NE	0	8	4	0	0	0	12
ENE	3	7	4	0	0	0	14
E	2	9	0	0	0	0	11
ESE	1	2	0	0	0	0	3
SE	1	0	1	0	0	0	2
SSE	1	7	1	0	0	0	9
S	0	5	6	1	0	0	12
SSW	0	0	0	0	0	0	0
SW	1	3	2	0	0	0	6
WSW	0	3	3	0	0	0	6
W	1	7	1	0	0	0	9
WNW	2	4	1	0	0	0	7
NW	4	5	5	0	0	0	14
NNW	0	9	1	0	0	0	10
TOTAL	17	77	33	1	0	0	128

PERIODS OF CALM(HOURS) : 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	2	13	3	0	0	0	18
NNE	1	1	1	0	0	0	3
NE	2	3	7	0	0	0	12
ENE	2	3	3	0	0	0	8
E	0	4	0	0	0	0	4
ESE	0	0	0	0	0	0	0
SE	2	2	1	0	0	0	5
SSE	0	3	0	0	0	0	3
S	0	7	5	0	0	0	12
SSW	0	0	1	0	0	0	1
SW	2	2	4	0	0	0	8
WSW	0	8	4	0	0	0	12
W	1	6	2	0	0	0	9
WNW	1	8	2	0	0	0	11
NW	3	14	5	0	0	0	22
NNW	7	16	7	0	0	0	30
TOTAL	23	90	45	0	0	0	158

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	27	36	17	0	0	0	80
NNE	17	12	5	0	0	0	34
NE	11	29	10	0	0	0	50
ENE	9	37	17	0	0	0	63
E	19	25	2	0	0	0	46
ESE	17	30	13	0	0	0	60
SE	13	27	5	0	0	0	45
SSE	7	14	3	3	0	0	27
S	7	33	12	13	0	0	65
SSW	6	8	18	10	0	0	42
SW	5	12	20	2	0	0	39
WSW	5	12	15	1	0	0	33
W	7	11	7	0	0	0	25
WNW	9	25	14	0	0	0	48
NW	9	61	17	0	0	0	87
NNW	17	83	20	0	0	0	120
TOTAL	185	455	195	29	0	0	864

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND SPEED (MPH)

WIND DIRECTION	1-4	4-8	8-13	13-19	19-25	>25	TOTAL
N	12	14	1	0	0	0	27
NNE	13	4	0	0	0	0	17
NE	19	11	0	0	0	0	30
ENE	10	23	0	0	0	0	33
E	17	20	1	0	0	0	38
ESE	16	20	7	0	0	0	43
SE	22	24	14	0	0	0	60
SSE	14	36	6	0	0	0	56
S	11	15	4	2	0	0	32
SSW	3	3	7	2	0	0	15
SW	3	8	3	0	0	0	14
WSW	5	4	10	0	0	0	19
W	3	2	1	0	0	0	6
WNW	2	4	0	0	0	0	6
NW	5	2	0	0	0	0	7
NNW	13	19	4	0	0	0	36
TOTAL	168	209	58	4	0	0	439

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	3	1	0	0	0	0	4
NNE	5	0	0	0	0	0	5
NE	4	1	0	0	0	0	5
ENE	5	1	0	0	0	0	6
E	8	6	0	0	0	0	14
ESE	12	0	0	0	0	0	12
SE	9	5	0	0	0	0	14
SSE	8	14	0	0	0	0	22
S	9	3	3	0	0	0	15
SSW	3	0	1	0	0	0	4
SW	2	0	0	0	0	0	2
WSW	1	0	0	0	0	0	1
W	3	0	0	0	0	0	3
WNW	1	0	0	0	0	0	1
NW	2	0	0	0	0	0	2
NNW	3	1	0	0	0	0	4
TOTAL	78	32	4	0	0	0	114

PERIODS OF CALM(HOURS) : 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND SPEED (MPH)

WIND DIRECTION	1-4	4-8	8-13	13-19	19-25	>25	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	1	0	0	0	0	0	1
ENE	8	0	0	0	0	0	8
E	10	1	0	0	0	0	11
ESE	8	0	0	0	0	0	8
SE	18	1	0	0	0	0	19
SSE	23	2	0	0	0	0	25
S	6	0	0	0	0	0	6
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	2	0	0	0	0	0	2
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	76	4	0	0	0	0	80

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1/1/05 - 3/31/05
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-4	4-8	8-13	13-19	19-25	>25	
N	47	82	25	0	0	0	154
NNE	39	27	7	0	0	0	73
NE	39	63	26	0	0	0	128
ENE	40	84	32	0	0	0	156
E	57	88	4	0	0	0	149
ESE	56	63	20	0	0	0	139
SE	68	72	31	0	0	0	171
SSE	53	97	23	8	0	0	181
S	34	64	37	18	0	0	153
SSW	12	13	27	12	0	0	64
SW	13	35	33	3	0	0	84
WSW	14	46	45	2	0	0	107
W	15	39	14	0	0	0	68
WNW	17	58	22	0	0	0	97
NW	26	121	32	0	0	0	179
NNW	41	166	46	0	0	0	253
TOTAL	571	1118	424	43	0	0	2156

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	9	46	8	0	0	0	63
NNE	3	5	0	0	0	0	8
NE	0	5	4	0	0	0	9
ENE	3	12	8	0	0	0	23
E	2	12	5	0	0	0	19
ESE	4	20	9	0	0	0	33
SE	4	21	1	0	0	0	26
SSE	1	23	5	0	0	0	29
S	5	31	21	4	0	0	61
SSW	3	23	17	0	0	0	43
SW	2	41	27	0	0	0	70
WSW	1	33	14	0	0	0	48
W	3	51	8	0	0	0	62
WNW	4	38	4	0	0	0	46
NW	11	29	0	0	0	0	40
NNW	14	125	13	0	0	0	152
TOTAL	69	515	144	4	0	0	732

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	5	8	0	1	0	0	14
NNE	0	1	0	0	0	0	1
NE	1	0	1	0	0	0	2
ENE	1	0	1	0	0	0	2
E	1	5	2	0	0	0	8
ESE	0	2	2	0	0	0	4
SE	1	3	1	0	0	0	5
SSE	0	1	0	0	0	0	1
S	1	4	2	0	0	0	7
SSW	0	2	2	1	0	0	5
SW	4	9	2	0	0	0	15
WSW	0	5	1	0	0	0	6
W	0	2	1	0	0	0	3
WNW	1	4	0	0	0	0	5
NW	2	1	0	0	0	0	3
NNW	0	2	1	1	0	0	4
TOTAL	17	49	16	3	0	0	85

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	4	5	1	1	0	0	11
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	1	1	0	0	0	2
E	0	0	1	0	0	0	1
ESE	0	1	1	0	0	0	2
SE	0	7	0	0	0	0	7
SSE	1	1	0	0	0	0	2
S	0	9	1	0	0	0	10
SSW	1	1	1	0	0	0	3
SW	0	4	1	0	0	0	5
WSW	2	1	1	0	0	0	4
W	2	2	1	0	0	0	5
WNW	0	1	0	0	0	0	1
NW	3	1	0	0	0	0	4
NNW	2	3	4	3	0	0	12
TOTAL	15	38	13	4	0	0	70

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	13	21	19	3	0	0	56
NNE	3	8	0	0	0	0	11
NE	5	6	5	0	0	0	16
ENE	9	19	6	0	0	0	34
E	4	4	10	2	0	0	20
ESE	2	18	18	0	0	0	38
SE	1	9	3	0	0	0	13
SSE	1	7	0	0	0	0	8
S	3	18	7	0	0	0	28
SSW	4	10	24	0	0	0	38
SW	10	20	13	1	0	0	44
WSW	7	13	4	0	0	0	24
W	2	21	7	0	0	0	30
WNW	5	6	1	0	0	0	12
NW	5	5	0	0	0	0	10
NNW	13	11	15	2	0	0	41
TOTAL	87	196	132	8	0	0	423

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	15	14	0	0	0	0	29
NNE	8	3	0	0	0	0	11
NE	11	5	1	0	0	0	17
NNE	10	14	1	0	0	0	25
E	12	14	3	0	0	0	29
ESE	19	19	0	0	0	0	38
SE	12	15	0	0	0	0	27
SSE	18	11	0	0	0	0	29
S	27	48	3	0	0	0	78
SSW	10	14	2	0	0	0	26
SW	8	30	0	0	0	0	38
WSW	3	3	1	0	0	0	7
W	4	8	1	0	0	0	13
WNW	4	1	0	0	0	0	5
NW	5	5	0	0	0	0	10
NNW	12	16	1	0	0	0	29
TOTAL	178	220	13	0	0	0	411

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND SPEED (MPH)

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	5	0	0	0	0	0	5
NNE	11	0	0	0	0	0	11
NE	11	2	0	0	0	0	13
ENE	14	1	0	0	0	0	15
E	23	5	0	0	0	0	28
ESE	32	4	0	0	0	0	36
SE	18	11	0	0	0	0	29
SSE	18	16	0	0	0	0	34
S	10	11	1	0	0	0	22
SSW	7	3	0	0	0	0	10
SW	6	2	0	0	0	0	8
WSW	4	0	1	0	0	0	5
W	1	0	0	0	0	0	1
WNW	1	0	0	0	0	0	1
NW	2	2	0	0	0	0	4
NNW	8	0	0	0	0	0	8
TOTAL	171	57	2	0	0	0	230

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	4	0	0	0	0	0	4
NNE	2	0	0	0	0	0	2
NE	9	0	0	0	0	0	9
ENE	19	1	0	0	0	0	20
E	36	0	0	0	0	0	36
ESE	32	0	0	0	0	0	32
SE	20	2	0	0	0	0	22
SSE	29	4	0	0	0	0	33
S	28	2	0	0	0	0	30
SSW	14	1	0	0	0	0	15
SW	3	1	0	0	0	0	4
WSW	6	0	0	0	0	0	6
W	1	0	0	0	0	0	1
WNW	3	0	0	0	0	0	3
NW	2	0	0	0	0	0	2
NNW	2	0	0	0	0	0	2
TOTAL	210	11	0	0	0	0	221

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 4/1/05 - 6/30/05
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	55	94	28	5	0	0	182
NNE	27	18	0	0	0	0	45
NE	37	18	11	0	0	0	66
ENE	56	48	17	0	0	0	121
E	78	40	21	2	0	0	141
ESE	89	64	30	0	0	0	183
SE	56	68	5	0	0	0	129
SSE	68	63	5	0	0	0	136
S	74	123	35	4	0	0	236
SSW	39	54	46	1	0	0	140
SW	33	107	43	1	0	0	184
WSW	23	55	22	0	0	0	100
W	13	84	18	0	0	0	115
WNW	18	50	5	0	0	0	73
NW	30	43	0	0	0	0	73
NNW	51	157	34	6	0	0	248
TOTAL	747	1086	320	19	0	0	2172

PERIODS OF CALM(HOURS): 1
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 11

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	12	96	0	0	0	0	108
NNE	5	8	0	0	0	0	13
NE	3	21	0	0	0	0	24
ENE	3	13	0	0	0	0	16
E	4	14	0	0	0	0	18
ESE	2	7	0	0	0	0	9
SE	5	15	0	0	0	0	20
SSE	8	11	0	0	0	0	19
S	9	36	18	0	0	0	63
SSW	1	20	18	0	0	0	39
SW	3	50	6	1	0	0	60
WSW	3	49	2	0	0	0	54
W	7	44	1	0	0	0	52
WNW	7	32	0	0	0	0	39
NW	16	29	1	0	0	0	46
NNW	35	81	0	0	0	0	116
TOTAL	123	526	46	1	0	0	696

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	4	5	0	0	0	0	9
NNE	2	0	0	0	0	0	2
NE	0	2	1	0	0	0	3
ENE	1	0	0	0	0	0	1
E	3	1	0	0	0	0	4
ESE	2	0	0	0	0	0	2
SE	2	0	0	0	0	0	2
SSE	3	0	0	0	0	0	3
S	2	12	2	0	0	0	16
SSW	1	5	5	0	0	0	11
SW	0	4	4	0	0	0	8
WSW	2	1	0	0	0	0	3
W	1	1	0	0	0	0	2
WNW	0	0	0	0	0	0	0
NW	1	0	0	0	0	0	1
NNW	4	0	0	0	0	0	4
TOTAL	28	31	12	0	0	0	71

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	5	5	0	0	0	0	10
NNE	2	2	0	0	0	0	4
NE	1	3	0	0	0	0	4
ENE	3	3	0	0	0	0	6
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	2	1	0	0	0	0	3
SSE	0	2	0	0	0	0	2
S	2	3	2	0	0	0	7
SSW	3	4	1	0	0	0	8
SW	1	3	2	0	0	0	6
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	1	1	0	0	0	0	2
NW	1	1	0	0	0	0	2
NNW	1	1	0	0	0	0	2
TOTAL	26	29	5	0	0	0	60

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	17	15	0	0	0	0	32
NNE	6	7	0	0	0	0	13
NE	10	8	0	0	0	0	18
ENE	11	2	0	0	0	0	13
E	3	4	0	0	0	0	7
ESE	9	5	0	0	0	0	14
SE	6	1	0	0	0	0	7
SSE	6	1	0	0	0	0	7
S	6	22	6	0	0	0	34
SSW	1	15	11	0	0	0	27
SW	4	12	6	0	0	0	22
WSW	0	1	1	0	0	0	2
W	0	6	0	0	0	0	6
WNW	1	1	0	0	0	0	2
NW	11	0	0	0	0	0	11
NNW	16	2	0	0	0	0	18
TOTAL	107	102	24	0	0	0	233

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND SPEED (MPH)

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	26	10	0	0	0	0	36
NNE	14	15	0	0	0	0	29
NE	24	10	0	0	0	0	34
ENE	23	11	0	0	0	0	34
E	27	3	0	0	0	0	30
ESE	26	5	0	0	0	0	31
SE	16	0	0	0	0	0	16
SSE	16	6	0	0	0	0	22
S	21	58	6	0	0	0	85
SSW	8	8	4	0	0	0	20
SW	6	20	1	0	0	0	27
WSW	9	9	0	0	0	0	18
W	10	7	0	0	0	0	17
WNW	2	3	0	0	0	0	5
NW	7	0	0	0	0	0	7
NNW	7	9	2	0	0	0	18
TOTAL	242	174	13	0	0	0	429

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	5	2	0	0	0	0	7
NNE	7	1	0	0	0	0	8
NE	22	2	0	0	0	0	24
ENE	29	0	0	0	0	0	29
E	28	0	0	0	0	0	28
ESE	23	0	0	0	0	0	23
SE	23	0	0	0	0	0	23
SSE	35	0	0	0	0	0	35
S	37	12	1	0	0	0	50
SSW	7	4	0	0	0	0	11
SW	5	1	0	0	0	0	6
WSW	4	0	0	0	0	0	4
W	2	0	0	0	0	0	2
WNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
NNW	4	0	3	0	0	0	7
TOTAL	232	22	4	0	0	0	258

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND SPEED (MPH)

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	0	0	0	0	0	3
NNE	5	0	0	0	0	0	5
NE	12	0	0	0	0	0	12
ENE	44	0	0	0	0	0	44
E	82	0	0	0	0	0	82
ESE	57	0	0	0	0	0	57
SE	51	0	0	0	0	0	51
SSE	77	0	0	0	0	0	77
S	77	4	0	0	0	0	81
SSW	31	0	0	0	0	0	31
SW	5	0	0	0	0	0	5
WSW	0	0	0	0	0	0	0
W	2	0	0	0	0	0	2
WNW	2	0	0	0	0	0	2
NW	3	0	0	0	0	0	3
NNW	2	0	0	0	0	0	2
TOTAL	453	4	0	0	0	0	457

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 7/1/05 - 9/30/05
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	72	133	0	0	0	0	205
NNE	41	33	0	0	0	0	74
NE	72	46	1	0	0	0	119
ENE	114	29	0	0	0	0	143
E	149	22	0	0	0	0	171
ESE	121	17	0	0	0	0	138
SE	105	17	0	0	0	0	122
SSE	145	20	0	0	0	0	165
S	154	147	35	0	0	0	336
SSW	52	56	39	0	0	0	147
SW	24	90	19	1	0	0	134
WSW	18	60	3	0	0	0	81
W	22	58	1	0	0	0	81
WNW	14	37	0	0	0	0	51
NW	39	30	1	0	0	0	70
NNW	69	93	5	0	0	0	167
TOTAL	1211	888	104	1	0	0	2204

PERIODS OF CALM(HOURS): 2
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 2

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: A DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	3	26	2	0	0	0	31
NNE	2	9	0	0	0	0	11
NE	0	13	0	0	0	0	13
ENE	0	7	0	0	0	0	7
E	1	6	0	0	0	0	7
ESE	1	9	0	0	0	0	10
SE	0	5	0	0	0	0	5
SSE	2	15	2	0	0	0	19
S	0	11	19	2	0	0	32
SSW	0	4	6	1	0	0	11
SW	0	17	9	2	0	0	28
WSW	0	14	9	3	0	0	26
W	1	22	10	0	0	0	33
WNW	0	13	1	0	0	0	14
NW	1	8	1	0	0	0	10
NNW	3	15	1	0	0	0	19
TOTAL	14	194	60	8	0	0	276

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: B DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	2	2	2	0	0	0	6
NNE	1	1	0	0	0	0	2
NE	0	1	0	0	0	0	1
ENE	0	2	0	0	0	0	2
E	1	4	0	0	0	0	5
ESE	4	2	0	0	0	0	6
SE	1	5	0	0	0	0	6
SSE	2	6	0	0	0	0	8
S	0	7	10	0	0	0	17
SSW	0	2	5	0	0	0	7
SW	0	5	2	1	0	0	8
WSW	3	5	7	1	0	0	16
W	0	10	2	0	0	0	12
WNW	0	4	2	0	0	0	6
NW	2	3	2	0	0	0	7
NNW	1	3	0	0	0	0	4
TOTAL	17	62	32	2	0	0	113

PERIODS OF CALM(HOURS) : 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: C DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	3	1	0	0	0	4
NNE	3	2	0	0	0	0	5
NE	2	4	0	0	0	0	6
ENE	3	0	0	0	0	0	3
E	6	5	0	0	0	0	11
ESE	1	2	1	0	0	0	4
SE	4	3	7	0	0	0	14
SSE	1	6	1	0	0	0	8
S	1	8	7	1	0	0	17
SSW	3	10	7	5	0	0	25
SW	1	5	5	3	0	0	14
WSW	0	4	6	12	0	0	22
W	2	10	4	1	0	0	17
WNW	3	6	2	0	0	0	11
NW	1	8	2	0	0	0	11
NNW	0	3	6	1	0	0	10
TOTAL	31	79	49	23	0	0	182

PERIODS OF CALM (HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: D DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	9	56	4	0	0	0	69
NNE	4	13	0	0	0	0	17
NE	9	16	0	0	0	0	25
ENE	15	17	7	0	0	0	39
E	19	18	1	0	0	0	38
ESE	15	13	0	0	0	0	28
SE	12	26	15	0	0	0	53
SSE	9	30	12	1	0	0	52
S	3	63	35	4	0	0	105
SSW	5	25	64	16	2	0	112
SW	2	18	17	11	3	0	51
WSW	3	17	54	10	0	0	84
W	6	45	36	3	0	0	90
WNW	4	39	31	0	0	0	74
NW	2	21	26	1	0	0	50
NNW	9	28	6	3	0	0	46
TOTAL	126	445	308	49	5	0	933

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: E DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	15	14	1	0	0	0	30
NNE	21	4	0	0	0	0	25
NE	13	6	0	0	0	0	19
ENE	10	6	0	0	0	0	16
E	6	7	0	0	0	0	13
ESE	12	4	1	0	0	0	17
SE	20	19	6	0	0	0	45
SSE	30	26	2	0	0	0	58
S	21	75	17	7	0	0	120
SSW	4	7	3	1	0	0	15
SW	5	7	2	0	0	0	14
WSW	2	6	0	0	0	0	8
W	9	5	1	0	0	0	15
WNW	6	4	3	0	0	0	13
NW	5	2	0	0	0	0	7
NNW	6	12	0	0	0	0	18
TOTAL	185	204	36	8	0	0	433

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: F DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	1	0	0	0	0	0	1
NNE	2	0	0	0	0	0	2
NE	7	1	0	0	0	0	8
ENE	14	0	0	0	0	0	14
E	16	0	0	0	0	0	16
ESE	12	0	0	0	0	0	12
SE	11	1	0	0	0	0	12
SSE	24	3	0	0	0	0	27
S	13	14	0	0	0	0	27
SSW	8	0	0	0	0	0	8
SW	0	1	0	0	0	0	1
WSW	1	0	0	0	0	0	1
W	2	1	0	0	0	0	3
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	3	0	0	0	0	0	3
TOTAL	114	21	0	0	0	0	135

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: G DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	1	0	0	0	0	0	1
NNE	3	0	0	0	0	0	3
NE	5	0	0	0	0	0	5
ENE	5	0	0	0	0	0	5
E	8	0	0	0	0	0	8
ESE	13	0	0	0	0	0	13
SE	22	0	0	0	0	0	22
SSE	29	1	0	0	0	0	30
S	15	8	0	0	0	0	23
SSW	0	2	0	0	0	0	2
SW	1	0	0	0	0	0	1
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
TOTAL	103	11	0	0	0	0	114

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22

SITE: AEP COOK

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 10/1/05 - 12/31/05
STABILITY CLASS: ALL DT/DZ
ELEVATION: SPEED:SP10M DIRECTION:DIR10M LAPSE:DT60M

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	31	101	10	0	0	0	142
NNE	36	29	0	0	0	0	65
NE	36	41	0	0	0	0	77
ENE	47	32	7	0	0	0	86
E	57	40	1	0	0	0	98
ESE	58	30	2	0	0	0	90
SE	70	59	28	0	0	0	157
SSE	97	87	17	1	0	0	202
S	53	186	88	14	0	0	341
SSW	20	50	85	23	2	0	180
SW	9	53	35	17	3	0	117
WSW	9	46	76	26	0	0	157
W	20	93	53	4	0	0	170
WNW	13	66	39	0	0	0	118
NW	12	42	31	1	0	0	86
NNW	22	61	13	4	0	0	100
TOTAL	590	1016	485	90	5	0	2186

PERIODS OF CALM(HOURS): 0
VARIABLE DIRECTION: 0
HOURS OF MISSING DATA: 22