INITIAL TITLE V AIR PERMIT APPLICATION REVIEW
(INCLUDING INCORPORATION OF
THE PHASE II ACID RAIN PERMIT INTO THE TITLE V PERMIT)

APPLICANT:	SITE LOCATION:		COUNTY:
Progress Energy Carolinas, Inc. Richmond County Combustion Turbine Facility	Hamlet		Richmond
TECHNICAL CONTACTS:	**PHONE:**	**RESPONSIBLE OFFICIAL:**	**TITLE:**
Arun Kapur	(919)362-3258	Pete Sessler	Plant Manager
REVIEW ENGINEER:	**SIGNATURE:**		**DATE:**
Rahul P. Thaker			May 21, 2003
REGIONAL CONTACT:	**REGIONAL OFFICE:**		**SIC CODE:**
Tom McKinney	FRO		4911
APPLICATION NUMBERS:	**EXISTING PERMIT NUMBERS:**		**NEW PERMIT NUMBER:**
7700070.02A	08759R05, Acid Rain Permit 770070R00		08759T06

I. Introduction

The U.S. Environmental Protection Agency (EPA) has given a full approval to North Carolina's Title V operating permits program effective on October 1, 2001. Title V facilities are required to obtain an operating permit which addresses all applicable regulations under the State Implementation Plan, Federal Implementation Plan, and other provisions of the Clean Air Act (CAA). The Title V Operating Permit will define all of the facility's obligations under the CAA.

This Title V Air Permit Application Review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the Title V operating permit. The primary source of information used to construct the permit is the above referenced air permit application and the existing air permits.

II. Background Information

The Title V operating permit replaces existing Air Quality Construction and Operation Permit No. 08759R05, which was issued on January 29, 2003, and is currently scheduled to expire on October 31, 2004. Also, the Title V permit will incorporate the Phase II Acid Rain permit requirements into a combined Title V/Title IV permit and replace the existing Phase II Acid Rain Permit No. 770070R00, which was issued by the DAQ on December 28, 2001, is currently scheduled to expire on December 31, 2005.

Pursuant to 15A NCAC 2Q .0506, the company submitted its Title V application to the DAQ on March 20, 2002. The application was considered complete for processing on March 27, 2002.

III. Facility Description

Progress Energy Carolinas, Inc.'s Richmond County Combustion Turbine Facility is located in Hamlet, Richmond County, North Carolina. The facility operates a 1,600 MW combustion turbine electric generation facility. The facility consists of (i) five dual fuel General Electric PG 7241 FA, simple cycle combustion turbines using dry low NOx (DLN) combustors and having water injection capability for NOx control (ii) two dual fuel General Electric PG 7241 FA, combined cycle combustion turbines using DLN combustors, and having selective catalytic reduction (SCR) control and water injection capability for NOx control, (iii) four No. 2 fuel oil storage tanks, (iv) one cooling tower with drift eliminator, and (v) three natural gas fired auxiliary boilers.

This facility operates under SIC code 4911.

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. During the last compliance inspection of August 7, 2002, the facility was found to be in compliance with all applicable requirements at that time.

V. Summary of Emission Sources and Control Devices

The following table identifies all emission sources and associated control devices for which the Initial Title V Operating Permit is being issued.

Emission Source I.D. No.	Emission Source Description	Control Device I.D. No.	Control Device Description
Unit 1, Unit 2, Unit 3, Unit 4, and Unit 6 PSD NSPS Subpart GG	five natural gas/No. 2 fuel oil-fired simple-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with dual fuel dry Low-NOx combustors when firing natural gas and water injection when firing No. 2 fuel oil for NO_x control	N/A	No Controls

Unit 7 and Unit 8 PSD NSPS Subpart GG	two natural gas/No. 2 fuel oil-fired combined-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with a heat recovery steam generator and a steam turbine, and dual fuel dry Low-NOx combustors when firing natural gas and water injection when firing No. 2 fuel oil for NO_x control	Unit 7 SCR Unit 8 SCR	selective catalytic reduction (SCR)
TK-1 and TK-2 PSD NSPS Subpart Kb	two No. 2 fuel oil, fixed-roof storage tanks (not to exceed 5 million gallons capacity each, actual capacity 3.1 million gallons each) with atmospheric vents	N/A	No Controls
TK-3 and TK-4 PSD NSPS Subpart Kb	two No. 2 fuel oil, fixed-roof storage tanks (not to exceed 3.1 million gallons capacity each)	N/A	No Controls
Tower 4 PSD	one cooling tower with drift eliminators (123,220 gallons per minute recirculating water flow rate)	N/A	No Controls
ES-10, ES-11, and ES-12 PSD NSPS Subpart Dc	three natural gas fired auxiliary boilers (16.74 million Btu per hour heat input rate each)	N/A	No Controls

VI. Emission Source-by-Source Evaluation

A. Five natural gas/No. 2 fuel oil-fired simple-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with dual fuel dry Low-NOx combustors when firing natural gas and water injection when firing No. 2 fuel oil for NO_x control (ID Nos. Unit 1, Unit 2, Unit 3, Unit 4, and Unit 6)

1. Description

   These are simple cycle combustion turbines used for peaking power demand. These turbines were constructed in 2001-2002.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions	State-only requirement 20 percent opacity (except during startup, shutdowns, and malfunctions) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period	15A NCAC 2D .0521
	20 percent opacity (except during startups) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period	40 CFR 52 Subpart II
sulfur dioxide	as defined in specific conditions	15A NCAC 2D .0524 (40 CFR Part 60 Subpart GG)
nitrogen oxides	as defined in specific conditions	15A NCAC 2D .0524 (40 CFR Part 60 Subpart GG)
	as defined in specific conditions	15A NCAC 2D .1417
various	as defined in specific conditions	15A NCAC 2D .0530
hazardous air pollutants	as defined in specific conditions and Section VII	15A NCAC 2D .1112
toxic air pollutants	as defined in specific conditions and Section VII State-only Requirement	15A NCAC 2D .1104

a. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

Visible emissions (except during startup, shutdowns, and malfunctions) shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971. This is a state-only requirement.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, the Permittee shall perform a Method 9 test for 1 hour using a preapproved protocol to be submitted in accordance with 15A NCAC 2D

.0501(c)(8) and General Condition JJ before the source operates more than 1100 hours using No. 2 fuel oil. This monitoring procedure shall be repeated before each subsequent 1100 hours of operation from the last test. No opacity monitoring is required while the source is burning natural gas.

The Permittee shall record the results of monitoring in a logbook.

iii. Reporting Requirements

The permittee shall submit the results of the Method 9 test within 30 days of completion of the test or at the end of the quarter.

b. 40 CFR 52 Subpart II "North Carolina State Implementation Plan"

i. Regulatory Analysis

Visible emissions (except during startups) shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for visible emissions from these combustion turbines to assure compliance with this regulation.

c. 2D .0524 "New Source Performance Standards (40 CFR Part 60 Subpart GG, Standards of Performance for Stationary Gas Turbines"

i. Regulatory Analysis

Emissions of SO_2 shall not exceed 0.015% by volume SO_2 in exhaust at 15 percent O_2 on a dry basis or 0.8% by weight sulfur in fuel.

Emissions of NO_X shall not exceed:

$$STD = 0.0075(14.4/Y) + F$$

where: STD = allowable nitrogen oxides emissions in percent by volume at 15 percent O_2 on a dry basis.

Y = manufacturer's rated heat rate at manufacturer's rated load or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. Y shall not exceed 14.43 kJ/w-h.

F = NOx emission allowance for fuel bound nitrogen as defined in 40CFR60.332(a)(3).

The permittee has demonstrated compliance with the above NSPS emission standards through stack tests conducted in May 2001 (for Units 1, 2, 3, and 4) and May 2002 (for Unit 6). In brief, the highest NOx emissions observed for Unit 1, 2, 3, 4, and 6 were 41.61 ppmvd, 36.91 ppmvd, 41.41 ppmvd, 41.79 ppmvd, and 38.56 ppmvd, respectively, when fired with No.2 fuel oil. Note that the NSPS limit is 75 ppmvd at 15% O_2. Please see the attached memorandums for a complete details.

Any additional stack testing for NOx or SO2 is not required at this time.

ii. Monitoring/Recordkeeping Requirements

In addition to any other monitoring requirements of the EPA, the Permittee is required to maintain records as follows:

(A) The sulfur content of the fuel being fired in each combustion turbine shall be monitored as specified in 40 CFR 60.334(b) to demonstrate compliance with the sulfur dioxide standard in 40 CFR 60.333, using the test methods and procedures in 40 CFR 60.335, except as follows:

(i) When firing fuel oil, as an alternate to sampling each occasion that fuel oil is transferred to each storage tank from any other source (as specified in 40 CFR 60.334(b)(1)), the Permittee may sample each tank to determine sulfur content after all shipments have been transferred into the tank and prior to placing the tank in service for supply to the turbines. Samples shall be analyzed for sulfur content in accordance with 40 CFR Part 75, Appendix D.

(ii) When firing natural gas, the procedures from 40 CFR Part 75, Appendix D shall be used to sample and analyze for sulfur content.

If the sulfur content of the fuel burned in each combustion turbine is not monitored as specified above or the sulfur dioxide emission rate of combustion turbine is above the limit given in Section VI. A. 2. c. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524.

(B) The nitrogen content of the fuel being fired in each combustion turbine shall be monitored as specified in 40 CFR 60.334(b) to demonstrate compliance with the nitrogen oxides standard as specified in 40 CFR 60.332, using the test methods and procedures in 40 CFR 60.335, except as follows:

(i) When firing fuel oil, as an alternate to sampling each occasion that fuel oil is transferred to each storage tank from any other source (as specified in 40 CFR 60.334(b)(1)), the Permittee may sample each tank to determine nitrogen content after all shipments have been transferred into the tank and prior to placing the tank in service for supply to the turbines. Samples shall be analyzed for nitrogen content in accordance with ASTM Method D4629.

Monitoring of fuel nitrogen shall not be required while pipeline natural gas is the only fuel being fired in the combustion turbines.

If the nitrogen content of the fuel burned in each combustion turbine is not monitored as specified above or the nitrogen oxides emission rate of any combustion turbine is above the limit given in Section VI. A. 2. c. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524.

(C) As required by 40 CFR 60.334(a), using the test methods and procedures in 40 CFR 60.335(c)(2), a continuous monitoring system shall be installed and operated to monitor and record fuel consumption and the ratio of water-to-fuel when firing fuel oil in each combustion turbine. The monitoring device shall be calibrated and maintained in accordance with the manufacturer's specifications. This system shall be accurate to within ±5.0 percent and must be approved by the Division of Air Quality prior to initial testing. The permittee shall comply with the requirements of 40 CFR Part 60, Appendix B, Performance Specifications and Appendix F, Quality Assurance Procedures for continuous monitoring systems, installed on each combustion turbine (ID Nos. Unit 1 through Unit 4, and Unit 6).

If the fuel consumption or the ratio of water-to-fuel being fired is not monitored and recorded continuously, for each combustion turbine (ID Nos. Unit 1 through Unit 4, and Unit 6), the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524.

iii. Reporting Requirements

In addition to any other reporting requirements to the EPA, the Permittee is required to REPORT the Regional Supervisor, DAQ, in WRITING, of the following:

(A) For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions for sulfur dioxide shall be reported for any daily period during which the sulfur content of the fuel being fired exceeds 0.8 percent by weight, within thirty days after each calendar year quarter for the previous 3-month period;
(B) The Permittee shall submit an excess emissions (calculated according to the requirements of 40 CFR 60.13(h)) and monitoring systems performance report

and/or a summary report form and monitoring report for the nitrogen oxide CEMS within 30 days after each calendar year quarter for the previous 3-month period. Written reports shall include information required in 40 CFR 60.7(c) and (d). This report shall also contain a clearly calculated corresponding emission limitation as specified in 40 CFR 60.332; and

(C) The Permittee shall submit in writing the sulfur content of the No. 2 fuel oil fired in the combustion turbines and the number of hours of operation of each combustion turbine, within 30 days after each calendar year quarter for the previous 3-month period.

All instances of deviations from the requirements of this permit must be clearly identified.

d. 2D .0530 "Prevention of Significant Deterioration"

i. Regulatory Analysis

These turbines are existing PSD major sources.

The following Best Available Control Technology (BACT) limits shall not be exceeded:

(A) Short term maximum emission rates for each simple-cycle combustion turbine (ID No. Unit 1 through Unit 4, and Unit 6) shall not exceed:

AFFECTED SOURCE	POLLUTANT	BACT EMISSION LIMITS [a]		BACT CONTROLS
		Natural Gas lb/mmBtu ppm	No. 2 Fuel Oil lb/mmBtu ppm	
combustion turbines (ID Nos. Unit 1 through Unit 4, and Unit 6), per turbine	opacity	20%	20%	combustion control
	nitrogen oxides	During initial BACT testing: 0.037 9 ppmvd [b] (24-hour rolling average) [c]	0.175 42 ppmvd [b] (24-hour rolling average) [c]	natural gas: dry-low NOx fuel oil: water injection
		After initial BACT testing: 0.043 10.5 ppmvd [b] (24-hour rolling average) [c]		
	sulfur dioxide	0.0006	0.054	0.05% sulfur fuel oil

	carbon monoxide	0.018 9 ppmvd	0.037 20 ppmvd	combustion control
	VOCs	0.0017 1.4 ppmvw	0.004 3.5 ppmvw	combustion control
	particulates/PM-10 (front half)	0.0055	0.009	combustion control
	sulfuric acid		fuel oil sulfur content	0.05% sulfur fuel oil

a BACT limits shall apply at all times except as provided under Section VI. A. 2. d. i. (B).

b ppmvd = parts per million by volume on a dry basis at 15% O_2.

c 24-hour rolling average is calculated using only actual operating hours (periods of zero emissions when not operating are not included).

(B) Emissions resulting from start-up, shutdown or malfunction above those given in Section VI. A. 2. d. i. (A) above are permitted provided that optimal operational practices are adhered to and periods of excess emissions are minimized. For the simple-cycle turbines, periods of excess emissions due to start-up and/or shutdown or operation below 50% load shall not exceed two hours in any 24-hour block period beginning at midnight. Start-up is defined as the period from initial firing to 50% load. Shutdown is defined as the period from 50% load to flame out.

(C) The following emission limits apply in order to demonstrate compliance with the National Ambient Air Quality Standards as required by 15A NCAC 2D .0530; 40 CFR 51.166(k):

AFFECTED SOURCE	POLLUTANT	EMISSION LIMIT				
		Annual (tons/yr)[a]	per 24-hour (lb)	per 8-hour (lb)	per 3-hour (lb)	per 1-hour (lb)
combustion turbines (ID Nos. Unit 1 through Unit 4, Unit 6, Unit 7, and Unit 8), total	nitrogen dioxide	1200.6				
	sulfur dioxide	357.4	16,632		2079	
	carbon monoxide	528.5		3696		462
	VOCs	55.0				
	particulates/PM-10 (front half)	151.8	2856			

[a] Tons per rolling consecutive 12-month period. Annual emissions for the combustion turbines are for all seven turbines firing fuel oil for 1000 hours per year, five simple-cycle turbines firing natural gas for 1000 hours per year and two combined-cycle turbines firing natural gas for 7760 hours per year, at 100% load.

The permittee has demonstrated compliance with BACT emission limits, included above, by testing Unit 1, one of the five simple cycle turbines, in May 2001. The results were the following:

NOx : 41.61 ppmvd @ 15% O2 at 100% load using No.2 fuel oil
8.17 ppmvd @ 15% O2 at 100% load using natural gas

CO : 0.93 ppmvd @ 15% O2 at 85% load using No.2 fuel oil
0.52 ppmvd @ 15% O2 at 85% load using natural gas

VOCs : 1.24 ppmvw @ 15% O2 at 70% load using No. 2 fuel oil
0.65 ppmvw @ 15% O2 at 100% load using natural gas

Refer to attached memorandums for a completed details on BACT testing results. Additional testing is not required at this time.

ii. Monitoring and Recordkeeping Requirements

The following monitoring/recordkeeping requirements apply to these turbines:

(A) The maximum annual hours of operation for each combustion turbine (ID Nos. Unit 1 through Unit 4, and Unit 6) shall not exceed 1000 full load equivalent hours per rolling consecutive 12-month period when firing No. 2 fuel oil.

(B) The maximum annual hours of operation for each simple-cycle combustion turbine (ID Nos. Unit 1 through Unit 4, and Unit 6) shall not exceed 2000 full load equivalent hours per rolling consecutive 12-month period.

(C) The Permittee shall record and maintain records of the actual number of hours of operation, and the amounts of each fuel burned during each day for each combustion turbine in accordance with 40 CFR Part 75. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not maintained.

(D) Only natural gas shall be burned during summer months (April through October) except during operational curtailment of interruptible transportation, Force Majeure events, malfunctions, functional equipment testing (periods not to exceed one hour per week per turbine), and during compliance testing.

(E) The sulfur content of the No. 2 fuel oil shall not exceed 0.05 percent sulfur by weight.

(F) Water injection shall be used when the combustion turbines are firing No. 2 fuel oil only.

(G) The Permittee shall monitor operations to demonstrate compliance with the BACT emission limits as follows:

Determine the sulfur content of the fuel being fired in each combustion turbine in accordance with Section VI. A. 2. c. ii. (A).

Determine nitrogen oxide emissions as specified in 40 CFR Part 75 Appendix E. At least 45 days prior to performing any required initial performance testing required by the procedure in Appendix E, the Permittee must submit a testing protocol to the Regional Supervisor, Division of Air Quality for review and approval prior to performing such tests.
Note: If Appendix E is being used in lieu of a NO_X CEM under the Acid Rain Program, then certification to use Appendix E shall be completed no later than the applicable deadline specified in 40 CFR Part 75.4 pursuant to the requirements in §75.20.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the sulfur content of the fuel is not monitored or the nitrogen oxide emissions are not monitored.

iii. Reporting Requirements

The following reporting requirements apply to the turbines:

(A) The Permittee shall submit in writing the following reports by January 30 of each calendar year for the preceding three-month period between October and December, April 30 of each calendar year for the preceding three-month period between January and March, July 30 of each calendar year for the preceding three-month period between April and June, and October 30 of each calendar year for the preceding three-month period between July and September:

(i) periods of excess emissions for sulfur dioxide for any daily period during which the sulfur content of the No. 2 fuel oil being fired exceeds 0.05 percent by weight, within 30 days after each calendar year quarter for the previous 3-month period; and

(ii) periods of excess emissions for nitrogen oxides for any 24-hour rolling averaging period during which the concentrations exceed 0.043 lb/mmBtu (10.5 ppmvd) when firing natural gas and 0.175 lb/mmBtu (42 ppmvd) when firing No. 2 fuel oil, as determined by the procedure specified in 40 CFR Part 75 Appendix E, postmarked within 30 days after each calendar year quarter for the previous 3-month period. The 24-hour rolling average is calculated using only actual operating hours (periods of zero emissions when not operating are not included). A valid hourly emission rate shall be calculated for each hour in which at least two NO_X concentrations are obtained at loads above 50 percent at least 15 minutes apart.

e. <u>2D .1417 Emission Allocations for Large Combustion Sources</u>

i. Regulatory Analysis

Before the EPA promulgation of revisions after November 1, 2000, to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply beginning May 31 through September 30, 2004 and May 1 through September 30, 2005 and each year thereafter until revised according to 15A NCAC 2D .1420, except as allowed by 15A NCAC 2D .1419:

SOURCE	NO_x EMISSION ALLOCATIONS (tons/season)		
	2004	2005	2006 and later
Combustion Turbine (ID No. ES1)	22	27	27
Combustion Turbine (ID No. ES2)	22	27	27
Combustion Turbine (ID No. ES3)	22	27	27
Combustion Turbine (ID No. ES4)	22	27	27
Combustion Turbine (ID No. ES6)	22	28	28

After the EPA promulgates revisions after November 1, 2000, to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply beginning May 31 through September 30, 2004 and May 1 through September 30, 2005 and each year thereafter until revised according to 15A NCAC 2D .1420, except as allowed by 15A NCAC 2D .1419:

SOURCE	NO_x EMISSION ALLOCATIONS (tons/season)		
	2004	2005	2006 and later
Combustion Turbine (ID No. ES1)	22	27	27
Combustion Turbine (ID No. ES2)	22	27	27
Combustion Turbine (ID No. ES3)	22	27	27
Combustion Turbine (ID No. ES4)	22	27	27
Combustion Turbine (ID No. ES6)	22	28	28

Sources (ID Nos. Unit 1 through Unit 4, and Unit 6) shall comply with the

requirements of 15A NCAC 2D .1417 using the nitrogen oxide budget trading program set out in 15A NCAC 2D .1419.

ii. Monitoring/Recordkeeping/Reporting Requirements

The Permittee shall assure compliance with 15A NCAC 2D .1417 by determining nitrogen oxide emissions in tons per ozone season using a continuous emissions monitoring (CEM) system that meets the requirements of 40 CFR Part 75 Subpart H, with such exceptions as allowed under 40 CFR Part 75, Subpart H or 40 CFR 96. The Permittee shall also comply with 40 CFR 96, Budget Trading Program for State Implementation Plans, for recordkeeping and reporting requirements. All instances of deviations from the requirements of this permit must be clearly identified. If the nitrogen oxides emissions for any ozone season exceed the applicable emission allocations indicated above or the recordkeeping requirements are not complied with, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .1417.

B. Two natural gas/No. 2 fuel oil-fired combined-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with a heat recovery steam generator and a steam turbine, and dual fuel dry Low-NOx combustors when firing natural gas and water injection when firing No. 2 fuel oil for NO_X control (ID Nos. Unit 7 and Unit 8), and associated SCRs (ID No. Unit 7 SCR and Unit 8 SCR)

1. Description

These are combined cycle combustion turbines. These turbines were constructed in 2002.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation

visible emissions	State-only requirement 20 percent opacity (except during startup, shutdowns, and malfunctions) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period 20 percent opacity (except during startups) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period	15A NCAC 2D .0521 40 CFR 52 Subpart II
sulfur dioxide	as defined in specific conditions	15A NCAC 2D .0524 (40 CFR Part 60 Subpart GG)
nitrogen oxides	as defined in specific conditions as defined in specific conditions	15A NCAC 2D .0524 (40 CFR Part 60 Subpart GG) 15A NCAC 2D .1417
various	as defined in specific conditions	15A NCAC 2D .0530
hazardous air pollutants	as defined in specific conditions and Section 2.2 A.1.	15A NCAC 2D .1112
toxic air pollutants	as defined in specific conditions and Section 2.2 A.2., State-only Requirement	15A NCAC 2D .1104

a. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

Visible emissions (except during startup, shutdowns, and malfunctions) shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971. This is a state-only requirement.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, the Permittee shall perform a Method 9 test for 1 hour using a preapproved protocol to be submitted in accordance with 15A NCAC 2D .0501(c)(8) and General Condition JJ before the source operates more than 1100 hours using No. 2 fuel oil. This monitoring procedure shall be repeated before each subsequent 1100 hours of operation from the last test. No opacity monitoring is required while the source is burning natural gas.

The Permittee shall record the results of monitoring in a logbook.

iii. Reporting Requirements

The permittee shall submit the results of the Method 9 test within 30 days of completion of the test or at the end of the quarter.

b. 40 CFR 52 Subpart II "North Carolina State Implementation Plan"

i. Regulatory Analysis

Visible emissions (except during startups) shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for visible emissions from these combustion turbines to assure compliance with this regulation.

c. 2D .0524 "New Source Performance Standards (40 CFR Part 60 Subpart GG, Standards of Performance for Stationary Gas Turbines"

i. Regulatory Analysis

Emissions of SO_2 shall not exceed 0.015% by volume SO_2 in exhaust at 15 percent O_2 on a dry basis or 0.8% by weight sulfur in fuel.

Emissions of NO_X shall not exceed:

$STD = 0.0075(14.4/Y) + F$

where: STD = allowable nitrogen oxides emissions in percent by volume at 15 percent O_2 on a dry basis.

Y = manufacturer's rated heat rate at manufacturer's rated load or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. Y shall not exceed 14.43 kJ/w-h.

F = NOx emission allowance for fuel bound nitrogen as defined in 40CFR60.332(a)(3).

The permittee has demonstrated compliance with the above NSPS emission standards through stack tests conducted in May 2002. In brief, the highest NOx emissions observed for Unit 7 and 8 were 1.17 ppmvd and 1.26 ppmvd, respectively, when fired with No.2 fuel oil. Note that the NSPS limit is 75 ppmvd at

15% O_2. Please see the attached memorandums for a complete details.

Any new stack testing for NOx or SO2 is not required at this time.

ii. Monitoring/Recordkeeping Requirements

In addition to any other monitoring requirements of the EPA, the Permittee is required to maintain records as follows:

(A) The sulfur content of the fuel being fired in each combustion turbine shall be monitored as specified in 40 CFR 60.334(b) to demonstrate compliance with the sulfur dioxide standard in 40 CFR 60.333, using the test methods and procedures in 40 CFR 60.335, except as follows:

(i) When firing fuel oil, as an alternate to sampling each occasion that fuel oil is transferred to each storage tank from any other source (as specified in 40 CFR 60.334(b)(1)), the Permittee may sample each tank to determine sulfur content after all shipments have been transferred into the tank and prior to placing the tank in service for supply to the turbines. Samples shall be analyzed for sulfur content in accordance with 40 CFR Part 75, Appendix D.

(B) As an alternate to the continuous water-to-fuel injection rate monitoring and fuel monitoring requirements specified in 40 CFR 60.334(a) and (b), the Permittee shall demonstrate compliance with the nitrogen oxide emission limit in 40 CFR 60.332 for each combustion turbine using a nitrogen oxide continuous emissions monitoring system (CEMS) meeting the following requirements:

(i) Each CEMS shall meet the applicable requirements of 40 CFR Part 75 for certifying, maintaining, operating and assuring quality of the system.

(ii) Each CEMS must be capable of calculating nitrogen oxide emissions concentrations corrected to 15% O_2.

(iii) The Permittee shall maintain records of the ambient temperature, ambient humidity and combustor inlet pressure so that the CEMS data can be corrected to ISO standard ambient conditions anytime in the future to demonstrate compliance with the emission standard if requested by the Division of Air Quality. As an alternate to maintaining the above records, the ISO correction for NO_X may be made by turbine internal control algorithm if approved by DAQ.

(iv) Monitor data availability shall be as determined by 40 CFR Part 75.

(v) Each CEMS should provide a minimum of 2 data points for each hour and calculate a l-hour average as per 40 CFR Part 75.

(vi) Recordkeeping requirements shall follow the requirements specified in 40 CFR 60.7.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524 if the records required in Section VI. B. 2. c. ii. above are not kept or nitrogen oxide emissions are not monitored using CEMs as required in Section VI. B. 2. c. ii. (B) or the nitrogen oxide emission rate of combustion turbine is above the limit given in Section VI. B. 2. c. i. above.

iii. Reporting Requirements

In addition to any other reporting requirements to the EPA, the Permittee is required to REPORT the Regional Supervisor, DAQ, in WRITING, of the following:

(A) Periods of excess emissions for sulfur dioxide, in accordance with 40 CFR 60.7(c), for any daily period during which the sulfur content of the fuel being fired exceeds 0.8 percent by weight, within 30 days after each calendar year quarter for the previous 3-month period;

(B) An excess emissions (calculated according to the requirements of 40 CFR 60.13(h)) and monitoring systems performance report and/or a summary report form and monitoring report for the nitrogen oxide CEMS within 30 days after each calendar year quarter for the previous 3-month period. Written reports shall include information required in 40 CFR 60.7(c) and (d). This report shall also contain a clearly calculated corresponding emission limitation as specified in 40 CFR 60.332; and

(C) The sulfur content of the No. 2 fuel oil fired in the combustion turbines and the number of hours of operation of each combustion turbine, within 30 days after each calendar year quarter for the previous 3-month period.

d. 2D .0530 "Prevention of Significant Deterioration"

i. Regulatory Analysis

These turbines are existing PSD major sources.

The following Best Available Control Technology (BACT) limits shall not be exceeded:

(A) Short term maximum emission rates for each combined-cycle combustion turbine (ID Nos. Unit 7 and Unit 8) shall not exceed:

AFFECTED SOURCE	POLLUTANT	BACT EMISSION LIMITS [a]		BACT CONTROLS
		Natural Gas lb/mmBtu ppm	No. 2 Fuel Oil lb/mmBtu ppm	
combustion turbines (ID Nos. Unit 7 and Unit 8), per unit	opacity	20%	20%	combustion control
	nitrogen oxides	0.010 2.5 ppmvd[b] (24-hour rolling average)[c,d]	0.054 13 ppmvd[b] (24-hour rolling average)[c,e]	natural gas: dry-low NOx and SCR fuel oil: water injection and SCR
	sulfur dioxide	0.0006	0.054	0.05% sulfur fuel oil
	carbon monoxide	0.018 9 ppmvd	0.037 20 ppmvd	combustion control
	VOCs	0.0017 1.4 ppmvw	0.004 3.5 ppmvw	combustion control
	particulates/PM-10 (front half)	0.0055	0.009	combustion control
	sulfuric acid		fuel oil sulfur content	0.05% sulfur fuel oil
	ammonia	10 ppmvd		

a BACT limits shall apply at all times except as provided under Section VI. B. 2. d. i. (C).

b ppmvd = parts per million by volume on a dry basis at 15% O_2.

c 24-hour rolling average is calculated using only actual operating hours (periods of zero emissions when not operating are not included).

d The NO_X emission limit is 2.5 ppmvd for the first 500 hours of operation (on a 24-hour rolling average basis). After 500 hours, the emission limit is 3.5 ppmvd (on a 24-hour rolling average basis). However, the ammonia injection rate shall not exceed that rate established per Section VI.B.2.d.ii.(F) at each load point. Three months after the 24-hour rolling average exceeds 3.3 ppmvd three times within any rolling 50 hour period, the emission limit changes to 2.5 ppmvd for the next 500 hours of operation. However, the Permittee will not be deemed to be out of compliance until the 24-hour rolling average exceeds 3.5 ppmvd during this three-month period. After any 500 hour period where the 2.5 ppmvd is maintained without exceedance of the 3.3 ppmvd trigger level, the limit reverts back to 3.5 ppmvd.

e The NO_X emission limit is 13 ppmvd for the first 500 hours of operation (on a 24-hour rolling average basis). After 500 hours, the emission limit is 18 ppmvd (on a 24-hour rolling average basis). However, the ammonia injection rate shall not exceed that rate established per Section VI.B.2.d.ii.(F) at each load point. Three months after the 24-hour rolling average exceeds 17 ppmvd three times within any rolling 50 hour period, the emission limit changes to 13 ppmvd for the next 500 hours of operation. However, the Permittee will not be deemed to be out of compliance until the 24-hour rolling average exceeds 18 ppmvd during this three-month period. After any 500 hour period where the 13 ppmvd is maintained without exceedance of the 17 ppmvd trigger level, the limit reverts back to 18 ppmvd.

(B) Emissions resulting from start-up, shutdown or malfunction above those given in Section VI. B. 2. d. i. (A) are permitted provided that optimal operational practices are adhered to and periods of excess emissions are minimized. For the combined-cycle turbines, periods of excess emissions due to start-up and/or shutdown or operation below 50% load shall not exceed six hours in any 24-hour block period beginning at midnight. Start-up is defined as the period from initial firing to 50% load. Shutdown is defined as the period from 50% load to flame out.

(C) The following emission limits apply in order to demonstrate compliance with the National Ambient Air Quality Standards as required by 15A NCAC 2D .0530; 40 CFR 51.166(k):

AFFECTED SOURCE	POLLUTANT	EMISSION LIMIT				
		Annual (tons/yr)[a]	per 24-hour (lb)	per 8-hour (lb)	per 3-hour (lb)	per 1-hour (lb)
combustion turbines (ID Nos. Unit 1 through Unit 4, Unit 6, Unit 7, and Unit 8), total	nitrogen dioxide	1200.6				
	sulfur dioxide	357.4	16,632		2079	
	carbon monoxide	528.5		3696		462
	VOCs	55.0				
	particulates/PM-10 (front half)	151.8	2856			

[a] Tons per rolling consecutive 12-month period. Annual emissions for the combustion turbines are for all seven turbines firing fuel oil for 1000 hours per year, five simple-cycle turbines firing natural gas for 1000 hours per year and two combined-cycle turbines firing natural gas for 7760 hours per year, at 100% load.

Unit 8 was tested (one of two combined cycle units) in May 2002 to demonstrate compliance with permitted BACT limits. The results showed compliance with the respective BACT limits. The stack test results are the following:

NOx : 1.26 ppmvd when fired with No. 2 fuel oil
0.06 ppmvd when fired with natural gas

CO : 0.87 ppmvd when fired with No. 2 fuel oil
0.48 ppmvd when fired with natural gas

VOCs : 0.38 ppmvw (as propane) when fired with No. 2 fuel oil
0.28 ppmvw (as propane) when fired with natural gas

NH3: 2.61 ppm when fired with No. 2 fuel oil

1.29 ppm when fired with natural gas

Refer to attached memorandums for a completed details on BACT testing results.

ii. Monitoring and Recordkeeping Requirements

The following monitoring/recordkeeping requirements apply to these turbines:

(A) The maximum annual hours of operation for each combustion turbine (ID No. Unit 7 and Unit 8) shall not exceed 1000 full load equivalent hours per rolling consecutive 12-month period when firing No. 2 fuel oil.

(B) The Permittee shall record and maintain records of the actual number of hours of operation, and the amounts of each fuel burned during each day for each combustion turbine (ID Nos. Unit 7 and Unit 8) in accordance with 40 CFR Part 75. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not maintained.

(C) Only natural gas shall be burned during summer months (April through October) except during operational curtailment of interruptible transportation, Force Majeure events, malfunctions, functional equipment testing (periods not to exceed one hour per week per turbine), and during compliance testing.

(D) The sulfur content of the No. 2 fuel oil shall not exceed 0.05 percent sulfur by weight.

(E) Water injection shall be used when the combustion turbines are firing No. 2 fuel oil only.

(F) For each combined-cycle combustion turbine (ID Nos. Unit 7 and Unit 8) compliance with the BACT NO_X and ammonia limits shall be demonstrated as follows for the selective catalytic reduction (SCR) system:

(i) The permittee shall install and operate an ammonia flow meter to measure and record the ammonia injection rate to the SCR system. The ammonia injection rates corresponding to a maximum ammonia slip of 10 ppmvd and necessary to comply with the BACT NO_X limits shall be established (and made available to the Division of Air Quality upon request) during the initial performance tests when firing No. 2 fuel oil and natural gas at 50, 70, 85 and 100 percent of peak load.

(ii) The SCR shall operate at all times that the turbine is operating except during turbine start-up and shutdown periods to the extent

recommended by the manufacturer and operated in a manner so as to minimize ammonia slip.

(iii) During NO_X CEM downtimes or malfunctions, the permittee shall operate at 100% of the ammonia injection rate determined during the performance test as specified in Section for each load range.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the nitrogen oxide emissions are not monitored using CEMs, as required in Section VI. B. 2. d. ii. above or the ammonia injection rate to the SCR system is not continuously measured and recorded, as required in Section VI. B. 2. c. ii. (B) above or nitrogen oxide or ammonia emission rate of combustion turbine is above the limit given in Section VI. B. 2. d. i. above.

(G) Under the provisions of North Carolina General Statute 143-215.108, for each combined-cycle combustion turbine (ID Nos. Unit 7 and Unit 8), the Permittee shall monitor operations to demonstrate compliance with the BACT emission limits as follows:

(i) Determine the sulfur content of the fuel being fired in each combustion turbine in accordance with Section VI. B. 2. c. ii. (A) (i).

(ii) Determine nitrogen oxide emissions as specified in Section VI. B. 2. c. ii. (B).

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the records required in Section VI. B. 2. d. ii. above are not kept or the nitrogen oxide emission rate of combustion turbine is above the limit given in Section VI. B. 2. d. i. above.

iii. Reporting Requirements

(A) The Permittee shall submit in writing the following reports by January 30 of each calendar year for the preceding three-month period between October and December, April 30 of each calendar year for the preceding three-month period between January and March, July 30 of each calendar year for the preceding three-month period between April and June, and October 30 of each calendar year for the preceding three-month period between July and September:

(i) periods of excess emissions for sulfur dioxide for any daily period during which the sulfur content of the No. 2 fuel oil being fired

exceeds 0.05 percent by weight, within 30 days after each calendar year quarter for the previous 3-month period; and

(ii) periods of excess emissions for nitrogen oxides for any 24-hour rolling averaging period during which the concentrations exceed 0.010 lb/mmBtu (2.5 ppmvd) when firing natural gas and 0.054 lb/mmBtu (13 ppmvd) when firing No. 2 fuel oil, as determined by the procedure specified in 40 CFR Part 75 Appendix E, postmarked within 30 days after each calendar year quarter for the previous 3-month period. The 24-hour rolling average is calculated using only actual operating hours (periods of zero emissions when not operating are not included). A valid hourly emission rate shall be calculated for each hour in which at least two NO_X concentrations are obtained at loads above 50 percent at least 15 minutes apart.

e. 2D .1417 Emission Allocations for Large Combustion Sources

i. Regulatory Analysis

a. Before the EPA promulgation of revisions after November 1, 2000, to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply beginning May 31 through September 30, 2004 and May 1 through September 30, 2005 and each year thereafter until revised according to 15A NCAC 2D .1420, except as allowed by 15A NCAC 2D .1419:

SOURCE	**NO_X EMISSION ALLOCATIONS (tons/ozone season)**		
	2004	**2005**	**2006 and later**
Combustion Turbine (ID No. Unit 7)	21	27	27
Combustion Turbine (ID No. Unit 8)	21	27	27

b. After the EPA promulgates revisions after November 1, 2000, to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply beginning May 31 through September 30, 2004 and May 1 through September 30, 2005 and each year thereafter until revised according to 15A NCAC 2D .1420, except as allowed by 15A NCAC 2D .1419:

SOURCE	NO_X EMISSION ALLOCATIONS (tons/ozone season)		
	2004	2005	2006 and later
Combustion Turbine (ID No. Unit 7)	21	27	27
Combustion Turbine (ID No. Unit 8)	21	27	27

c. Sources (ID Nos. Unit 7 and Unit 8) may comply with the requirements of 15A NCAC 2D .1417 using the nitrogen oxide budget trading program set out in 15A NCAC 2D .1419.

ii. Monitoring/Recordkeeping/Reporting Requirements

The Permittee shall assure compliance with 15A NCAC 2D .1417 by determining nitrogen oxide emissions in tons per ozone season using a continuous emissions monitoring (CEM) system that meets the requirements of 40 CFR Part 75 Subpart H, with such exceptions as allowed under 40 CFR Part 75, Subpart H or 40 CFR 96. The Permittee shall also comply with 40 CFR 96, Budget Trading Program for State Implementation Plans, for recordkeeping and reporting requirements. All instances of deviations from the requirements of this permit must be clearly identified. If the nitrogen oxides emissions for any ozone season exceed the applicable emission allocations indicated above or the recordkeeping requirements are not complied with, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .1417.

C. Two No. 2 fuel oil, fixed-roof storage tanks atmospheric vents(not to exceed 5 million gallons capacity each, actual capacity 3.1 million gallons each, ID Nos. TK-1 and TK-2)

Two No. 2 fuel oil, fixed-roof storage tanks with atmospheric vents (not to exceed 3.1 million gallons each, ID Nos. TK-3 and TK-4)

1. Description

Two storage tanks (TK-1 and TK2) have been constructed. The remaining tanks (TK-3 and TK-4) have not yet been constructed.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
NA	recordkeeping	15A NCAC 2D .0524 (40 CFR Part 60 Subpart Kb)

a. 2D .0524: "New Source Performance Standards" (40 CFR Part 60 Subpart Kb "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984")

i. Regulatory Analysis

These tanks are exempt from the VOC emission standards of NSPS Subpart Kb. Only recordkeeping requirements apply to them.

ii. Monitoring/Recordkeeping/Reporting Requirements

The capacity for each tank is 3.1 million gallons maximum, which equates to 11,733 m^3. Also the true vapor pressure of No. 2 fuel oil at 70^0F is 0.009 psi, which equates to 0.062 kPa. Since the vapor pressure is less than 3.5 kPa, these sources are exempt from the General Provisions and from any other provisions of Subpart Kb, except for the monitoring and recordkeeping under paragraph 60.116b, as per 60.110b(c). The dimensions and capacities of each storage vessel shall be kept as set forth in 40 CFR 60.116b(b). This record is to be kept for the life of the source.

b. 2D .0530 "Prevention of Significant Deterioration"

i. Regulatory Analysis

The long-term BACT emission rates of VOC have been modeled for these tanks.

The following emission limits apply in order to demonstrate compliance with the National Ambient Air Quality Standards as required by 15A NCAC 2D .0530; 40 CFR 51.166(k):

Affected Source	Pollutant	Emission Limit Annual tons/yr[a]
fuel oil storage tanks (ID Nos. TK1, TK2, TK3, and TK4), total	VOCs	11.58

[a] Tons per rolling consecutive 12-month period.

ii. Monitoring/Recordkeeping/Reporting Requirements

(A) The combined maximum throughput for No. 2 fuel oil for four storage tanks shall not exceed 90,960,000 gallons per year.

(B) The Permittee shall keep records for the fuel consumed from each storage tank on a monthly basis for No. 2 fuel oil for four storage tanks in a written or electronic format. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the the amount of fuel used is not monitored or the combined annual throughput for four storage tanks exceed the limit included above in Section VI.C.2. b.i. above.

D. One cooling tower with drift eliminators (ID No. Tower 4)

1. Description

This is used to cool the water from the condenser of the steam turbine. The nominal capacity of this source is 123,220 gallons of recirculating water per minute. It is a source for PM/PM-10 emissions. This source has been constructed and is in operation.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P < = 30 tons per hour $E = 55.0P^{0.11}$ - 40 for P > 30 tons per hour where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
particulates/PM-10	as defined in specific conditions	15A NCAC 2D .0530

a. 2D .0515: "Particulates from Miscellaneous Industrial Processes"

i. Regulatory Analysis

The allowable particulate emissions are governed by the process rate, as per the equations given in the above Table. As per the Title V application, the potential emission rate for PM is 1.38 lbs per hour. Compliance is expected due to negligible PM emissions.

Testing is not required for verification of compliance with this emission limit as the PM emission rate is expected to be negligible.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required.

b. 2D .0530: "Prevention of Significant Deterioration"

i Regulatory Analysis

The following emission limits apply in order to demonstrate compliance with the National Ambient Air Quality Standards as required by 15A NCAC 2D .0530; 40 CFR 51.166(k):

AFFECTED SOURCE	**POLLUTANT**	**EMISSION LIMIT**	
		Annual tons/yr[a]	Daily lbs/day
Cooling Tower (ID No. Tower 1)	particulate/PM-10	6.0	33.12

[a] Tons per rolling consecutive 12-month period.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for particulate emissions from this source.

E. Three natural gas fired auxiliary boilers (16.74 million Btu per hour heat input rate each, ID No. ES-10, ES-11, and ES-12)

1. Description

These are natural gas fired auxiliary boilers. Currently, only boiler ES-10 is in operation. Boilers ES-11 and ES-12 have not yet been constructed.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	0.395 pound per million Btu heat input	15A NCAC 2D .0503
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	State-only requirement 20 percent opacity (except during startup, shutdowns, and malfunctions) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period 20 percent opacity (except during startups) when averaged over a six-minute period except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period	15A NCAC 2D .0521 40 CFR 52 Subpart II
None	recordkeeping	15A NCAC 2D .0524 (40 CFR 60 Subpart Dc)
various	as defined in specific conditions	15A NCAC 2D .0530

a. 2D .0503(a) "Particulates from Fuel Burning Indirect Heat Exchangers"

i. Regulatory Analysis

This rule applies to installations burning fuel, including natural gas and fuel oils, for the purpose of producing heat or power by indirect heat transfer.

Allowable emissions of particulate matter from fuel combustion shall be calculated as follows:

$$E = 1.090\ Q^{-0.2594}$$

where: E = allowable particulate emission rate, pounds per million Btu

Q = maximum heat input rate (total at plant site), million Btu per hour

Allowable particulate emissions for each boiler is determined to be 0.395 lb per million

Btu, from the above equation, with a heat input rate, Q, of 50.22 million Btu per hour. Therefore allowable particulate emissions for each boiler will be

(0.395 lb/mmBtu)(16.74 mmBtu/hr) = 6.61 lb/hr

There are no control devices to control particulates. Potential particulate emissions as reported in the Title V application are only 0.187 lb/hr, which are based upon the manufacturer's data. Since the potential emission rate of PM is less than the 2D .0503 allowable, compliance is indicated.

Note that the current permit lists 2D .0503 allowable as 0.094 lb per million Btu. This will be corrected and the Title V permit will include the allowable PM emission rate as 0.395 lb per million Btu, as estimated above.

ii. Monitoring/Recordkeeping/Reporting Requirements

Since the potential particulate emissions are less than the allowable, no monitoring, recordkeeping or reporting are required. Stack testing is not required to ensure compliance with this regulation. However, the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required.

a. <u>2D .0516 "Sulfur Dioxide Emissions form Combustion Sources"</u>

i. Regulatory Analysis

This source is subject to the emission limit of 2.3 pounds per million Btu. Based on a maximum firing rate of 16.74 million Btu/hr, the allowable emission rate of SO2 will be 38.5 lb/hr. The Title V application indicates, as per manufacturer's data, that the potential emission rate of SO2 will be only 0.017 lb/hr. Hence, the compliance with this requirement is indicated.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

b. <u>2D .0521 "Control of Visible Emissions"</u>

i. Regulatory Analysis

Visible emissions (except during startup, shutdowns, and malfunctions) shall not exceed 20 percent opacity when averaged over a six-minute period for sources

established after July 1, 1971. This is a state-only requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for visible emissions from the firing of natural gas in this source.

c. 40 CFR 52 Subpart II "North Carolina State Implementation Plan"

i. Regulatory Analysis

Visible emissions (except during startups) shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for visible emissions from this source to assure compliance with the this regulation.

d. 2D .0524 "New Source Performance Standards" (40 CFR60 Subpart Dc "Standards of Perfromance for Small Industrial-Commercial-Institutional Steam Generating Units")

i. Regulatory Analysis

There are not any emission limits which the natural gas fired boilers are subject to in this NSPS. Only the following recordkeeping requirements apply.

ii. Recordkeeping Requirements

The Permittee shall record and maintain records of the amounts of each fuel combusted during each month. Such records shall be maintained for a period of two years following the date of such record.

e. 2D .0530: “Prevention of Significant Deterioration"

i Regulatory Analysis

The following emission limits apply in order to demonstrate compliance with the National Ambient Air Quality Standards as required by 15A NCAC 2D .0530; 40 CFR 51.166(k):

AFFECTED SOURCE	POLLUTANT	EMISSION LIMIT				
		Annual (tons/yr)[a]	per 24-hour (lb)	per 8-hour (lb)	per 3-hour (lb)	per 1-hour (lb)
three auxiliary boilers (ID Nos. ES-10, ES-11, and ES-12), total	nitrogen dioxide	2.20				
	sulfur dioxide	0.35	6.77		0.85	
	carbon monoxide	2.32		14.88		
	VOCs	1.01				
	particulates/PM-10 (filterable and condensible)	0.63	12.02			

[a] Tons per rolling consecutive 12-month period. Annual emissions for the auxiliary boilers are for all three boilers, operating for 24 hrs per day and 2500 hours per year.

ii. Monitoring/Recordkeeping Requirements

The maximum annual hours of operation for each auxiliary boiler shall not exceed 2500 hours per rolling consecutive 12-month period. The Permittee shall record and maintain records of the actual number of hours of operation during each month for each auxiliary boiler (ID Nos. ES-10, ES-11, and ES-12). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not maintained.

iii. Reporting Requirements

The Permittee shall submit a summary report of monitoring and recordkeeping activities within 30 days after each calendar year quarter.

VII. Multiple Emission Source Limits

A. Five natural gas/No. 2 fuel oil-fired simple-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with dual fuel dry Low-NOx combustors and having water injection capability for NO_X control (ID Nos. Unit 1, Unit 2, Unit 3, Unit 4, and Unit 6)

Two natural gas/No. 2 fuel oil-fired combined-cycle internal combustion turbines (1,628 million Btu per hour heat input rate each, when firing natural gas, 1,819 million Btu per hour heat input rate each, when firing No. 2 fuel oil), each equipped with a heat recovery steam generator and a steam turbine, and dual fuel dry Low-NOx combustors and having water injection capability for NO_X control (ID Nos. Unit 7 and Unit 8), and associated SCRs (ID No. Unit 7 SCR and Unit 8 SCR)

These sources are subject to the following regulatory requirements:

1. 40 CFR 63.43: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT) DETERMINATIONS FOR CONSTRUCTED AND RECONSTRUCTED MAJOR SOURCES

   a. As a major source with the potential to emit 10 tons per year of any hazardous air pollutant (HAP), as listed in Section 112(b) of the federal Clean Air Act, or 25 tons per year of any combination of HAP, the Permittee shall apply proper combustion control to comply with the MACT requirements as promulgated in 40 CFR 63.43 "Maximum Achievable Control Technology (MACT) Determinations for Constructed and Reconstructed Major Sources."

State-only requirement

2. TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REPORTING REQUIREMENT

   a. Pursuant to 15A NCAC 2D .1100 "Control of Toxic Air Pollutants," and in accordance with the approved application for an air toxic compliance demonstration, the following permit limits shall not be exceeded:

Emission Source(s)	Toxic Air Pollutant(s)	Emission Limit(s)
combined cycle turbines (ID Nos. Unit 7 and Unit 8)	ammonia	54.5 lb/hr[1]

VIII. Schedule of Compliance

Not Applicable.

IX. Phase II Acid Rain Requirements

The acid rain permit for these turbines is effective from January 1, 2001 through December 31, 2005.

i. Statement of Basis

Statutory and Regulatory Authorities: In accordance with the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended and Titles IV and V of

[1] Only ammonia emissions resulting from ammonia slip due to operation of SCRs on these turbines are subject to NC air toxic program requirements. Ammonia emissions resulting from combustion of fuels in these turbines are not subject to this requirement at this time. In brief, the current permit incorrectly includes the ammonia emissions from combustion of fuel oil for NC air toxic program review.

the Clean Air Act, the Department of Environment and Natural Resources, Division of Air Quality issues this permit pursuant to Title 15A North Carolina Administrative Codes, Subchapter 2Q .0400 and 2Q .0500, and other applicable Laws.

ii. SO_2 Allowance Allocations and NO_x Requirements for each affected unit

		2001	2002	2003	2004	2005
Unit 1 through Unit 5	SO_2 allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	NA*	NA*	NA*	NA*	NA*
	NO_x limit	NA**				

* SO_2 allowances are not allocated by U.S. EPA for new units under 40 CFR part 72.

** Does not apply for combustion turbine units.

iii. Comments, Notes and Justifications

None.

iv. Phase II Permit Application

The Phase II Permit Application submitted for this facility, as approved by the Department of Environment and Natural Resources, Division of Air Quality, are part of this permit. The owners and operators of these Phase II acid rain sources must comply with the standard requirements and special provisions set forth in the attached application.

X. Permit Shield (including non-applicable requirements)

In accordance with 2Q .0512, the permit will contain a provision stating that compliance with the terms, conditions, and limitations of the Title V permit shall be deemed in compliance with applicable requirements specifically identified in the permit, as of the date of permit issuance. If the permit does not expressly state that a permit shield exists then it shall be presumed not to provide such a shield.

XI. Insignificant Activities

The insignificant activities listed in the application have been reviewed and verified.

Although each insignificant activity is not listed in the Title V permit, a general condition is placed in the Title V permit stating that all insignificant activities shall comply with the applicable requirements. Those sources which qualify for exemption from permitting under regulation 2Q .0503(8) will be attached to the cover letter of the permit.

XII. General Conditions

The "General Conditions" section of the Title V Operating Permit lists additional applicable rule requirements that the permittee must adhere to, as with any other permit condition. These requirements in general are common to all Title V facilities. The general conditions include provisions such as annual fee payment, permit renewal and expiration, transfer of ownership or operation, property rights, submission of documents, inspections and entry procedures, reopen for cause, and severability.

XIII. Public Notice

Pursuant to 15A NCAC 2Q. 0521, a notice of the DRAFT Title V Operating Permit will be published in a newspaper of general circulation in the area where the facility is located. The notice will provide a 30 day comment period with an opportunity for a public hearing. Copies of the public notice will be sent to persons on the Title V mailing list, and EPA. In addition, notice of the DRAFT permit and opportunity for participation will also given to any affected state on or before the time that the notice is provided to the public. Affected states as specified by 15A NCAC 2Q .0503(1) and 40 CFR 70.8(b) were South Carolina, North Carolina local air pollution control programs for Mecklenburg County and Forsyth County, and Catawba Indian Nation.

The Title V permit will be proposed to EPA after the completion of public comment period.

It should be noted here that the draft permit was sent to FRO for comments on 4/15/03. FRO responded on 5/5/03 indicating that the permit looked ok and they didn't have any comments. Afterwards, the draft permit was sent to company on 5/5/03. Company responded on 5/21/03 with the comments. Please refer to company fax dated 5/21/03. Note that almost all comments are minor in nature except the one which is discussed below:

Comment 1:

Remove recordkeeping requirement for 2D .0521 from Section 2.1 A.1 d. and 2.1 B. 1.d.

DAQ Response:

The recordkeeping requirement of a logbook is a standard practice for all similar as well as other Title V sources. In fact, this is the same requirement which DAQ included in the issued Rowan LLC and Rockingham LLC Title V permits (similar Title V sources). The permittee is required to note in the logbook any VE observations/Mthod 9 test results above the emission standard, along with any corrective action taken to reduce the emissions, and the results of corrective action etc. The noncompliance with the emission standard is not the same as deviation with the underlying permit requirement. These type of instances cannot be reported through semiannual reporting as deviations. Also, the Method 9 test report is not expected to contain this type of information. Therefore, DAQ believes that recordkeeping requirements of

having a logbook is justified and adequate.

XIV. Recommendations

The initial Title V application for Progress Energy Carolinas, Inc.'s Richmond County Combustion Turbine Facility has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. The DAQ has made a determination that the facility is complying or will achieve compliance as specified in the Title V permit with all applicable requirements.