

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date:

Region: Fayetteville Regional Office
County: Richmond
NC Facility ID: 7700070
Inspector's Name: James Moser
Date of Last Inspection: 08/10/2010
Compliance Code: 3 / Compliance - inspection

Facility Data			Permit Applicability (this application only)
<p>Applicant (Facility's Name): Progress Energy Carolinas Inc. - Richmond Cty Comb Turbine</p> <p>Facility Address: Progress Energy Carolinas Inc. - Richmond Cty Comb Turbine 198 Energy Way Hamlet, NC 28345</p> <p>SIC: 4911 / Electric Services NAICS: 221112 / Fossil Fuel Electric Power Generation</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>			<p>SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other:</p>
Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	<p>Application Number: 7700070.07B Date Received: 11/27/2007 Application Type: Renewal Application Schedule: TV-Renewal</p> <p style="text-align: center;">Existing Permit Data</p> <p>Existing Permit Number: 08759/T11 Existing Permit Issue Date: 01/07/2010 Existing Permit Expiration Date: 03/31/2014</p>
Kim Kashmer Senior Environmental Specialist (910) 205-2111 P O Box 1009 Hamlet, NC 28353	Cecil Gurganus Plant Manager (910) 205-2101 198 Energy Way Hamlet, NC 28345	Ann Quillian Sr. Engr. (919) 546-6610 410 South Wilmington Street Raleigh, NC 27601	
<p>Review Engineer: Mike Gordon</p> <p>Review Engineer's Signature: _____ Date: _____</p>		<p style="text-align: center;">Comments / Recommendations:</p> <p>Issue 08759/T12 Permit Issue Date: Permit Expiration Date:</p>	

1. Purpose of Application

Progress Energy Carolinas, Inc. (Progress) submitted an application for renewal of their Title V permit on November 30, 2007. The permit is being renewed and is incorporating existing CAIR requirements under 15A NCAC 2D .2400, the associated removal of 15A NCAC 2D .1400, incorporation into the Title V Permit through a part II application process of previously authorized 15A NCAC 2Q .0501(c)2 changes to the facility, and a Part 2 MACT "Hammer" application for several natural gas fired heaters and two boilers, all rated between 2.6 and 16.74 million British thermal units per hour (MMBtu/hr). Consolidated into the renewal process are applications 7700070.07B, 7700070.09A, 7700070.09B (Acid Rain Application processed by Mr. Ed Martin, P.E.), 7700070.09C, and 7700070.09D.

2. Facility Description

Progress Energy Carolinas, Inc.- 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. Two of the four No. 2 fuel oil storage tanks (TK-3 and TK-4) and two of the three natural gas fired auxiliary boilers (ES-2 and ES-3) have not been constructed as of this permit issuance. Progress Energy may opt to remove these units with the permit renewal. This facility operates under SIC code 4911.

3. Permit Modifications/Changes

The following table describes the modifications to the current permit.

Old Page No.	New Page No.	Part, Section, or Condition No.	Change
-	-	Cover	Amended to reflect current permit number, issue date, effective date, and associated application information
Insignificant Activity List	Emissions Source Table	Attachment	Removed affected boilers (ID No. I-1) from the insignificant activity list.
-	-	Emissions Source Table	Updated Table to reflect changes to permit (addition of Case-by-Case MACT 112(j) designations, addition of I-1(now ES-19, ES-20, and ES-21) to the Title V permit, etc.)
-	-	Throughout	Removed 2Q .0501(c)2 statements related to operation in mode 6/6Q and the incorporation of NOx CEMS as an alternative method of compliance found in the emissions source table, Section 2.1.A, and 2.1.B (Significant modification application ID No. 7700070.09C has been incorporated into this renewal)
11-12	-	2.1.A.4	Removed NOx SIP requirements incorporated under 2D .2400. Requirements have been placed in the new Section 2.5 for CAIR
19-20	-	2.1.B.4	Removed NOx SIP requirements incorporated under 2D .2400. Requirements have been placed in the new Section 2.5 for CAIR

Old Page No.	New Page No.	Part, Section, or Condition No.	Change
42-44	-	2.1.F.7 to 2.1.F.9	Removed Federal Only and State Only requirements listed under 2D .1418 and 40 CFR 52 Subpart II. Requirements are now part of Section 2.5 (CAIR).
44	-	2.1 F.10	Removed this condition since acid rain application has been submitted.
-	-	2.1.E.6, 2.1.G.6, 2.1.H.5	Added Case-by-Case 112(j) requirements for natural gas boilers and heaters.
-	46-48	2.1.K	Added previously insignificant 8.75 MMBtu/hr natural gas heaters to the Title V permit due to 112(j) applicability and added corresponding requirements (ID No's. ES-21, ES-22, and ES-23)
-	48-50	2.1.L	Added previously insignificant 2.6 MMBtu/hr natural gas heaters to the Title V permit due to 112(j) applicability and added corresponding requirements (ID No's. ES-19 and ES-20)
	52	2.3	Revised Acid Rain Effective dates and application date. Added Units 13 and 14 to requirements.
-	53-54	2.4	Added CAIR Permit Section and attached associated application as part of this permit
Page 55	Page 55	General Conditions	Updated General Conditions to latest revision

4. Regulatory Review

a. Clean Air Interstate Rules

On December 23, 2008 The U.S. Court of Appeals for the D.C. Circuit ruled to remand the Clean Air Interstate Rule (CAIR) to the EPA and therefore leave CAIR and the CAIR Federal Implementation Plans, including the CAIR trading programs, in place until EPA issues a new rule to replace CAIR in accordance with the July 11, 2008 decision. EPA informed the Court that development and finalization of a replacement rule could take about two years.¹ On July 1, 2006 (Amended May 1, 2008) North Carolina issued rules under 15A NCAC 2D .2400 for implementation of the CAIR Program. North Carolina's rules have been approved by the Environmental Management Commission (EMC) and have now been approved by the EPA in December 2009; therefore the .2400 rules are now part of the State Implementation Plan. A permit section has been created for the incorporation of CAIR related rules under Section 2.5.

¹ See "State of North Carolina vs. EPA" Case No. 05-1244 U.S. Court of Appeals for the District of Columbia. December 23, 2008

The following are changes to Natural Gas (particularly the previously insignificant natural gas heaters):

- b. 15A NCAC 2D .0503 – Particulates from Fuel Burning Indirect Heat Exchangers – This regulation limits particulate matter (PM) emissions from the firing of fuel in indirect heat exchangers (in lb/MMBtu) based on the facility-wide heat input. Using AP-42 emission factors, PM emissions from natural gas are estimated as follows:

$$\frac{\left(7.6 \frac{\text{lbPM}_{total}}{\text{mmscf}}\right)}{1,020 \frac{\text{MMBtu}}{\text{mmscf}}} = 0.007 \frac{\text{lbPM}_{total}}{\text{mmBtu}}$$

Because worst-case PM emission rates are estimated to be less than the allowable PM emission rate, no monitoring, recordkeeping, or reporting shall be required to demonstrate compliance with this limitation.

- c. 15A NCAC 2D .0516– Sulfur Dioxide Emissions From Combustion Sources – This regulation limits sulfur dioxide (SO₂) emissions to no greater than 2.3 lb/MMBtu of heat input for combustion sources. Using AP-42 emission factors, SO₂ emissions from natural gas are estimated to be less than 2.3 lb/MMBtu, as follows:

$$\frac{\left(0.6 \frac{\text{lbSO}_2}{\text{mmscf}}\right)}{1,020 \frac{\text{MMBtu}}{\text{mmscf}}} = 0.0006 \frac{\text{lbSO}_2}{\text{mmBtu}}$$

Because worst-case SO₂ emission rates are estimated to be less than the allowable SO₂ emission rate, no monitoring, recordkeeping, or reporting shall be required to demonstrate compliance with this limitation.

- d. 15A NCAC 2D .0521 – Control of Visible Emissions – Visible emission (VE) standards provided in this regulation are applicable to potential VE emissions from any stack, vent, or outlet. This regulation limits visible emissions to no more than 20 percent opacity when averaged over a 6-minute period, except that 6-minute periods averaging more than 87 percent opacity may occur not more than once in any hour not more than four times in any 24-hour period. Because natural gas firing is associated with inherently low visible emissions, no monitoring, recordkeeping, or reporting shall be required to demonstrate compliance with this limitation.
- e. 15A NCAC 2D .1109 –Case-by-Case MACT – On July 20, 2007, the D.C. Circuit Court vacated the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, which had been promulgated under 40 CFR 63, Subpart DDDDD. The North Carolina Attorney General’s

office has determined that the NESHAP vacatur equates to the failure of the U.S. EPA to promulgate a standard as required under Section 112(d) of the Clean Air Act (CAA). As a result, the site-specific Maximum Achievable Control Technology (MACT) standards required under CAA §112(j), commonly referred to as the MACT “hammer” provisions, have been triggered. North Carolina regulations implementing the MACT hammer are found at 15A NCAC 2D .1109.

On August 21, 2009, the NC DAQ received a Part 2 MACT “Hammer” application from this facility asking that the NC DAQ establish 112(j) emissions limitations in accordance with NC DAQ’s recommendations.

No control technologies for the control of CO, metals, Hg, or HCl were identified for natural gas fired boilers in the state of North Carolina, nor were any such technologies identified in a North Carolina query using U.S. EPA’s AirControlNet software (v4.1). The NC DAQ has determined that MACT is the use of best work practice standards for natural gas combustion sources of this size, consistent with the provisions in CAA § 112(d)(2)(D). Best work practice standards in this case shall include the annual inspection and maintenance of the boiler as follows:

To assure compliance, the Permittee shall perform an annual boiler inspection and maintenance as recommended by the manufacturer, or as a minimum, the inspection and maintenance requirement shall include the following:

- i. Inspect the burner, and clean or replace any components of the burner as necessary;
- ii. Inspect the flame pattern and make any adjustments to the burner necessary to optimize the flame pattern; and,
- iii. Inspect the system controlling the air-to-fuel ratio, and ensure that it is correctly calibrated and functioning properly.

The Permittee shall conduct at least one tune-up per calendar year to demonstrate compliance with this requirement. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .1109 if the affected boilers are not inspected and maintained as required above.

In addition, the Permittee will be required to record the results of the annual inspection in a logbook (written or electronic format), which shall be retained on-site and made available to an authorized representative upon request.

5. Acid Rain Application

Progress Energy submitted an Acid Rain Permit Application for the Richmond facility dated May 5, 2009. However, the application inadvertently listed Unit 5 as an affected source; whereas there is no Unit 5 at the facility. Therefore, a revised application dated December 14, 2009, was submitted to correct the error, and will become part of the Title V permit (as an attachment).

In addition, the new Unit 13 and 14 turbines have now been included in the acid rain application.

This application 7700070.09B has been consolidated with the Title V renewal application 7700070.07B.

15A NCAC 2Q .0400 "Acid Rain Procedures" (40 CFR Part 72 "Permits Regulation")

North Carolina air quality regulation 15A NCAC 2Q .0400 implements Phase II of the federal acid rain program pursuant to Title IV of the CAA as provided in 40 CFR Part 72. Issuance or denial of acid rain permits shall follow the procedures under 40 CFR Part 70 (Title V) and Part 72. If the provisions or requirements of Part 72 conflict or are not included in Part 70, the Part 72 provisions and requirements shall apply and take precedence.

There are no SO₂ allowances allocated by U.S. EPA for new units under 40 CFR part 72. Also, there are no NO_x limits for gas or oil-fired units.

6. Permit History

Permit No.	Issuance Date	Description of Revision
08759T06	September 12, 2003	Initial TV Permit
08759T07	December 14, 2005	Significant modification that revised .0521 requirements and Acid Rain effective dates with new attached application.
08759T08	June 4, 2008	Significant Modification under 15A NCAC 2Q .0501(c)2. (Changes to startup/shutdown, CEMS as alternative compliance method)
08759T09	June 16, 2008	Incorporation of water injection into startup/shutdown, changed NO _x period for determining hourly emissions to coincide with 2.1.B.3(ii)
08759T10	April 2, 2009	Incorporation of new air emissions sources and modification to NO _x SIP requirements.
08759T11	January 7, 2010	Addition of two new insignificant activity sources to the list.

6. Statement of Compliance

The Department has reviewed the compliance status of this facility. During the last compliance inspection of August 10, 2010 by Mr. Jim Moser of the Fayetteville Regional Office, the facility was found to be in compliance with all applicable requirements at that time.

7. Facility Emissions Review

The following is an emission summary for this facility. Actual emissions are for year 2009, as reported by the company to DAQ through submittal of annual emission inventory.

Pollutant	Actual Emissions (Tons/Yr)
PM	61.34
PM10	61.34
PM2.5	61.34
CO	192.57
NOx	239.34
SO ₂	9.02
VOC	17.34
Single HAP (NH ₃)	11.43
Total HAP	10.91

8. Public Notice / EPA and Affected States Review

Public notice for this permit is required. The EPA Review period applies.

9. Conclusions, Comments, and Recommendations

This is a permit renewal for the Progress Energy Carolinas, Inc. – Richmond County Combustion Turbine Facility.

FRO has requested a draft copy of this permit.