

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

**Permit Issue Date:**

**Region:** Asheville Regional Office  
**County:** Rutherford  
**NC Facility ID:** 8100028  
**Inspector's Name:** Mike Parkin  
**Date of Last Inspection:** 08/21/2007  
**Compliance Code:** C/In Compliance With  
 Procedural Reqr

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>
<b>Applicant (Facility's Name):</b> Duke Energy Carolinas, LLC - Cliffside Steam Station  <b>Facility Address:</b> Duke Energy Carolinas, LLC - Cliffside Steam Station 573 Duke Power Road (SR 1002) Cliffside, NC 28024  <b>SIC:</b> 4911 / Electric Services <b>NAICS:</b> 221112 / Fossil Fuel Electric Power Generation  <b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V			<b>SIP:</b> <b>NSPS:</b> <b>NESHAP:</b> <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b>
<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 8100028.08A <b>Date Received:</b> 01/15/2008 <b>Application Type:</b> Renewal <b>Application Schedule:</b> TV-Renewal <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 04044/T28 <b>Existing Permit Issue Date:</b> 01/29/2008 <b>Existing Permit Expiration Date:</b> 10/31/2008
Steve Hodges Environmental Coordinator (828) 657-2339 573 Duke Power Road Mooresboro NC, 28114	Rick Roper Manager Cliffside Steam Station  573 Duke Power Road Mooresboro NC, 28114	William Horton Senior Environmental Specialist (980) 373-3226 526 South Church Street Charlotte NC, 28202	
<b>Review Engineer:</b> Mike Gordon  <b>Review Engineer's Signature:</b> <b>Date:</b>		<b>Comments / Recommendations:</b> <b>Issue</b> 04044/T29 <b>Permit Issue Date:</b> <b>Permit Expiration Date:</b>	

**1. Purpose of Application**

Duke Energy Carolinas, LLC (Duke) submitted an application for renewal of their Title V permit on January 22, 2008. The facility will be incorporating CAM requirements into the existing coal fired boilers for the electrostatic precipitators (ESP)

**2. Application Chronology**

Refer to "Comprehensive Application Report" for complete details.

### **3. Facility Description**

This facility is an electric power generating utility with primary emissions sources consisting of five tangentially fired pulverized coal dry bottom boilers. Units 1-4 have hot side ESP control and low NO<sub>x</sub> burners. Unit 5 is over twice the size of the other boilers combined and is equipped with a cold side ESP, an ammonia flue gas conditioning system for opacity control, and the following for NO<sub>x</sub> control: low NO<sub>x</sub> burners, Selective Catalytic Reduction (SCR), Separated Over Fire Air (SOFA), and Lowered Fire Incremental Re-spacing (LFIR). The facility is installing a new supercritical pulverized coal-fired 800 MW boiler and will simultaneously retire existing Units 1-4 when the new system is brought online. Other ancillary emission sources that will be part of the Unit 6 installation include: an auxiliary boiler, cooling tower, emergency generator, firewater pump, and various coal handling, ash handling and lime handling emission sources. The older less efficient and uncontrolled Units 1-4 (with a combined capacity of about 200 MW) which began operation around 1940 will be retired when the new Unit 6 begins operation, bringing the total capacity of the station (Units 5 and 6) to 1360 MW. Unit 6 is projected to begin operation as early as 2011.

### **4. Statement of Compliance**

Based on the last inspection performed by ARO (Mike Parkin) on 8/21/2007, Duke Energy's Cliffside Plant appeared to be in compliance with all requirements outlined in the air permit 04044T27.

### **5. Permit Modifications/Changes**

#### **5.1 CAM Application**

Coal Fired Boiler Units 1 through 5 are subject to 40 CFR 64 for particulate emissions from the Electrostatic Precipitators (ESP's) and therefore the facility proposed a Compliance Assurance Monitoring (CAM) plan for each unit. Duke Energy submitted a CAM plan that used the opacity data collected during PM emissions stack testing. The data extends over a period of 25 years. Correlated PM and opacity values submitted by the facility were found by the DAQ to not to provide a reasonable assurance of ongoing compliance with the PM emission limits for the anticipated range of operating conditions at each unit and therefore were re-evaluated using the data supplied by Duke Energy. The DAQ then determined a trigger value for CAM that is more representative of the PM and Opacity correlation. It was determined from this data that the excursion values should be set at 12% opacity for Unit 1, 15% for Unit 2, 16% for Unit 3, 15% for Unit 4, and 25% for Unit 5. CAM trigger limits were set by calculating the average opacity at 90% of the permitted PM limit determined by logarithmic graphing of the data received from the facility for each unit. The data submitted by Duke Energy is presented to the DAQ in lieu of continuous operational data for purposes of correlating opacity and PM emissions.

## 5.2 Removal of Particulate testing requirements [15A NCAC 2D .0536]

Permit 04044T28 required that the facility monitor opacity using COMS. Although the requirement for COMS have been left in the permit, the additional testing requirements and opacity limits listed under 2.1.A.4.(f) have been removed from the permit due to overlapping requirements that have been included as part of the facility CAM Plan and in order to establish consistency with existing utility permits already processed this year. Permit conditions previous to this renewal required the facility to perform stack testing if opacity data shows greater than 5% of the trigger limit listed in 2.1.A.4. As part of this renewal, the limits have been further refined using data opacity and PM data submitted by the facility for CAM. The requirements previously listed as part of 2.1.A.4 have been appropriately moved to 2.1.A.11.

## 5.3 Table of Changes

Old Page No.	New Page No.	Part, Section, or Condition No.	Change
-	-	Throughout	Removed references to Part II and I since the DAQ no longer separates these sections within the permit.
-	-	Throughout	Corrected EPA Test Method rule citations in various sections from 15A NCAC 2D .0501 to the new 15A NCAC 2D .2600 rules.
-	-	General Conditions	Updated Permit with the latest General Conditions. Version 2.22.1.
14	13	2.1.A.4	Removed 35% opacity limit and testing requirements due to incorporation of requirements and limits in the facility CAM plan located in Section 2.1.A.11.
-	17-19	2.1.A.11	Added facility CAM plan for Coal fired Boilers (Unit ID No.'s ES-1 to ES-5)
45	45	2.1.J	Added Method 29 for lead to the list of reference test methods.
-	62	2.1.P	Added citation for 15A NCAC 2D .0524 - Subpart OOO in the Regulated Pollutants Table for Particulate Emissions.
-	-	Part II	Removed Part II from the permit due to changes in permitting procedures at the DAQ and incorporation of 501(c)(2) changes that the Permittee has completed and is requesting be covered under the permit shield. General Condition NN now covers the general requirements of Part II and specific requirements are incorporated within the main body of the permit (See Sections related to Unit 6)

## **6. NSPS, NESHAPS, Attainment Status, NSR, 112(r), PSD, and CAM**

### NSPS

The Coal Unloading, Conveying, Storage, and Crushing system listed under Section 2.1.E of the permit is subject to NSPS Subpart Y for PM emissions. The Limestone Unloading, Conveying, Storage, and Crushing system listed under Section 2.1.F of the permit is subject to NSPS Subpart OOO for PM emissions. The diesel fuel-fired emergency quench water pump (ID No. QP5), one diesel fuel-fired emergency firewater pump (ID No. FWP5), one No. 2 fuel oil-fired emergency generator (ID No. ES-EG6), and one No. 2 fuel oil-fired emergency firewater pump (ID No. ES-FWP), are subject to NSPS Subpart IIII for sulfur dioxide, VOC and NOx, CO, and PM emissions. The coal/No. 2 fuel oil-fired supercritical electric utility boiler (ID No. ES-6) is subject to NSPS Subpart Da for sulfur dioxides, NOx, PM, visible emissions, and Mercury. The No. 2 fuel oil/propane-fired auxiliary boiler (ID No. ES-Aux 6) is subject to NSPS Subpart Db for sulfur dioxide, NOx, visible emissions, and PM. Coal handling for Unit 6 listed under Section 2.1.N is subject to NSPS Subpart Y. The bagfilter as part of Lime Silo for SDA (ID No. ES-LSSDA) with associated bagfilter (ID No. CD32-3) is subject to NSPS Subpart OOO.

### NESHAPS

One Emergency Diesel Generator (ID No. ES-12 (EmGen) and one diesel fuel-fired emergency quench water pump (ID No. QP5) are subject to 40 C.F.R. 63 Subpart ZZZZ initial notification requirements. The No. 2 fuel oil-fired emergency generator (ID No. ES-EG6), and the No. 2 fuel oil-fired emergency firewater pump (ID No. ES-FWP) are subject to 40 C.F.R. 63 Subpart ZZZZ. The facility also is required to request an applicability determination as part of Permit condition 2.1.D.3 for the diesel generator.

### Attainment Status and NSR

Rutherford County is in attainment. There is no NSR for this renewal.

### 112(r)

This facility is not subject to Section 112(r) of the Clean Air Act requirements.

### PSD

The Cliffside Plant is a major stationary source. Units 1-5 are not subject to NSR requirements. Unit 6 is subject to NSR (PSD) and those requirements were incorporated in previous permit revisions.

### CAM

Coal Fired Units 1, 2, 3, 4, and 5 are subject to CAM for PM emissions from the Electrostatic Precipitators (ESP's). See discussion above in 5.1 for details.

## 7. Permit History

Permit No.	Issuance Date	Description of Revision
04044T20	September 23, 2003	<b>Initial TV Permit</b>
04044T21	November 12, 2003	Reissued Initial Title V Permit due to Duke Energy Adjudication
04044T22	December 3, 2004	Minor Modification to revise reporting requirements for NOx related language
04044T23	June 10, 2005	Reopened for cause to revise federal opacity monitoring and reporting requirements in accordance with letter to Mr. Albert J. Smith III from Donald R. van der Vaart dated February 15, 2005.
04044T24	July 12, 2006	Minor Modification reopened for cause. Replaced proposed SIP 2D .0521 language with approved SIP 2D .0521 language and other changes to rule related language.
04044T25	December 15, 2006	501(c)(2) modification. Incorporation of new emissions sources, revised SO2 requirements for FGD system, and various other administrative corrections.
04044T26	January 18, 2007	Administrative Amendment.
04044T27	July 13, 2007	Administrative Amendment
04044T28	January 29, 2008	15 NCAC 2Q .0501(c)(2) permit. Added Coal Fired Boiler Unit 6 to the facility as well as additional handling and processing equipment to support operation of this unit.

## 8. Facility Emissions Review

The following is an emission summary for this facility. Actual emissions are for year 2006, as reported by the company to DAQ through submittal of annual emission inventory.

Pollutant	Actual Emissions Tons/Yr	Potential Emissions Tons/Yr
PM	1963.86	> 100
PM10	1963.86	> 100
PM2.5	1658.77	> 100
CO	698.03	> 100
NOx	4251.71	> 100
SO <sub>2</sub>	29155.08	> 100
VOC	51.65	> 100
Single HAP (HCl)	1849	> 10
Total HAP	4099	> 25

## **9. Public Notice / EPA and Affected States Review**

Public notice for this permit is required. The EPA Review period applies. This permit will affect no additional states.

## **10. Conclusions, Comments, and Recommendations**

This is a permit renewal for the Duke Energy – Cliffside Steam Electric Generation Plant. CAM is a major change in this permit and should be closely monitored in the next few years to ensure it has been implemented effectively in this permit. The facility is required to inspect and take corrective action (if required) at any time it experiences an opacity excursion. An excursion is defined in the CAM plan as a three-hour average opacity level greater than the levels specified in the permit. Furthermore, the permit states:

“If five (5) percent or greater of COMS data (averaged over a three hour block period and excluding startup, shutdown, and malfunction periods) recorded in a calendar quarter show opacity values higher than those listed above, a stack test shall be performed in the following calendar quarter to demonstrate compliance with the particulate standard. If the stack test exceeds 80 percent of the PM limit then retesting shall be conducted in accordance with 2.1.A.4.e.”

Similar language could be found in Section 2.1.A.4 for these emissions sources and it was determined that they overlapped significantly. Since the requirements as part of CAM implementation were more stringent than those required as part of 15A NCAC 2D .0536 the additional testing requirements of Section 2.1.A.4 were removed.

ARO has requested a draft copy of this permit. All comments will be addressed prior to issuing the permit.