

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date:

Region: Mooresville Regional Office
County: Catawba
NC Facility ID: 1800073
Inspector's Name: Tonisha Dawson
Date of Last Inspection: 06/29/2009
Compliance Code: 3 / Compliance - inspection

Facility Data			Permit Applicability (this application only)		
Applicant (Facility's Name): Duke Energy Carolinas, LLC - Marshall Steam Station Facility Address: Duke Energy Carolinas, LLC - Marshall Steam Station 8320 East Highway 150 Terrell, NC 28682 SIC: 4911 / Electric Services NAICS: 221112 / Fossil Fuel Electric Power Generation Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other:		
Contact Data			Application Data		
Facility Contact	Authorized Contact	Technical Contact	Application Number: 1800073.08A Date Received: 01/17/2008 Application Type: Renewal Application Schedule: TV-Renewal Existing Permit Data Existing Permit Number: 03676/T45 Existing Permit Issue Date: 10/16/2009 Existing Permit Expiration Date: 09/30/2010		
Donna Burrell Principle EHS Professional (828) 478-7820 8320 East Highway 150 Terrell, NC 28682	Stephen Immel Regional Manager (828) 478-7600 8320 East Highway 150 Terrell, NC 28682	William Horton Senior Environmental Specialist (980) 373-3226 526 South Church Street Charlotte, NC 28202			
Review Engineer: Mike Gordon Review Engineer's Signature: _____ Date: _____		Comments / Recommendations: Issue 03676/T46 Permit Issue Date: Permit Expiration Date:			

1. Purpose of Application

Duke Energy Carolinas, LLC (Duke) submitted an application for renewal of their Title V permit for Marshall Steam Station on January 17, 2008.

The renewed permit will:

- Incorporate CAM requirements into the permit for the existing coal fired boilers for the electrostatic precipitators (ESP),
- Incorporate approved CAIR requirements under 15A NCAC 2D .2400 that are now part of the federally approved State Implementation Plan,
- Incorporate mercury provision pursuant to 15A NCAC 2D .2500 "Mercury Rules for Electric Generators",
- Removal of 15A NCAC 2D .1400 rules and Federal 40 CFR 52 Subpart II rules that are replaced by 2D .2400,

- SO₂ Requirements for existing scrubbers pursuant to 15A NCAC 2D .0606 SO₂ requirements for the existing scrubbers, and opacity limits,

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_x burners. Unit 5 is equipped with a cold side ESP, an ammonia flue gas conditioning system for opacity control, and the following for NO_x control: low NO_x burners, Selective Catalytic Reduction (SCR), Separated Over Fire Air (SOFA), and Lowered Fire Incremental Re-spacing (LFIR).

4. Statement of Compliance

Based on the last inspection performed by MRO (Tonisha Dawson) on 06/29/2009, Duke Energy’s Marshall Plant appeared to be in compliance with all requirements outlined in the air permit 03676T44.

5. Permit Modifications/Changes

5.1 CAM Application

Coal Fired Boiler Units 1 through 4 are subject to 40 CFR 64 for PM-10 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. The DAQ determined a trigger value for CAM that is representative of the correlation between PM and Opacity correlation. It was determined from this data that the excursion values should be set at 20% opacity for Unit 1, 20% for Unit 2, 22% for Unit 3, and 25% for Unit 4. 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. (See attached correlations).

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

Testing requirements and opacity limits listed under 2.1.A.4 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 previously issued. 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 that were part of 2.1.A.4 have been appropriately moved to 2.1.A.12.

5.3 Clean Air Interstate Rule

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.

5.4 Mercury Rules for Electric Generators

On February 8, 2008, the D.C. Circuit vacated EPA's rule removing power plants from the Clean Air Act list of sources of hazardous air pollutants. At the same time, the Court vacated the Clean Air Mercury Rule.² The NC EMC adopted rules under 15A NCAC 2D .2500 on January 1, 2007 specifically for the reduction of mercury emissions within the State. While these rules were, in part, a result of the federal CAMR rulemaking, they remain in effect despite the vacatur of the Federal CAMR Rule. Because the rules are currently in effect they remain State-Only requirements. As a result, the following new regulations were added:

1. 2D .2500: MERCURY RULES FOR ELECTRIC GENERATORS

In accordance with the applicability requirements in 2D .2501, the rule applies to:

- (1) Any stationary coal-fired boiler or any stationary coal-fired combustion turbine serving at any time, since the start-up of a unit's combustion

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

² See "State of New Jersey et al. vs. EPA" Case No. 05-1097 U.S. Court of Appeals for the District of Columbia. February 8, 2008

- chamber, a generator with nameplate capacity of more than 25 MWe producing electricity for sale; or
- (2) Any unit that qualifies as a cogeneration unit during the 12-month period starting on the date that the unit first produces electricity and continues to qualify as a cogeneration unit, or any cogeneration unit serving at any time a generator with nameplate capacity of more than 25 MWe and supplying in any calendar year more than one-third of the unit's potential electric output capacity or 219,000 MWh, whichever is greater, to any utility power distribution system for sale; or
 - (3) Any Hg budget unit identified in the table in Rule 2D .2503.

As stationary coal-fired boilers serving a generator with a nameplate capacity greater than 25 MWe and listed in the table in Rule 2D .2503, this rule applies to the four coal fired boilers at Marshall. As discussed in a memo from Keith Overcash dated September 15, 2009, the DC Court of Appeals vacated CAMR on February 8, 2008, making all but Sections 2D .2509 and .2511 of the 2D .2500 rules deficient and impractical. In accordance with the memo, until new federal rules are promulgated to replace CAMR, the state-only 2D .2500 rules will remain in the permit (if already in the permit), or newly placed into permits, with a footnote stating that Sections 15A NCAC 2D .2509 and .2511 are state-enforceable and that all other sections of 15A NCAC .2500 will not be enforced at this time.

5.5 15A NCAC 2D .0606 - Part 51 Appendix P for SO₂

Duke energy has four existing Flue Gas Desulfurization spray tower scrubbers (SO₂ scrubbers) in service at the facility. Pursuant to 15A NCAC 2D .0606(a) fossil fuel fired generators "shall be monitored as described in Paragraph 2 of Appendix P of 40 CFR Part 51." Paragraph 2.1.2 provides,

A continuous monitoring system for the measurement of sulfur dioxide which meets the performance specifications of paragraph 3.1.3 of this appendix shall be installed, calibrated, maintained, and operated on any fossil fuel-fired steam generator of greater than 250 million BTU per hour heat input which has installed sulfur dioxide pollutant control equipment.

2D .0606 further provides

The excess emissions recorded by the monitoring systems required to be installed under this Rule shall be reported no later than 30 days after the end of the quarter to the Division in the manner described in Paragraphs 4 and 5.1 through 5.3.3 of Appendix P of 40 CFR Part 51 except that a six-minute time period is deemed as an appropriate alternative opacity averaging period as described in Paragraph 4.2 of Appendix P of 40 CFR Part 51.

The existing permit contains Appendix P provisions as a result of the operation of ESP's to control particulate. The renewed permit will contain an SO₂ Appendix P provision that was patterned after the existing Appendix P provision with the exception of the averaging time. Compliance with sulfur dioxide emission standards are determined by averaging hourly continuous emission monitoring system values over a 24-hour block period beginning at midnight. Excess emissions and monitor downtime are calculated using the same equations listed in the permit for continuous opacity monitoring.

5.6 Table of Changes

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
-	-	Throughout	Removed references to Part II and I since the DAQ no longer separates these sections within the permit.
-	-	General Conditions	Updated Facility General Conditions to the latest revision.
-	-	Table of Contents	Revised for additional application attachments (CAIR).
-	-	Throughout	Added specific conditions from Part II to relevant sections of the permit where necessary.
14	11-12	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.12.
16	13-14	2.1.A.7	Added SO ₂ requirements under 15A NCAC 2D .0606 for the existing scrubbers
15-16	-	2.1.A.8	Removed Federal-Only 40 CFR 52 Subpart II requirements. The EPA has adopted NC CAIR rules into the State Implementation Plan.
16-17	-	2.1.A.9	Removed specific conditions that referenced 15A NCAC 2D .1400 rules and replaced with 15A NCAC 2D .2400 based specific conditions in the CAIR Permit Section 2.6
-	17-19	2.1.A.12	Added CAM plan for Coal fired Boilers (Unit ID No.'s ES-1 to ES-5)
-	19-20	2.1.A.13	Incorporated applicable requirements of 15A NCAC 2D .2500 for Mercury emissions from Coal fired Boilers (Unit ID No.'s ES-1 to ES-5)
-	44-45	Section 2.5	Added CAIR Permit Section
-	-	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

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

NSPS

The Limestone Receiving, Transfer, Storage, and Processing Equipment listed under Section 2.1.B of the permit is subject to NSPS Subpart OOO for PM emissions. The Four NSPS coal conveyors listed under Section 2.1.F is subject to NSPS Subpart Y.

NESHAPS

One 1,000 HP, No. 2 fuel oil fired emergency use water pump (ID No. ES-26 (EQWP)), One No. 2 fuel oil-fired emergency/blackout protection diesel generator (ID No. ES-35 (EmGen)), and one No. 2 fuel oil-fired diesel emergency air compressor (ID No. ES-36 (AC)) are subject to 40 C.F.R. 63 Subpart ZZZZ initial notification requirements.

Attainment Status and NSR

Catawba County is in non-attainment for PM 2.5.

112(r)

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

PSD

The Marshall Plant is a major stationary source.

CAM

Coal Fired Units 1, 2, 3, and 4, 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
03676T27	June 3, 2003	Initial TV Permit
03676T28	November 12, 2003	Reissued Initial Title V Permit due to Duke Energy Adjudication
03676T29	February 5, 2004	Significant Modification to add new sources including limestone and gypsum processing
03676T30	March 25, 2004	502(b)(10) change to permit incorporating ash handling equipment into permit
03676T31	October 13, 2004	Minor Modification adding SNCR and coal conveyors to the Units. Revised NOx requirements for the boilers.
03676T32	October 25, 2004	Minor Modification correcting some issues with T31 and adding flyash transfer filter separators
03676T33	December 3, 2004	Minor Modification adding limits to sulfur dioxide emissions for the coal units

03676T34	April 19, 2005	Minor Modification replacing ESP's and adding flyash equipment to Part I
03676T35	June 10, 2005	Reopened for Cause
03676T36	July 6, 2005	Administrative Amendment correcting some omissions not carried into T35 from T34
03676T37	December 7, 2005	15 NCAC 2Q .0501(c)(2) permit adding 40 CFR 52 Subpart II requirements and modifying limestone handling
03676T38	December 20, 2005	Minor Modification adding SNCR equipment to Unit 1 and Unit 2
03676T39	April 7, 2006	Minor Modification adding anhydrous ammonia injection and revising the ammonia limit for unit 1
03676T40	September 12, 2006	Minor Modification adding SNCR and ammonia injection to Unit 4
03676T41	February 1, 2007	Minor Modification added and removed a number of insignificant activities
03676T42	August 24, 2007	Significant Modification incorporating previous 501(c)(2) requirements into the Title V permit
03676T43	June 3, 2008	Significant Modification permitting EDTA burning, added a number of insignificant activities and SNCR for Unit 3
03676T44	January 7, 2009	Significant Modification for Acid Rain
03676T45	October 16, 2009	State-only Modification adding arsenic limits to the permit

8. 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	7310.37
PM10	7151.50
PM2.5	6945.76
CO	3237.13
NOx	13234.28
SO ₂	6174.76
VOC	149.90
Single HAP (HCl)	154
Total HAP	543.22

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 – Marshall 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 received a copy of this permit.