

**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:	
Duke Energy Corporation Cliffside Steam Station	Cliffside	Rutherford	
TECHNICAL CONTACT:	PHONE:	RESPONSIBLE OFFICIAL:	TITLE:
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APPLICATION NUMBERS :	EXISTING PERMIT NUMBERS :	NEW PERMIT NUMBER:	
810028A5.A	04044R19	04044T20	
8100028.00A (compliance plan)	Acid Rain Permit 810028R02		

I. Introduction

The U.S. Environmental Protection Agency (EPA) has given interim approval to North Carolina's Title V operating permits program effective on December 15, 1995. This EPA approval triggered the requirements for Title V facilities to submit permit applications to the Division of Air Quality (DAQ). 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 Initial Title V Air Permit Application Review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the DRAFT Title V operating permit. The primary source of information used to construct the DRAFT permit is the above referenced air permit application.

II. Background Information

The DRAFT Title V operating permit replaces an existing Air Quality Construction and Operation Permit No. 04044R19, which was issued on December 12, 2001 and is currently scheduled to expire on September 30, 2005. The Title V permit will also incorporate the Phase II acid rain permit requirements as a combined Title V/Title IV permit and replace the existing Phase II Acid Rain Permit No. 810028R02, which was issued by the DAQ on

November 20, 2002 and is currently scheduled to expire on December 31, 2007. In addition, the Title V permit will include Duke's SO₂ compliance plan (Application No. 8100028.00A (see Section VI.A.2.a.i).

Pursuant to 15A NCAC 2Q .0506, Duke Energy submitted its initial Title V application to the DAQ on August 12, 1996. The application was considered complete for processing on October 8, 1996. The DRAFT permit is required to go to public notice pursuant to 15A NCAC 2Q .0521.

This facility operates under SIC code 4911.

III. Facility Description

Duke Energy's Cliffside Steam Station is an electric utility facility with emission sources consisting of five coal/No. 2 fuel oil-fired electric utility boilers (ID Nos. ES-1, ES-2, ES-3, ES-4 and ES-5); two No. 2 fuel oil/propane-fired auxiliary boilers; one flyash transfer and storage system (ID No. ES-8) consisting of one flyash vacuum handling system (ID No. ES-8A) and one flyash storage silo, truck load out and blow off system (ID No. ES-8B); one flyash transfer and storage system (ID No. ES-9) consisting of one flyash vacuum handling system (ID No. ES-9A) and one flyash storage silo (ID No. ES-9B); and one limestone storage silo (ID No. ES-11).

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. Based on its latest inspection, the facility was in compliance with all applicable requirements. The applicant has certified that the facility will be in compliance with all applicable requirements at the time of permit issuance and will continue to comply with these requirements. The applicant has also certified that the facility will be in compliance with any applicable requirements taking effect during the term of the permit and will meet such requirements on a timely basis.

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
ES-1 (U1Boiler)	one coal/No. 2 fuel oil-fired electric utility boiler (647 million Btu per hour heat input, Unit No. 1) equipped with low-NOx burners	CD-1 (U1ESP)	one hot-side electrostatic precipitator (80,640 square feet of plate area)
ES-2 (U2Boiler)	one coal/No. 2 fuel oil-fired electric utility boiler (647 million Btu per hour heat input, Unit No. 2) equipped with low-NOx burners	CD-2 (U2ESP)	one hot-side electrostatic precipitator (80,640 square feet of plate area)
ES-3 (U3Boiler)	one coal/No. 2 fuel oil-fired electric utility boiler (810 million Btu per hour heat input, Unit No. 3) equipped with low-NOx burners	CD-3 (U3ESP)	one hot-side electrostatic precipitator (87,840 square feet of plate area)
ES-4 (U4Boiler)	one coal/No. 2 fuel oil-fired electric utility boiler (810 million Btu per hour heat input, Unit No. 4) equipped with low-NOx burners	CD-4 (U4ESP)	one hot-side electrostatic precipitator (87,840 square feet of plate area)
ES-5 (U5Boiler)	one coal/No. 2 fuel oil-fired electric utility boiler (6,080 million Btu per hour heat input, Unit No. 5)	CD-11a (U5LNCFS, SOFA /LOFIR) CD-11b (U5SCR) CD-5 (U5ESP) CD-6 (U5ESP) CD-12 (U5FG) CD-13 (U5FG)	one low-NO _x concentric firing system and separated overfire air/lowered firing low-NO _x control equipment (SOFA/LOFIR)* a selective catalytic reduction system installed in series with: two cold-side electrostatic precipitators (190,080 square feet of plate area, each) equipped with flue gas ash conditioning systems consisting of: an anhydrous ammonia injection system, and a sulfur trioxide injection system
ES-6 (AuxB)	one No. 2 fuel oil/propane**-fired auxiliary boiler (71.5 million Btu per hour heat input)	NA	NA

ES-7 (AuxB)	one No. 2 fuel oil/propane**-fired auxiliary boiler (4 million Btu per hour heat input)	NA	NA
Emission Source I.D. No.	Emission Source Description	Control Device I.D. No.	Control Device Description
ES-8 (FTS)	one flyash transfer and storage system consisting of:		
ES-8A	one flyash vacuum handling system, and	CD-15 (Fltr)	one fabric-type in-line vacuum filter
ES-8B	one flyash storage silo, truck load out and blow off system	CD-14 (Fltr)	one bagfilter (1,200 square feet of filter area)
ES-9 (FTS)	one flyash transfer and storage system consisting of:		
ES-9A	one flyash vacuum handling system, and	CD-17 (Fltr)	one bagfilter (678 square feet of filter area)
ES-9B	one flyash storage silo	CD-16 (Fltr)	one bagfilter (392 square feet of filter area)
ES-11 (LSS)	one limestone storage silo	CD-18 (Fltr)	one bagfilter (200 square feet of filter area)

* The ammonia and sulfur trioxide ash conditioning, NOx control systems (low-NOx burners, SCR, and SOFA/LOFIR) may be operated independently of each other or in combination. Each system may be operated intermittently as necessary, based on boiler system requirements, to maintain compliance with applicable particulate, visible emission and/or nitrogen oxides (NOx) regulatory requirements.

** Propane is for start-up only.

VI. Emission Source-by-Source Evaluation

A. four coal/No. 2 fuel oil-fired electric utility boilers (ID Nos. ES-1(U1Boiler), ES-2(U2Boiler), ES-3(U3Boiler), and ES-4(U4Boiler)) equipped with low-NOx burners and associated electrostatic precipitators (ID Nos. CD-1(U1ESP), CD-2(U2ESP), CD-3(U3ESP), and CD-4(U4ESP)), and

one coal/No. 2 fuel oil-fired electric utility boiler (ID No. ES-5(U5Boiler)) with low-NO_x concentric firing and separated overfire air/lowered firing low-NO_x control equipment (ID No. CD-11a(U5LNCFS,SOFA/LOFIR)) and associated selective catalytic reduction system (ID No. CD-11b(U5SCR)) installed in series with two electrostatic precipitators (ID Nos. CD-5(U5ESP) and CD-6(U5ESP)) equipped with flue gas conditioning systems consisting of an ammonia injection system (ID No. CD-12(U5FG)) and a sulfur trioxide injection system (ID No. CD-13(U5FG))

1. Description

Boilers Nos. 1, 2, 3, 4 and 5 (ID No. ES-1, ES-2, ES-3, ES-4 and ES-5) are tangentially-fired, dry-bottom boilers with heat inputs of 647, 647, 810, 810 and 6080 million Btu per hour respectively and began operation in 1939, 1939, 1946, 1947 and 1969 respectively. These boilers fire coal as primary fuel, with No.2 fuel oil used for start-up and flame stabilization.

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
sulfur dioxide	2.2 pounds per million Btu heat input	15A NCAC 2D .0501(e)
	Phase II Acid Rain Permit Requirements (see Section 2.3)	15A NCAC 2Q .0402 (40 CFR Part 72)
nitrogen oxides	when burning only coal 1.8 pounds per million Btu heat input	15A NCAC 2D .0519
	when burning only oil 0.8 pounds per million Btu heat input	
	when burning coal and oil $E = [(Ec)(Qc) + (Eo)(Qo)]/Qt$ where: E = emission limit in pounds per million Btu heat input Ec = 1.8 pounds per million Btu heat input Eo = 0.8 pounds per million Btu heat input Qc = coal heat input in Btu per hour Qo = oil heat input in Btu per hour Qt = Qc + Qo	
	Phase II Acid Rain Permit Requirements (see Section 2.3)	15A NCAC 2Q .0402 (40 CFR Part 72)
	varies - see Section 2.1 A.8	15A NCAC 2D .1416
visible emissions	<p>Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule for sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), the following limits apply:</p> <p>40 percent opacity (except during startups) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p> <p>State-only requirement 40 percent opacity (excluding startups, shutdowns, maintenance periods when fuel is not being combusted, and malfunctions approved as such according to procedures approved under 15A NCAC 2D .0535) when averaged over a six-minute period except that: (1) no more than 10 six-minute periods shall exceed the opacity standard in any one day; and (2) the percent of excess emissions (defined as percentage of monitored operating time in a calendar quarter above the opacity limit) shall not exceed 0.8 percent of the total operating hours.</p>	<p>40 CFR 52 Subpart II</p> <p>15A NCAC 2D .0521</p>

	<p>When the EPA approves the revised 15A NCAC 2D .0521 opacity rule for sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), the following limit applies beginning on the date the final rule is published in the Federal Register:</p> <p>40 percent opacity (excluding startups, shutdowns, maintenance periods when fuel is not being combusted, and malfunctions approved as such according to procedures approved under 15A NCAC 2D .0535) when averaged over a six-minute period except that: (1) no more than 10 six-minute periods shall exceed the opacity standard in any one day; and (2) the percent of excess emissions (defined as percentage of monitored operating time in a calendar quarter above the opacity limit) shall not exceed 0.8 percent of the total operating hours.</p>	15A NCAC 2D .0521
	<p>State-enforceable only</p> <p>Boiler No. 1 (ES-1) - 8 percent annual average opacity Boiler No. 2 (ES-2) - 12 percent annual average opacity Boiler No. 3 (ES-3) - 8 percent annual average opacity Boiler No. 4 (ES-4) - 8 percent annual average opacity Boiler No. 5 (ES-5) - 16 percent annual average opacity</p>	15A NCAC 2D .0536
particulate matter	0.25 pounds per million Btu heat input	15A NCAC 2D .0536
malfunction abatement plan	as defined in specific conditions	15A NCAC 2D .0535
good operations and maintenance practices	as defined in specific conditions	15A NCAC 2D .0606 and 40 CFR 52 Subpart II

a. 2D .0501(e) "Compliance with Emission Control Standards"

i. Regulatory Analysis

Sulfur dioxide emissions from each boiler shall not exceed 2.2 pounds per million Btu heat input. This is a DAQ-approved SO₂ emission rate, established per 2D .0501(e), to protect the SO₂ NAAQS. This is calculated on a 24-hour (daily) block averaging period basis. There are no control devices to control emissions of sulfur dioxide.

This regulation requires that, in addition to any control or manner of operation necessary to meet emission standards in 15A NCAC 2D .0500, any source of air pollution shall be operated with such control or in such manner that the source shall not cause the ambient air quality standards of 15A NCAC 2D .0400 to be exceeded at any point beyond the premises on which the source is located. When controls more stringent than named in the applicable emission standards in 15A NCAC 2D .0500 are required to prevent violation of the ambient air quality standards or are required to create an offset, the permit shall contain a condition requiring these controls.

In 1991 Duke Energy was required to model SO₂ concentrations at all fossil plants at the (2D .0516) allowable SO₂ emission rate of 2.3 pounds per million Btu heat input. With the exception of the Belews Creek Steam Station, all Duke plants modeled in exceedance of the National Ambient Air Quality Standard (NAAQS) for SO₂. Ambient monitoring was required to determine if an ambient SO₂ problem could be detected. Initial monitoring was required at the Buck and Marshall Steam Stations. One year of monitoring data was collected at Buck. Due to a Duke-discovered discrepancy in the modeling data, the Buck SO₂ monitors were relocated to the Riverbend Steam Station. Three years of ambient monitoring data was collected at Riverbend and Marshall. Two exceedances of the SO₂ 24-hour standard were documented at Riverbend. Because of the ambient violation detected at Riverbend and as a condition of the air permit, Duke was required to perform ambient SO₂ monitoring at their other plants for which modeling showed an exceedance of the NAAQS: Buck, Dan River, Allen, and Cliffside Steam Stations. However, Duke voluntarily submitted a compliance plan for Cliffside in lieu of monitoring after Dan River had monitored exceedances. Therefore, no monitoring is planned for Cliffside. At this time, monitoring continues at Allen and Buck; and monitoring at Marshall, Dan River, and Riverbend is completed.

As a result of the SO₂ ambient air exceedances, DAQ and Duke have agreed on a SO₂ compliance plan (or corrective action plan) for several stations. As part of the compliance plan for Cliffside (ref: Application 810028.00A; Duke letter to Alan Klimek, from William T. Horton, dated December 22, 1999; Duke's updated plan letter to Keith Overcash from George T. Everett dated October 3, 2002; Duke's updated stack extension plans provided to DAQ in a meeting on March 6, 2002; and Duke's revised corrective action plan to Keith Overcash from William T. Horton dated March 6, 2003) each unit must comply with a lower SO₂ limit of 2.2 pounds per million Btu heat input (vs. the otherwise 2D .0516 allowable rate of 2.3 pounds per million Btu heat input) and the stacks for units 1, 2, 3 and 4 will be extended an additional 30 feet. The unit 5 stack will not change.

The compliance schedule for extending the stacks is as follows: Each stack for Boilers No. 1 and 2 will be extended an additional 30 feet to 184 feet from the base of the stack, and each stack for Boilers No. 3 and 4 will be extended an additional 30 feet to 189 feet from the base of the stack. Construction of all four stacks for Boilers No. 1, 2, 3 and 4 is to be completed by November 5, 2004. Duke may revise the above stack extensions (30 feet extensions) and/or revise the sulfur dioxide limit (2.2 pounds per million Btu heat input), based on a new compliance plan and a modification to the permit, both to be approved by the DAQ in the future, as long as the schedule of construction for completion of

the stack extensions remains unchanged. A unit may continue to operate without stack extensions beyond these dates if Duke Energy Corporation submits a commitment to retire the unit prior to December 31, 2006. The commitment must be submitted in writing to DAQ at least 11 months prior to the scheduled stack extension completion date (i.e. by December 5, 2003).

Duke's compliance plan modeling was approved per memo from Jerry Freeman, AQAB, to Ed Martin dated May 14, 2003.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall demonstrate compliance with 2D .0501(e) using a continuous emissions monitoring (CEM) system meeting the requirements of 40 CFR Part 75. Sulfur dioxide emissions shall be determined by averaging hourly continuous emission monitoring system values over a 24-hour block period beginning at midnight. Compliance is defined as not exceeding 2.2 pounds per million Btu heat input for any 24-hour block averaging period.

iii. Reporting Requirements

The Permittee shall submit no later than 30 days following the end of the quarter the continuous emissions monitoring data showing the 24-hour daily block values in pounds per million Btu for each 24-hour daily block averaging period during the reporting period.

b. 2D .0519 "Control of Nitrogen Dioxide and Nitrogen Oxides Emissions"

i. Regulatory Analysis

The emission limit of nitrogen oxides for a boiler that burns both coal and oil or gas in combination, shall be calculated by the following equation:

$$E = [(Ec)(Qc) + (Eo)(Qo)]/Qt$$

where: E = emission limit for combined burning of coal and oil in pounds per million Btu heat input
Ec = 1.8 pounds per million Btu heat input for coal only
Eo = 0.8 pounds per million Btu heat input for oil or gas only
Qc = coal heat input in Btu per hour
Qo = oil or gas heat input in Btu per hour
Qt = Qc + Qo.

Duke Energy states that they do not expect to burn any of the permitted oils (except during startup or flame stabilization) above a rate greater than 70

percent of the total heat input; and request that a limit of 1.1 pounds per million Btu be placed in the permit, based on a worst-case oil burn rate of 70 percent, for all oil burn rates (except during startup or flame stabilization) below 70 percent to avoid the complexity of determining heat rates at various burn rates for monitoring and recordkeeping purposes. Therefore, nitrogen oxide emissions shall not exceed the following, calculated on a 24-hour (daily) block averaging period basis:

- (A) 1.8 pounds per million Btu heat input when burning only coal.
- (B) 0.8 pounds per million Btu heat input when burning only oil (fuel oil or polychlorinated biphenyl (PCB)-contaminated mineral oil)
- (C) 1.1 pounds per million Btu heat input when burning both coal and oil (fuel oil or polychlorinated biphenyl (PCB)-contaminated mineral oil), for other than startup, when the oil burn rate is less than 70 percent of the total heat input ($Q_o/Q_t < 70\%$), corresponding to no more than 70 percent of total heat input being from oil.

Unit 5 has a selective catalytic reduction (SCR) system to control nitrogen oxide emissions, which was added to permit No. 04044R17, issued on March 6, 2001. Units 1, 2, 3 and 4 do not have any post-combustion control devices to control emissions of nitrogen oxides. All units have some type of low-NO_x burners to reduce nitrogen oxides formed during combustion. The Unit 5 separated overfire air/lowered firing low-NO_x control equipment (SOFA/LOFIR) was added to permit No. 04044R19, issued December 12, 2001.

ii. Monitoring/Recordkeeping Requirements

To demonstrate compliance with 15A NCAC 2D .0519, nitrogen oxide emissions in pounds per million Btu shall be determined using a continuous emissions monitoring (CEM) system meeting the requirements of 40 CFR Part 75. The Permittee shall maintain records of coal and oil consumption to document the emission rate and provide such records upon request to the DAQ.

iii. Reporting Requirements

The Permittee shall report no later than 30 days after the end of each semi-annual period the continuous emissions monitoring system data for periods of excess nitrogen oxide emissions showing the 24-hour daily block values for each 24-hour block averaging period during the reporting period.

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

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule for sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), the following limit applies:

i. Regulatory Analysis

Visible emissions from these sources shall not be more than 40 percent opacity (except during startups) when averaged over a six-minute period except that six-minute periods averaging not more than 90 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. This regulation is the "old" 2D .0521, which was replaced by the current 2D .0521 at the state level on April 1, 2001, and remains the only approved opacity rule at the federal level.

ii. Monitoring/Recordkeeping Requirements

To assure compliance the Permittee shall determine the opacity using a continuous opacity monitor system (COMS) meeting the requirements of 15A NCAC 2D .0536(g). Compliance with 40 CFR 52 Subpart II shall be determined using six-minute averages of the COMS values.

iii. Reporting Requirements

The COMS excess emissions data shall be reported no later than 30 days after the end of the quarter as specified in Section VI.A.2.h.iii.

(State-only requirement)

d. 2D .0521 "Control Of Visible Emissions"

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule for sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), the following limit applies:

i. Regulatory Analysis

For sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), compliance with the 40 percent opacity limit shall be determined as follows: excluding startups, shutdowns, maintenance periods when fuel is not being combusted, and malfunctions approved as such according to procedures approved under 15A NCAC 2D .0535: (1) no more than 10 six-minute periods shall exceed the opacity standard in any one day; and (2) the percent of excess emissions (defined as percentage of monitored operating time in a calendar quarter above the opacity limit) shall not exceed

0.8 percent of the total operating hours. If a source operates less than 500 hours during a calendar quarter, the percent of excess emissions shall be calculated by including hours operated immediately previous to this quarter until 500 operational hours are obtained.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall determine the opacity using a continuous opacity monitor system (COMS) meeting the requirements of 15A NCAC 2D .0536(g). Compliance with 15A NCAC 2D .0521 shall be determined using six-minute averages of the COMS values.

iii. Reporting Requirements

The COMS excess emissions data shall be reported no later than 30 days after the end of the quarter as specified in Section VI.A.2.h.iii.

e. 2D .0521 "Control Of Visible Emissions"

When the EPA approves the revised 15A NCAC 2D .0521 opacity rule for sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), the following limit applies beginning on the date the final rule is published in the Federal Register:

i. Regulatory Analysis

For sources required to install, operate, and maintain continuous opacity monitoring systems (COMs), compliance with the 40 percent opacity limit shall be determined as follows: excluding startups, shutdowns, maintenance periods when fuel is not being combusted, and malfunctions approved as such according to procedures approved under 15A NCAC 2D .0535: (1) no more than 10 six-minute periods shall exceed the opacity standard in any one day; and (2) the percent of excess emissions (defined as percentage of monitored operating time in a calendar quarter above the opacity limit) shall not exceed 0.8 percent of the total operating hours. If a source operates less than 500 hours during a calendar quarter, the percent of excess emissions shall be calculated by including hours operated immediately previous to this quarter until 500 operational hours are obtained.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall determine the opacity using a continuous opacity monitor system (COMS) meeting the requirements of 15A NCAC 2D .0536(g).

Compliance with 15A NCAC 2D .0521 shall be determined using six-minute averages of the COMS values.

iii. Reporting Requirements

The COMS excess emissions data shall be reported no later than 30 days after the end of the quarter as specified in Section VI.A.2.h.iii.

f. 2D .0536 "Particulate Emissions From Electric Utility Boilers"

i. Regulatory Analysis

Emissions of particulate matter from these boilers shall not exceed 0.25 pounds per million Btu heat input.

Emissions of particulate matter are controlled by the electrostatic precipitators (ESPs) on all units. The Unit 5 ESP is equipped with flue gas conditioning systems consisting of an ammonia injection system and a sulfur trioxide injection system to control particulate emissions. The Permittee shall obtain an air permit before installing or enabling Energy Management System (EMS) capability.

ii. Testing/Monitoring/Recordkeeping Requirements

A stack test shall be conducted in accordance with Method 5 or Method 17 of Appendix A of 40 CFR Part 60 once per calendar year. In the event that a unit exceeds 80 percent of its particulate emission limit during the stack test, the Permittee will schedule and conduct another stack test within 6 months. Upon demonstration that the source is operating under 80 percent of its particulate limit, as shown by three consecutive semiannual stack tests, the source may resume annual stack tests. Testing requirements are specified in 2D .0501(c).

iii. Reporting Requirements

The results of any stack test shall be reported within 30 days, and the test report shall be submitted within 60 days after the test.

(State-only requirements)

iv. Regulatory Analysis

The following requirements under 2D .0536 are state-enforceable only since the maximum annual average opacities under this rule have not been approved by EPA.

Visible emissions from these boilers shall not exceed the following:

- Boiler No. 1 (ES-1) - 8 percent annual average opacity
- Boiler No. 2 (ES-2) - 12 percent annual average opacity
- Boiler No. 3 (ES-3) - 8 percent annual average opacity
- Boiler No. 4 (ES-4) - 8 percent annual average opacity
- Boiler No. 5 (ES-5) - 16 percent annual average opacity

v. Reporting Requirements

The Permittee shall submit a report by the 30th day following the end of each month showing, for each day of the previous month, the calculated annual average opacity of each unit and the annual average opacity limit.

g. 2D .0535 "Excess Emissions Reporting and Malfunctions"

i. Regulatory Analysis

All electric utility boiler units shall have a malfunction abatement plan approved by the Director.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain logs to show that the operation and maintenance parts of the malfunction abatement plan are implemented. These logs shall be subject to inspection by DAQ personnel upon request during business hours.

h. 2D .0606 (State-only requirement) and 40 CFR 52 Subpart II (Federal-only requirement) "Sources Covered By Appendix P of 40 CFR Part 51"

i. Regulatory Analysis

15 A NCAC 2D .0606 (Appendix P of 40 CFR Part 51) applies to fossil-fired steam generators of greater than 250 million Btu per hour heat input. This regulation sets forth the minimum requirements for continuous emission monitoring (CEM) and recording that the state implementation plan must include. A CEM (COM) for the measurement of opacity shall be installed, calibrated, maintained and operated in accordance with Appendix P for these coal-fired boilers. Also, excess emissions shall be reported quarterly as described in Appendix P.

ii. Monitoring/Recordkeeping Requirements

A continuous opacity monitoring system (COMS) will be used to monitor and record opacity. Continuous emissions monitoring and recordkeeping of opacity

will be performed as described in Paragraphs 2 and 3.1.1 through 3.1.5 of Appendix P of 40 CFR Part 51. The monitoring systems shall meet the minimum specifications described in Paragraphs 3.3 through 3.8 of Appendix P of 40 CFR Part 51. The quarterly excess emissions (EE) reports required under Appendix P of 40 CFR Part 51 shall be used as an indication of good operation and maintenance of the electrostatic precipitators. These boilers shall be deemed to be properly operated and maintained if the percentage of time the opacity emissions, calculated on a 6-minute average, in excess of 40 percent (including startups, shutdowns, and malfunctions) does not exceed 3.0 percent of the total operating time for any given calendar quarter, adjusted for monitor downtime (MD) as calculated below. In addition, these sources shall be deemed to be properly operated and maintained if the %MD does not exceed 2.0 percent.

Calculations for %EE and %MD

Percent Excess Opacity Emission (%EE) Calculation:

$$\%EE = \frac{\text{Total Excess Emission Time}}{\text{Total Source Operating Time} - \text{Monitor Downtime}} \times 100$$

Percent Monitor Downtime (%MD) Calculation for COMS:

$$\%MD = \frac{\text{Total Monitor Downtime}}{\text{Total Source Operating Time}} \times 100$$

- * Total Excess Emission Time contains any 6-minute period greater than 40% opacity including startup, shutdown, and malfunction.
- ** Total Monitor Downtime includes Quality Assurance (QA) activities unless exempted by regulation or defined in an agency approved QA Manual. The amount of exempt QA Time will be reported in the quarterly report as such.
- *** If a source operates less than 2200 hours during any quarter, the source may calculate the %EE and/or %MD using all operating data for the current quarter and the preceding quarters until 2200 hours of data are obtained.

iii. Reporting Requirements

For periods of excess emissions, defined as each 6-minute period average greater than 40 percent opacity, the opacity measurements made by the COMS shall be reported no later than 30 days after the end of the quarter as described in Paragraphs 4 and 5.1 of Appendix P of 40 CFR Part 51 except that a six-minute time period shall be deemed as an appropriate alternative opacity averaging period as described in Paragraph 4.2 of Appendix P of 40

CFR Part 51.

i. 2D .1416 "Emission Allocations for Utility Companies"

i. Regulatory Analysis

(A) After November 1, 2000 but before the EPA promulgation of revisions to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply:

(1) The total emissions from all the coal-fired boilers and combustion turbines that are not listed in 15A NCAC 2D .1417 at Duke Energy Corporation's Allen, Belews Creek, Buck, Cliffside, Dan River, Marshall, and Riverbend facilities shall not exceed:

- (a) 17,816 tons per ozone season for 2004;
- (b) 23,072 tons per ozone season for 2005; and
- (c) 21,278 tons per ozone season for 2006 and each year thereafter until revised according to 15A NCAC 2D .1420.

(2) Furthermore, except as allowed under 15A NCAC 2D .1419, individual sources at these facilities named in the table in this Subparagraph shall not exceed during the ozone season the nitrogen oxide emission allocations in the table.

SOURCE	NO_x EMISSION ALLOCATIONS (TONS/SEASON) 2004	NO_x EMISSION ALLOCATIONS (TONS/SEASON) 2005	NO_x EMISSION ALLOCATIONS (TONS/SEASON) 2006 AND LATER
ES-1 (Boiler 1)	76	98	91
ES-2 (Boiler 2)	82	106	98
ES-3 (Boiler 3)	107	138	128
ES-4 (Boiler 4)	120	156	144
ES-5 (Boiler 5)	1326	1717	1584

(B) After November 1, 2000, and after any EPA promulgation of revisions to 40 CFR Part 51, Subpart G, revising the nitrogen oxide budget for North Carolina, the following limits apply:

- (1) The total emissions from all the coal-fired boilers and combustion turbines that are not listed in 15A NCAC 2D .1417 at Duke Energy Corporation's Allen, Belews Creek, Buck, Cliffside, Dan River, Marshall, and Riverbend facilities shall not exceed:
- (a) 17,816 tons per ozone season for 2004;
 - (b) 22,270 tons per ozone season for 2005; and
 - (c) 16,780 tons per ozone season for .2006 and each year thereafter until revised according to 15A NCAC 2D .1420.
- (2) Furthermore, except as allowed under 15A NCAC 2D .1419, individual sources at these facilities named in the table in this Subparagraph shall not exceed during the ozone season the nitrogen oxide emission allocations in the table.

SOURCE	NO _x EMISSION ALLOCATIONS (TONS/SEASON) 2004	NO _x EMISSION ALLOCATIONS (TONS/SEASON) 2005	NO _x EMISSION ALLOCATIONS (TONS/SEASON) 2006 AND LATER
ES-1 (Boiler 1)	76	95	71
ES-2 (Boiler 2)	82	102	77
ES-3 (Boiler 3)	107	134	101
ES-4 (Boiler 4)	120	150	113
ES-5 (Boiler 5)	1326	1658	1249

(C) These sources will comply with the requirements of 15A NCAC 2D .1416 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 .1416 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.

B. two No. 2 fuel oil/propane-fired auxiliary boilers (ID No. ES-6(AuxB) and ES-7(AuxB))

1. Description

These boilers are used to generate steam during periods when steam is not available from the main plant boilers. Boiler ES-6 began operation in 1969 and has a rating of 71.5 million Btu per hour heat input. The exact manufacturing date for Boiler ES-7 is not known (the company indicates that it is before 6/10/89) and has a rating of 4 million Btu per hour heat input. It is therefore assumed that the 4 million Btu boiler was manufactured after July 1, 1971. Boiler ES-7, which had previously been an insignificant activity, was permitted as a normal source with permit No. 04044R16.

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	0.10 pounds 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	<p><u>ID No. ES-6(AuxB)</u> Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply:</p> <p>40 percent opacity (except during startups) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p> <p>State-only requirement 40 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p>	<p>40 CFR 52 Subpart II</p> <p>15A NCAC 2D .0521</p>
	<p>When the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies beginning on the date the final rule is published in the Federal Register:</p> <p>40 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p>	<p>15A NCAC 2D .0521</p>

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions	<p><u>ID No. ES-7(AuxB)</u> Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply:</p> <p>20 percent opacity (except during startups) when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity if (i) no six-minute period exceeds 87 percent opacity, (ii) no more than one six-minute period exceeds 20 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p> <p>State-only requirement 20 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity if (i) no six-minute period exceeds 87 percent opacity, (ii) no more than one six-minute period exceeds 20 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 20 percent opacity in any 24-hour period.</p>	<p>40 CFR 52 Subpart II</p> <p>15A NCAC 2D .0521</p>
	<p>When the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies beginning on the date the final rule is published in the Federal Register:</p> <p>20 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity if (i) no six-minute period exceeds 87 percent opacity, (ii) no more than one six-minute period exceeds 20 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 20 percent opacity in any 24-hour period.</p>	<p>15A NCAC 2D .0521</p>

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 these boilers are determined based on the total maximum heat input of all fuel burning indirect heat exchangers at the plant site of 9069.5 million Btu per hour (647, 647, 810, 810, 6080, 71.5 and 4 for boilers ES-1, ES-2, ES-3, ES-4, ES-5, ES-6 and ES-7 respectively).

Therefore emissions of particulate matter from these boilers shall not exceed the following:

$$E = 1.090 (9069.5)^{-0.2594} = 0.10 \text{ lb/mmBtu}$$

or:

$$\text{ES-6: } (0.10 \text{ lb/mmBtu})(71.5 \text{ mmBtu/hr}) = 7.15 \text{ lb/hr}$$

$$\text{ES-7: } (0.10 \text{ lb/mmBtu})(4 \text{ mmBtu/hr}) = 0.40 \text{ lb/hr}$$

There are no control devices to control particulates.

Potential particulate emissions for boiler ES-6 when firing No. 2 fuel oil are estimated to be 1.03 lb/hr using an AP-42 (5th Edition) factor of 2.0 lb/1000 gal (AP-42, Table 1.3-2) and a maximum design capacity of 517 gallons per hour fuel oil rate as given on form B3 of the application. Potential particulate emissions for boiler ES-7 when firing No. 2 fuel oil are estimated to be 0.058 lb/hr using an AP-42 (5th Edition) factor of 2.0 lb/1000 gal (AP-42, Table 1.3-2) and a maximum design capacity of 29 gallons per hour fuel oil rate as given on form B3 of the application. Particulate emissions when firing propane will be much less than for No.2 fuel oil. Therefore, since these potential emissions are less than the above 2D .0503 allowable emission rates, compliance is indicated.

ii. Monitoring/Recordkeeping/Reporting Requirements

Since the potential particulate emissions are less than the allowables, 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.

b. 2D .0516 "Sulfur Dioxide Emissions From Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. Therefore allowable SO₂ emissions are:

ES-6: (2.3 lb/mmBtu)(71.5 mmBtu/hr) = 164.5 lb/hr

ES-7: (2.3 lb/mmBtu)(4 mmBtu/hr) = 9.2 lb/hr

There are no control devices to control emissions of sulfur dioxide.

Potential SO₂ emissions for boiler ES-6 when firing No. 2 fuel oil with a sulfur content of 0.5 % by weight are estimated to be 36.7 lb/hr using an AP-42 (5th Edition) factor of 142S lb/1000 gal, where S = % sulfur, and at a maximum design capacity of 517 gallons per hour fuel oil rate as given on form B3 of the application. Potential SO₂ emissions for boiler ES-7 when firing No. 2 fuel oil with a sulfur content of 0.5 % by weight are estimated to be 2.06 lb/hr using an AP-42 (5th Edition) factor of 142S lb/1000 gal, where S = % sulfur, and at a maximum design capacity of 29 gallons per hour fuel oil rate as given on form B3 of the application. Emissions of SO₂ when firing propane will be negligible. Therefore, since this is less than the 2D .0516 allowable, compliance is indicated.

ii. Monitoring/Recordkeeping/Reporting

There are no testing, monitoring, recordkeeping, or reporting requirements for this source due to the inherently low sulfur content of No. 2 fuel oil.

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

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply:

i. Regulation Analysis

ES-6: Visible emissions shall not exceed 40 percent opacity (except during startups) when averaged over a six-minute period for sources manufactured as of July 1, 1971.

ES-7: Visible emissions shall not exceed 20 percent opacity (except during startups) when averaged over a six-minute period for sources established after July 1, 1971.

This regulation is the “old” 2D .0521, which was replaced by the current 2D .0521 at the state level on April 1, 2001, and remains the only approved opacity rule at the federal level. Compliance is demonstrated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping/Reporting Requirements

There are no monitoring, recordkeeping or reporting requirements.

(State-only requirement)

d. 2D .0521 "Control Of Visible Emissions"

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply:

i. Regulation Analysis

ES-6: Visible emissions shall not exceed 40 percent opacity when averaged over a six-minute period for sources manufactured as of July 1, 1971.

ES-7: Visible emissions shall not exceed 20 percent opacity (except during startups) when averaged over a six-minute period for sources established after July 1, 1971.

Compliance is indicated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, whenever this source operates for not more than 1100 hours using No. 2 fuel oil, the Permittee shall perform a Method 9 test. This procedure will be repeated before each subsequent 1100 hours of operation from the last test. The results of the observations shall be recorded.

iii. Reporting Requirements

The permittee shall submit the results of the Method 9 test as a part of the quarterly report described in Section VI.A.2.h.iii above.

e. 2D .0521 "Control Of Visible Emissions"

When the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply beginning on the date the final rule is published in the Federal Register:

i. Regulation Analysis

ES-6: Visible emissions shall not exceed 40 percent opacity when averaged over a six-minute period for sources manufactured as of July 1, 1971.

ES-7: Visible emissions shall not exceed 20 percent opacity (except during

startups) when averaged over a six-minute period for sources established after July 1, 1971.

Compliance is indicated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, whenever this source operates for not more than 1100 hours using No. 2 fuel oil, the Permittee shall perform a Method 9 test. This procedure will be repeated before each subsequent 1100 hours of operation from the last test. The results of the observations shall be recorded.

iii. Reporting Requirements

The permittee shall submit the results of the Method 9 test as a part of the quarterly report described in Section VI.A.2.h.iii above.

**C. one flyash transfer and storage system (ID No. ES-8(FTS)) consisting of:
one flyash vacuum handling system (ID No. ES-8A) and associated vacuum filter (ID No. CD-15(Fltr)), and
one flyash storage silo, truck load out and blow off system (ID No. ES-8B) and associated bagfilter (ID No. CD-14(Fltr));**

**one flyash transfer and storage system (ID No. ES-9(FTS)) consisting of:
one flyash vacuum handling system (ID No. ES-9A) and associated bagfilter (ID No. CD-17(Fltr)), and
one flyash storage silo (ID No. ES-9B) and associated bagfilter (ID No. CD-16(Fltr)); and**

one limestone storage silo (ID No. ES-11(LSS)) and associated bagfilter (ID No. CD-18(Fltr))

1. Description

The older Unit 5 flyash transfer system (ID No. ES-8) was added to permit No. 04044R13 (issued October 6, 1997) when the ownership was transferred from Monex Resources to Duke Power. Some identification numbers have been changed.

The newer Unit 5 flyash transfer system (ID No. ES-9) was added to permit No. 04044R16 (issued October 4, 2000). In addition the bagfilter on the older silo was replaced by a slightly larger pulse jet bagfilter with 1,200 square feet of filter area (the old filter had 1,066 square feet of filter area). The system will be used to store flyash and will transfer flyash to the existing silo for truck load out. Some identification numbers have been changed.

The limestone storage silo (ID No. ES-11) was added with permit No. 04044R17 (issued March 6, 2001). This silo is used to store limestone that is to be fed into the Unit 5 boiler

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	$E = 4.10 \times P^{0.67}$ for P # 30 tons/hr, or $E = 55.0 \times P^{0.11} - 40$ for P >30 tons/hr where: E = allowable emission rate in pounds per hour P = process weight rate in tons per hour	2D .0515
visible emissions	<p>Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limits apply:</p> <p>40 percent opacity (except during startups) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p> <p>State-only requirement 40 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p>	<p>40 CFR 52 Subpart II</p> <p>15A NCAC 2D .0521</p>
	<p>When the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies beginning on the date the final rule is published in the Federal Register:</p> <p>40 percent opacity (except during startups, shutdowns, and malfunctions) when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent opacity if (i) no six-minute period exceeds 90 percent opacity, (ii) no more than one six-minute period exceeds 40 percent opacity in any hour, and (iii) no more than four six-minute periods exceed 40 percent opacity in any 24-hour period.</p>	15A NCAC 2D .0521

a. 2D .0515 "Particulates From Miscellaneous Industrial Processes"

i. Regulatory Analysis

Allowable emissions of particulate matter from any stack, vent, or other outlet of any industrial process for which no other emission control standards are applicable shall not exceed the amount calculated by the following equations:

$$E = 4.10 P^{0.67} \quad \text{for process weight rates equal to or less than 60,000 pounds per hour}$$

or

$$E = 55.0(P)^{0.11} - 40 \quad \text{for process weight rates greater than 60,000 pounds per hour}$$

where: E = allowable particulate emission rate, lbs/hr
P = process weight rate, tons/hr

Flyash transfer and storage system (ID No. ES-8)

The following information is taken from Kim Melvin's permit review for permit No. 4044R13 when the ownership of the existing flyash handling system was transferred from Monex Resources to Duke Power:

As detailed in the renewal review for Monex Resources, the controlled potential particulate emission rate for the flyash operations is estimated at 0.031 pounds per hour. This rate is based on a maximum process rate of 23 tons per hour, an emission factor of 0.27 pounds per ton (AP-42 8.10-4; emission factor for cement handling), and a control efficiency of 99.5%.

The allowable particulate emission rate for a process rate of 23 tons/hr is:

$$E = 4.10 P^{0.67} = 4.10(23)^{0.67} = 33.5 \text{ lbs/hr}$$

Since the after control emissions of 0.031 lbs/hr are less than the allowable, compliance is indicated. Note that the before control emissions of this source will be more than the allowable, therefore, inspections, monitoring and recordkeeping are required.

Flyash transfer and storage system (ID No. ES-9)

The following is taken from Mike Parkin's review for permit No.

04044R16 (issued October 4, 2000) when this source was added to the permit:

According to the application for the new system, the maximum process rate is 25 tons per hour. The allowable emission based on this process rate in accordance with 2D .0515 is 35.4 lbs/hr. The application lists the control efficiency for both bagfilters as 99.99%. The emission rate for bagfilter ID No. CD-16 installed on the new storage silo is listed as 0.1 lbs/hr. The emission rate for bagfilter ID No. CD-17 installed on the new storage silo is listed as 0.15 lbs/hr. Using an emission factor of 0.27 pounds per ton (AP-42 8.10-4; emission factor for cement handling), and a control efficiency of 99.0% yields an estimated particulate emission rate of 0.07 lbs/hr per bagfilter or 0.14 lbs/hr for both bagfilters.

Since the after control emissions are less than the allowable, compliance is indicated. Note that the before control emissions of this source will be more than the allowable, therefore, inspections, monitoring and recordkeeping are required.

Limestone storage silo (ID No. ES-11)

The following was taken from Gautam Patnaik's review for permit No. 04044R17:

The table below shows the process rate for this source, the allowable emission rate for particulate matter, the before and after controls emission rate of particulate matter. Since, the after controls emission rate of particulate is below that of the allowable rate, this source will be in compliance with this regulation.

<i>Source ID No.</i>	<i>Process Rate tons/hr</i>	<i>^{.0515} Allowable rate of particulate matter Lbs/hr</i>	<i>before controls emission rate of particulate lbs/hr</i>	<i>^Nafter controls emission rate of particulate lbs/hr</i>
<i>ES-11</i>	<i>16</i>	<i>26.27</i>	<i>127</i>	<i>0.127</i>

^{.0515} Based on 2D .0515 regulation

^N Based on a control efficiency of 99.9%

Since the after control emissions are less than the allowable, compliance is indicated. Note that the before control emissions of this source will be more than the allowable, therefore, inspections, monitoring and recordkeeping are required.

ii. Monitoring/Recordkeeping Requirements

To ensure that optimum control efficiency of particulate matter is maintained by the vacuum filter and bagfilter, inspections and any required maintenance will be performed as recommended by the manufacturer. If manufacturer's recommendations are not available, as a minimum, inspections will include annual internal inspections of the vacuum filter and bagfilter to ensure structural integrity and monthly visual (external) inspections of the system ductwork and material collection unit for leaks. 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.

The Permittee shall keep records of the following:

- (A) the results of each inspection, and
- (B) any maintenance performed on the bagfilter.

iii. Reporting Requirements

The Permittee will submit the results of any maintenance performed on the vacuum filter and bagfilter within 30 days of a written request by DAQ. A summary report of monitoring and recordkeeping shall be submitted by January 30 and July 30 of each year.

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

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies:

i. Regulation Analysis

Visible emissions shall not exceed 20 percent opacity (except during startups) when averaged over a six-minute period for sources established after July 1, 1971. This regulation is the "old" 2D .0521, which was replaced by the current 2D .0521 at the state level on April 1, 2001, and remains the only approved opacity rule at the federal level. Compliance is demonstrated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping/Reporting Requirements

There are no monitoring, recordkeeping or reporting requirements.

(State-only requirement)

c. **2D .0521 "Control Of Visible Emissions"**

Until the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies:

i. Regulation Analysis

Visible emissions shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971. Compliance is indicated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping Requirements

One visual observation monthly of the emission point shall be performed for any visible emissions above normal operating conditions. The results of the observations shall be recorded.

iii. Reporting Requirements

A summary report of the visual observations shall be submitted by January 30 and July 30 of each year.

d. **2D .0521 "Control Of Visible Emissions"**

When the EPA approves the revised 15A NCAC 2D .0521 opacity rule, the following limit applies beginning on the date the final rule is published in the Federal Register:

i. Regulation Analysis

Visible emissions shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971. Compliance is indicated since the facility was found to be operating in compliance with this opacity requirement during the latest inspection.

ii. Monitoring/Recordkeeping Requirements

One visual observation monthly of the emission point shall be performed for any visible emissions above normal operating conditions. The results of the observations shall be recorded.

iii. Reporting Requirements

A summary report of the visual observations shall be submitted by January 30 and July 30 of each year.

VII. Phase II Acid Rain Requirements

Unit Nos. 1, 2, 3, 4 and 5 at the Cliffside Steam Station are “existing” affected units under 40 CFR Part 72.6 and 15A NCAC 2Q .0401(c)(1) since they began commercial operation before the date of enactment of the Clean Air Act Amendments of 1990 (November 15, 1990). Existing units do not include simple-cycle combustion turbines or units which serve a generator with a nameplate capacity of 25MWe or less.

The following tables identify the SO₂ allowance allocations and NO_x requirements for each affected unit.

		2003	2004	2005	2006	2007
ES-1 Unit 1 Boiler ID No. 1	SO ₂ allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	898*	898*	898*	898*	898*
	NO _x limit	<p>Pursuant to 40 CFR 76.8(d)(2), the Division of Air Quality approves a NO_x early election compliance plan for boiler No. 1. The compliance plan is effective for calendar year 2000 through calendar year 2007. Under the compliance plan, this unit’s annual average NO_x emission rate for each year, determined in accordance with 40 CFR part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(1) of 0.45 lb/mmBtu for tangentially fired boilers. If the unit is in compliance with its applicable emission limitation above for each year of the plan, then the unit shall not be subject to the applicable emission limitation, under 40 CFR 76.7(a)(1), of 0.40 lb/mmBtu until calendar year 2008.</p> <p>In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.</p>				

		2003	2004	2005	2006	2007
ES-2 Unit 2 Boiler ID No. 2	SO ₂ allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	872*	872*	872*	872*	872*
	NO _x limit	<p>Pursuant to 40 CFR 76.8(d)(2), the Division of Air Quality approves a NO_x early election compliance plan for boiler No. 2. The compliance plan is effective for calendar year 2000 through calendar year 2007. Under the compliance plan, this unit's annual average NO_x emission rate for each year, determined in accordance with 40 CFR part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(1) of 0.45 lb/mmBtu for tangentially fired boilers. If the unit is in compliance with its applicable emission limitation above for each year of the plan, then the unit shall not be subject to the applicable emission limitation, under 40 CFR 76.7(a)(1), of 0.40 lb/mmBtu until calendar year 2008.</p> <p>In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.</p>				

		2003	2004	2005	2006	2007
ES-3 Unit 3 Boiler ID No. 3	SO ₂ allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	1291*	1291*	1291*	1291*	1291*
	NO _x limit	<p>Pursuant to 40 CFR 76.8(d)(2), the Division of Air Quality approves a NO_x early election compliance plan for boiler No. 3. The compliance plan is effective for calendar year 2000 through calendar year 2007. Under the compliance plan, this unit's annual average NO_x emission rate for each year, determined in accordance with 40 CFR part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(1) of 0.45 lb/mmBtu for tangentially fired boilers. If the unit is in compliance with its applicable emission limitation above for each year of the plan, then the unit shall not be subject to the applicable emission limitation, under 40 CFR 76.7(a)(1), of 0.40 lb/mmBtu until calendar year 2008.</p> <p>In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.</p>				

		2003	2004	2005	2006	2007
ES-4 Unit 4 Boiler ID No. 4	SO ₂ allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	1305*	1305*	1305*	1305*	1305*
	NO _x limit	<p>Pursuant to 40 CFR 76.8(d)(2), the Division of Air Quality approves a NO_x early election compliance plan for boiler No. 4. The compliance plan is effective for calendar year 2000 through calendar year 2007. Under the compliance plan, this unit's annual average NO_x emission rate for each year, determined in accordance with 40 CFR part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(1) of 0.45 lb/mmBtu for tangentially fired boilers. If the unit is in compliance with its applicable emission limitation above for each year of the plan, then the unit shall not be subject to the applicable emission limitation, under 40 CFR 76.7(a)(1), of 0.40 lb/mmBtu until calendar year 2008.</p> <p>In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.</p>				

		2003	2004	2005	2006	2007
ES-5 Unit 5 Boiler ID No. 5	SO ₂ allowances, under Tables 2, 3, or 4 of 40 CFR part 73.	14036*	14036*	14036*	14036*	14036*
	NO _x limit	<p>Pursuant to 40 CFR 76.8(d)(2), the Division of Air Quality approves a NO_x early election compliance plan for boiler No. 5. The compliance plan is effective for calendar year 2000 through calendar year 2007. Under the compliance plan, this unit's annual average NO_x emission rate for each year, determined in accordance with 40 CFR part 75, shall not exceed the applicable emission limitation, under 40 CFR 76.5(a)(1) of 0.45 lb/mmBtu for tangentially fired boilers. If the unit is in compliance with its applicable emission limitation above for each year of the plan, then the unit shall not be subject to the applicable emission limitation, under 40 CFR 76.7(a)(1), of 0.40 lb/mmBtu until calendar year 2008.</p> <p>In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.</p>				

* The number of allowances allocated to Phase II-affected units by U.S. EPA may change under 40 CFR part 73. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned conditions necessitate a revision to the unit SO₂ allowance allocations identified in this permit (See 40 CFR 72.84).

VIII. MACT Applicability and Requirements

The facility may be subject to the electric utility and combustion turbine MACT standards which are to be proposed in future.

IX. 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.

X. 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.

Item 83 on the list is to allow burning of 600-1000 lbs elemental sulfur per year by blending on the coal pile. This sulfur is intermittently produced from occasional spillage, clogging, and leakage resulting from maintenance of the flue gas SO₃ injection system and storage. This activity was previously allowed for the Marshall Steam Station by the Mooresville Regional Office in a letter to Bill Horton from Keith Overcash dated September 1, 1993. Duke requested this be allowed and added to the insignificant activity list in the Title V permit for Cliffside (and also at Marshall, Belews Creek and Allen) in an e-mail to Ed Martin from Bill Horton dated 20 May 2003. Duke states that they do not believe 40 CFR 60 Subpart H, "Standards of Performance for Sulfuric Acid Plants," applies because they are not burning elemental sulfur to produce sulfuric acid (see e-mail to Ed Martin from Bill Horton dated 22 May 2003). Only elemental sulfur generated on site may be burned.

XI. 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.

XII. Public Notice

Pursuant to 15A NCAC 2Q. 0521, a notice of the DRAFT Title V Operating Permit will be placed in a newspaper of general circulation in the area where the facility is located. The notice will provide for a 30 day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list, and EPA. In addition, notice of the DRAFT permit and opportunity for participation shall be 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) are South Carolina, Georgia, Tennessee and Virginia; North Carolina local air pollution control programs for Western North Carolina Regional Air Pollution Control Agency (Buncome and Haywood Counties), Mecklenburg County and Forsyth County; and the Catawba Indian Nation in York County South Carolina and the Eastern Band of Cherokee Indians in Swain, Jackson and Graham Counties North Carolina.

XIII. Recommendations

The initial Title V application for Duke Energy Corporation, Riverbend Station 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 preliminary determination that the facility is complying or will achieve compliance as specified in the draft permit with all applicable requirements. Therefore, the DAQ is proposing to issue the Title V Operating Permit upon completion of the public comment period and the EPA review.