

AIR PERMIT REVIEW

APPLICANT: Western Carolina University	SITE LOCATION: Cullowhee	COUNTY: Jackson	
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APPLICATION NUMBER: 5000085.03C	EXISTING PERMIT NUMBER: 00884R08	NEW PERMIT NUMBER: 00884T09	

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. Final approval for the Title V program was received October 1, 2001. Title V facilities are required to obtain an operating permit which addresses all applicable regulations under the State Implementation Plan, Federal Implementation Plan, and other provisions of the Clean Air Act (CAA). The Title V Operating Permit will define all of the facility's obligations under the CAA.

This First Time Title V Air Permit application Review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the Title V operating permit. The primary source of information used to construct the permit is the above referenced air permit application. This facility has previously been permitted as a Synthetic Minor. Changes in business conditions warrant the Company to exceed Title V thresholds.

II. Background Information

The Title V operating permit replaces an existing Air Quality Construction and Operation Permit No. 00884R08 for Western Carolina University which was issued on November 26, 2003 and is currently scheduled to expire on April 30, 2005.

Pursuant to 15A NCAC 2Q .0506 Western Carolina University submitted its initial Title V application to the Division of Air Quality on December 15, 2003. The application was considered complete for processing on December 15, 2003. The permit is required to go to public notice pursuant to 15A NCAC 2Q .0521.

III. Facility Description

Western Carolina University is an educational institution. Currently the emissions sources at the facility are four natural gas/No. 6 fuel oil-fired boilers. The facility is a Title V facility based on SO₂ emissions greater than 100 tons per year.

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. The facility was considered to be out of compliance in 2003 for exceeding SO₂ emissions limits established in the State Synthetic Minor permit.

The facility is considered to be in compliance now that a completed Title V application has been processed by this Office.

V. Summary of Emission Sources and Control Devices

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
1	natural gas/No. 6 fuel oil-fired boilers (34.95 million Btu per hour maximum heat input)	N/A	N/A
2	natural gas/No. 6 fuel oil-fired boilers (40.05 million Btu per hour maximum heat input)	N/A	N/A
3	natural gas/No. 6 fuel oil-fired boilers (22.05 million Btu per hour maximum heat input)	N/A	N/A
4	natural gas/No. 6 fuel oil-fired boilers (43.95 million Btu per hour maximum heat input)	N/A	N/A

VI. Emission Source-by-Source Evaluation

A. Four natural gas/No. 6 fuel oil-fired boilers (ID Nos. 1, 2, 3 and 4).

1. Description

Four natural gas/No. 6 fuel oil-fired boilers: 34.95, 40.05, 22.05, and 43.95 million Btu per hour heat input. Note that the State permit originally listed the maximum heat input for the boilers as 50, 50, 50, and 25 million Btu. This is incorrect and was corrected for this Title V permit.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards 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.

a. NCAC 2D .0503: “Particulates from Fuel Burning Indirect Heat Exchangers”.

i. Regulation Analysis

The total rated heat input for the natural gas/No. 6 fuel oil-fired boilers is 141 million Btu/hour. Allowable emissions are determined by the formula, $E = 1.090 \times Q^{-0.2594}$, where E is the allowable particulate emissions in pounds per million Btu, and Q is the maximum heat input in million Btu per hour. Note that the maximum heat input is determined by the summation of all fuel burning indirect heat exchangers located at the facility. Therefore, the allowable particulate emissions for each boiler are:

$$E = 1.090 \times (141)^{-0.2594} \qquad E = 0.302 \text{ lb/million Btu.}$$

Worst-case particulate emission occur when combusting No. 6 fuel oil. Estimated particulate emissions were calculated by this Office using the DAQ-approved spreadsheet for fuel oil combustion. Estimated particulate emissions for each boiler are:

Boiler 1: 5.60 lb/hr = 0.16 lb/MBtu;
Boiler 2: 6.41 lb/hr = 0.16 lb/MBtu;
Boiler 3: 3.53 lb/hr = 0.16 lb/MBtu;
Boiler 4: 7.04 lb/hr = 0.16 /b/MBtu.

Actual estimated particulate emissions are less than allowable particulate emissions. Therefore, this facility is considered to be in compliance with 2D .0503.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/Recordkeeping/reporting is required for particulate emissions from the firing of natural gas or No. 6 fuel oil.

b. NCAC 2D .0516: “Sulfur Dioxide Emissions from Combustion Sources”

i. Regulation Analysis

This regulation states in part, “ sulfur dioxide emissions from any source of combustion...shall not exceed 2.3 pounds of sulfur dioxide per million Btu heat input”. The worst-case scenario is obtained from the DAQ-approved No. 6 fuel oil-fired boiler combustion spreadsheet. When combusting fuel oil with a sulfur content of 2.1 percent, the estimated sulfur dioxide emissions are:

Boiler 1: 76.82 lb/hr = 2.19 lb/MBtu;
Boiler 2: 88.03 lb/hr = 2.19 lb/MBtu;
Boiler 3: 48.47 lb/hr = 2.19 lb/MBtu;
Boiler 4: 96.60 lb/hr = 2.19 /b/MBtu.

The estimated sulfur dioxide emission rate is less than the allowable emission rate. Therefore, the facility is expected to be in compliance with 2D .0516.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping is required when combusting natural gas. When combusting No. 6 fuel oil, records must be maintained in a logbook indicating: the name of the fuel oil supplier, the maximum sulfur content of the fuel oil received during the quarter, the method used to determine the maximum sulfur content, and a statement from the responsible official that the records of fuel oil supplier certification submitted represent all of the No. 6 fuel oil fired during that period.

The permittee must submit a summary report of the fuel oil supplier certifications each July and December for the previous six months.

c. NCAC 2D .0521: "Control of Visible Emissions"

i. Regulation Analysis

Three of the natural gas/No. 6 fuel-oil fired boilers (ID Nos. 1, 2, and 3) were manufactured before July 1, 1971. Therefore, they are limited to a maximum of 40 percent visible opacity emissions when averaged over a six-minute period, except one occurrence of 90 percent visible opacity is allowed in any hour, but not more than four times in a 24-hour period.

Boiler ID No. 4 was manufactured after July 1, 1971 and is limited to 20 percent visible opacity emissions when averaged over a six-minute period, except one occurrence of 87 percent visible opacity is allowed in any hour, but not more than four times in a 24-hour period.

The boilers have shown no past compliance problems in regards to visible opacity emissions. Past history indicates the boilers have been operated in compliance, and all indications are that the boilers will remain in compliance with 2D .0521.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/Recordkeeping is required when combusting natural gas. When combusting No. 6 fuel oil, the Permittee must observe visible emissions once per day. These observations must be recorded in a logbook, with the following information: the date and time of each recorded action, the results of each observation while noting an emissions that were observed in noncompliance and any corrective action taken. The Permittee must submit a summary report each July and December for the preceding six months.

VII. Other Applicable Requirements:

A. MACT

The facility is subject not subject to MACT.

B. PSD

PSD is not applicable and there are also no current PSD avoidance stipulations in the permit.

C. NSPS

The facility is not subject to NSPS.

D. TOXICS

The facility is not subject to the NC Toxics program.

E. ACCIDENTAL CHEMICAL RELEASE

Section 112(r) does not apply.

VIII. 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.

IX. General Conditions

The “General Conditions” section of the Title V Operating Permits 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.

X. Insignificant Activities

No insignificant activities were submitted on the Company’s Title V application, nor have any been noted on plant inspections. Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement.

XI. Public Notice

Pursuant to 15A NCAC 2Q .0521, a second notice of the draft Title V Operating Permit was placed in a newspaper of general circulation in the area where the facility is located. The notice provided for a 30 day comment period, with an opportunity for a public hearing. Copies of the public notice were sent to persons on the Title V mailing list, EPA, South Carolina, Georgia, Tennessee.

XII. Recommendations

The first time Title V application for Western Carolina University has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. The DAQ has made a determination that the facility is complying or will achieve compliance as specified in the permit with all applicable requirements. Therefore, the DAQ proposes to issue the first time Title V permit once the 30-day public notice and 45-day EPA review periods have been completed. Recommend issuance of Initial Title V Permit No. 00884T09.