

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date:

Region: Winston-Salem Regional Office
County: Rockingham
NC Facility ID: 7900015
Inspector's Name: Dylan Wright
Date of Last Inspection: 03/17/2022
Compliance Code: 3 / Compliance - inspection

Facility Data	Permit Applicability (this application only)
<p>Applicant (Facility's Name): Duke Energy Carolinas, LLC - Dan River Comb. Cycle Facility</p> <p>Facility Address: Duke Energy Carolinas, LLC - Dan River Comb. Cycle Facility 864 South Edgewood Road Eden, NC 27288</p> <p>SIC: 4911 / Electric Services NAICS: 221112 / Fossil Fuel Electric Power Generation</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>	<p>SIP: 02D .0612, 02D .0613, 02Q .0501(c)(1) NSPS: NA NESHAP: NA PSD: NA PSD Avoidance: NA NC Toxics: NA 112(r): NA Other: NA</p>

Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	<p>Application Number: 7900015.22A Date Received: 03/28/2022 Application Type: Modification Application Schedule: TV-Significant Existing Permit Data Existing Permit Number: 03455/T32 Existing Permit Issue Date: 11/02/2020 Existing Permit Expiration Date: 10/31/2025</p>
William Milam, Jr. Senior EHS Professional (336) 635-3023 864 South Edgewood Road Eden, NC 27288	Terry Tuck General Manager II 864 South Edgewood Road Eden, NC 27288	Erin Wallace Lead Environmental Specialist (919) 546-5797 410 South Wilmington Street Raleigh, NC 27601	

Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2020	9.73	268.89	33.02	98.79	153.74	1.99	1.35 [Formaldehyde]
2019	9.72	272.76	33.10	98.97	151.82	2.00	1.33 [Formaldehyde]
2018	10.96	249.18	36.81	107.94	170.20	2.24	1.49 [Formaldehyde]
2017	10.36	259.83	42.28	113.02	166.37	2.19	1.46 [Formaldehyde]
2016	10.39	232.60	36.61	107.45	163.84	2.15	1.43 [Formaldehyde]

<p>Review Engineer: Ed Martin</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p>Comments / Recommendations:</p> <p>Issue 03455/T33 Permit Issue Date: _____ Permit Expiration Date: _____</p>
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Chronology

March 28, 2022	Application 7900015.22A was received and complete for processing.
May 3, 2022	Erin Wallace was asked if Duke Energy Carolinas (DEC) had received approval from the Stationary Source Compliance Branch (SSCB) pursuant to 02D .0612 for the CO CEMS alternative monitoring they propose.
May 10, 2022	DEC requested the SSCB approve the alternate CO CEMS monitoring as described in the application, which was included in their request.
May 13, 2022	SSCB approved DEC's alternate monitoring plan in a letter to the Responsible Official, Terry Tuck.
May 19, 2022	The draft permit and review were sent for supervisor's review.
May 20, 2022	The draft permit and review were sent to Erin Wallace at DEC, Dylan Wright at the Winston-Salem Regional Office, and Samir Parekh with SSCB.
June 16, 2022	DEC's comments on the draft permit were received.
xx, 2022	Sent the draft permit to 30-day public notice and 45-day EPA review.
xx, 2022	Public notice period ended.
xx, 2022	EPA's comment period ended.
xx, 2022	Permit was issued.

I. Purpose of Application

The current monitoring of carbon monoxide (CO) emissions in the PSD avoidance condition in permit condition 2.1.A.4.d for the two natural gas fired combined cycle combustion turbines ES-11 and ES-12 requires that the facility calculate emissions according to a prescriptive equation. Emissions of CO are calculated at various operating conditions using the manufacturer's emission factors as provided in the original application when the turbines were first permitted in 2009 (T27). To more accurately determine CO emissions from these units, DEC is proposing to install, maintain, and operate a CO continuous emissions monitoring system (CO CEMS) on each stack in accordance with the 40 CFR Part 60 provisions. DEC requested alternate monitoring for the CO CEMS using 40 CFR Part 75 as discussed in Section IV below.

This is a one-step significant permit modification that contravenes or conflicts with a condition in the existing permit, following the procedures in 15A NCAC 02Q .0501(c)(l). Public notice of the draft permit is required at this time.

There are no equipment changes for this modification. DEC requested that insignificant activities I-15, I-SWP, I-78, and I-81 be removed from the permit.

II. Permit Changes

The following changes were made to Air Permit No. 03455T32:

Page	Section	Description of Changes
Cover	--	Added new cover letter with new format. Amended permit numbers and dates.
5	2.1 A, regulation table	Removed Subpart BBBBBB from the Cross State Air Pollution Rule 40 CFR Part 97 for nitrogen oxides.
8-11	2.1 A.4	Revised this section mainly to replace CO monitoring equations that used emission factors with monitoring using CO CEMS in Section 2.1 A.4.c (previously Section 2.1 A.4.d). Other changes for consistency among sub-sections and to clarify monitoring requirements.
18	2.3	Removed "Federal-Enforceable Only" and removed Subpart BBBBBB "TR NOx Ozone Season Trading Program."
20	3	Created this new section for insignificant activities. Removed I-15, I-SWP, I-78, and I-81.
21-29	4	Created this new section and moved General Conditions to this section. Updated General Conditions to version 6.0, dated 01/07/2022.

III. Facility Description

DEC's Dan River Steam Station is an electric utility plant that generates electrical power using combustion turbines. The Dan River facility has two natural gas-fired combined-cycle combustion turbines (ID Nos. ES-11 and ES-12), one multi-cell cooling tower for condensing the heat recovery steam generator turbine exhaust steam (ID No. ES-13), one natural gas-fired auxiliary boiler (ID No. ES-14), one No. 2 fuel oil-fired emergency generator (ID No. ES-15), and one No. 2 fuel oil-fired emergency firewater pump (ID No. ES-16).

IV. Emissions and Regulatory Analysis

The proposed CO CEMS are subject to having a quality assurance program required by 40 CFR Part 60, Appendix F, Section 3, Quality Assurance Procedures, as specified in 15A NCAC 02D .0613. However, DEC has requested alternate monitoring using the 40 CFR Part 75 requirements as discussed below.

DEC requested alternate monitoring for the CO CEMS, pursuant to 15A NCAC 2D .0612, in an email to Steve Hall and Gary Saunders with SSCB on May 10, 2022. SSCB approved DEC's alternate monitoring plan in a letter to the Responsible Official, Terry Tuck, on May 13, 2022.

In addition to the QA/QC requirements of 40 CFR Part 60, the turbines are also subject to 40 CFR Part 75 monitoring, recordkeeping, and reporting requirements for the acid rain program and the Cross State Air Pollution Rule (CSAPR) NOx and SO₂ CEMS. The Part 75 quality control requirements are required at different frequencies and intervals than the Part 60 requirements. DEC is requesting that the frequencies and intervals between the QA/QC requirements for the CO CEMS under 40 CFR Part 60 be aligned with those under 40 CFR Part 75 so that they can conduct all QA/QC activities on the same schedule.

CGAs

Appendix F to Part 60 requires a Cylinder Gas Audit (CGA) be conducted on each CO CEMS once per calendar quarter, even during calendar quarters when there is no operation. The Part 60 CGA is similar to the “linearity” test required in Part 75. However, Part 75 only requires a linearity test in quarters when the unit operates at least 168 unit operating hours. For consistency, DEC is requesting that the Part 75 operating hour criteria for linearity tests be allowed for the CO CEMS. The permit will require a CGA to be conducted at least once each QA operating quarter on each CO CEMS in accordance with 40 CFR Part 75, Appendix B, §2.2.1 instead of once every calendar quarter. A *QA operating quarter* is defined as a calendar quarter in which the unit operates at least 168 unit operating hours, and a *unit operating hour* is a clock hour during which a unit combusts any fuel, either for part of the hour or for the entire hour. Regardless of the number of hours of operation, at a minimum, a CGA shall be conducted at least once every four calendar quarters on each CO CEMS consistent with the requirements in 40 CFR Part 75, Appendix B, §2.2.3(f).

RATAs

Appendix F of Part 60 requires a Relative Accuracy Test Audit (RATA) annually. DEC is requesting that the requirement to complete a RATA be once every four QA operating quarters (as defined above) as allowed by Part 75. The permit will require a RATA to be conducted once every four successive QA operating quarters in accordance with 40 CFR Part 75, Appendix B, §2.3.1.2 instead of once every four calendar quarters. Regardless of the number of hours of operation, at a minimum, a RATA shall be conducted at least once every eight calendar quarters on each CO CEMS consistent with the requirements in 40 CFR Part 75, Appendix B, §2.3.1.1. The frequency timeline for the RATAs shall begin with the date of the RATA completed during the CEMS Certification.

Grace Periods

Also, to be consistent, DEC is requesting that the “grace period” provisions allowed by Part 75, Appendix B, §2.2.4 and §2.3.3 for completing the linearity tests (CGAs) and RATAs apply.

V. Public Notice

Pursuant to 15A NCAC 02Q .0521, a notice of the draft Title V Operating Permit will be published on the DAQ website to provide for a 30-day comment period with an opportunity for a public hearing. Copies of the draft (proposed) permit, review and public notice will be sent to EPA for their 45-day review, to persons on the Title V mailing list, to the Winston-Salem Regional Office, and to the Permittee.

VI. Other Requirements

PE Seal

A PE seal is not required since no new control devices are being added.

Zoning

There is no expansion of the facility, therefore zoning consistency is not required.

Fee Classification

The facility fee classification after this modification will remain as “Title V” as before.

VII. Comments on Draft Permit

The draft permit and review were sent to Erin Wallace at DEC, Dylan Wright at the Winston-Salem Regional Office, and Samir Parekh with Stationary Source Compliance Branch on May 20, 2022, for review.

DEC Comments

In an email on June 16, 2022, DEC provided a track changes version of the permit with the following comments:

1. There was a typo in the definition of "Total Monitor Downtime" in Section 2.1 A.4, which was corrected.
2. In response to DAQ's question on the draft language DEC provided in the application regarding the frequency timeline for the RATAs in Section 2.1 A.4.c.i.(B) of the permit and as shown on page 4 above, showing that the RATAs shall begin with the last RATA conducted prior to July 16, 2014, DEC corrected this to read: "The frequency timeline for the RATAs shall begin with the date of the RATA completed during the CEMS Certification."

SSCB Comments

In an email on May 26, 2022, Samir Parekh responded with the following comments:

1. It was suggested that this requirement be added to permit condition 2.1.A.4.c for the CO CEMS monitoring and to 2.1.A.4.e for the NO_x CEMS monitoring: "The Permittee shall report the percent excess emissions (%EE) for all periods of operation, including start-up, shutdown, and malfunction."

Response

Reporting condition 2.1.A.4.h already had this requirement: "Excess emissions must be reported for all periods of operation, including startup, shutdown, and malfunctions" for both the CO and NO_x CEMS. However, it was agreed (with Samir) to put this under the two separate conditions instead, to be a more standard monitoring condition.

2. Permit condition 2.1.A.4.c.i.(B) states that "... a RATA shall be conducted at least once every eight calendar quarters on each CO CEMS consistent with the requirements in 40 CFR Part 75, Appendix B, §2.3.1.1(a)." Samir notes that the Appendix B reference section should be §2.3.1.1 (without the (a)) as per the SSCB letter dated May 13, 2022, approving DEC's alternate monitoring plan.

Response

This was changed to be consistent with SSCB's approval letter which refers to altering the timing and frequency requirements in general for conducting the RATAs (including the frequency for doing those every four successive QA operating quarters), not necessarily specific to the requirement for conducting a RATA at least once every eight calendar quarters at a minimum which §2.3.1.1(a) had referred to.

WSRO Comments

In an email on May 24, 2022, Dylan Wright provided the following comments in a marked-up permit and review.

1. Insignificant activity I-15 was no longer on site, and I-78 has been disconnected from its fuel source and the plant told said they have no plans to run it again.

Response

DEC was asked if those should be removed from the IA list in Section 3. In an email on May 31, 2022, Erin Wallace responded that these sources are no longer on site: I-15, I-SWP, I-78, and I-81.

2. Some text in the review was gray instead of black.

Response

This was corrected.

VIII. Recommendations

Later