

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date:

Region: Fayetteville Regional Office
County: Richmond
NC Facility ID: 7700070
Inspector's Name: Robert Hayden
Date of Last Inspection: 11/05/2014
Compliance Code: 3 / Compliance - inspection

<p style="text-align: center;">Facility Data</p> <p>Applicant (Facility's Name): Duke Energy Progress, LLC – Richmond County Turbines</p> <p>Facility Address: Duke Energy Progress, LLC - Richmond County Turbines Richmond County Energy Complex Hamlet, NC 28345</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 style="text-align: center;">Permit Applicability (this application only)</p> <p>SIP: 2D: .0503, .0515, .0521, .0524, .0530, .1109, .1111 2Q: .0400</p> <p>NSPS: Dc, GG, IIII, KKKK NESHAP: YYYY, ZZZZ, DDDDD, Case-by-Case PSD: Major PSD Avoidance: n/a NC Toxics: n/a 112(r): n/a Other: CSAPR, Acid Rain Removed: CAIR</p>
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Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	
Kim Kashmer Senior Environmental Specialist (910) 205-2111 198 Energy Way Hamlet, NC 28345	Jason Haynes Station Manager (910) 205-2101 198 Energy Way Hamlet, NC 28345	Ann Quillian Sr. Environmental Specialist (919) 546-6610 PO Box 1551 Raleigh, NC 27602	<p>Application Numbers: 7700070.15A, 15B, 15C, & .14A</p> <p>Date Received: 06/12/2015, 06/12/2015, 10/02/2015, & 06/26/2014</p> <p>Application Type: Renewal / Name Change Application Schedule: TV-Renewal</p> <p style="text-align: center;">Existing Permit Data</p> <p>Existing Permit Number: 08759/T17 Existing Permit Issue Date: 07/18/2014 Existing Permit Expiration Date: 03/31/2016</p>

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2014	21.99	331.66	50.75	522.14	164.83	29.85	20.43 [Formaldehyde]
2013	20.85	371.90	59.55	614.42	192.51	35.07	24.18 [Formaldehyde]
2012	22.11	514.96	63.50	657.11	205.81	37.72	25.88 [Formaldehyde]
2011	19.59	517.01	49.39	506.63	159.16	29.73	19.86 [Formaldehyde]
2010	12.46	442.12	35.51	372.95	118.70	21.26	14.67 [Formaldehyde]

<p>Review Engineer: Russell Braswell</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p style="text-align: center;">Comments / Recommendations:</p> <p>Issue 08759/T18 Permit Issue Date: _____ Permit Expiration Date: _____</p>
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1. Purpose of Application:

- .15A

Duke Energy Progress, LLC – Richmond County Turbines (Duke) currently operates under Title V Air Quality Permit No. 08759T17, which expires on March 31, 2016. Duke has submitted this application in order to renew the permit. Because this renewal application was received at least nine months before the expiration date, the current permit will remain in effect, regardless of expiration date, until this permit application is accepted or denied.

- .15B and .14A

In addition to the Title V permit, Duke also operates under a Title IV permit (i.e. Acid Rain permit). Duke initially submitted application .14A in order to renew the acid rain permit. Duke then submitted another renewal application in order to synchronize the Title IV and Title V permit expiration dates. Because the renewal application was received before the expiration date, the current Title IV permit will remain in effect until these permit applications are accepted or denied.

- .15C

Duke has submitted a permit application for a name change.

2. Facility Description:

This facility operates simple and combined-cycle combustion turbines to generate electricity. According to the most recent inspection report¹, the combined-cycle turbines operate approximately continuously, and the simple-cycle turbines operate as needed.

3. History/Background Since the Previous Permit Renewal:

- April 25, 2011 Permit T12 issued. This action renewed the permit and added CAIR requirements to the permit.
- June 13, 2011 Application .11A received. This was for a significant modification.
- March 27, 2012 Application .12A received. This was for a significant modification.
- August 12, 2012 Permit T13 issued in response to application .12A. This action slightly upgraded turbine capacity. As a result, 2D .0530(u) was added to the permit.
- August 30, 2012 Application .12B received. This was for a major modification.
- April 29, 2013 Application .13A received. This was an administrative application to change the permit name.
- May 20, 2013 Permit T14 issued in response to application .13A.

1 Robert Hayden, November 6, 2014

- November 21, 2013 Permit T15 issued in response to application .12B. This action increased the maximum firing time for units 1-6. MACT Subpart YYYY was also added to the permit.
- December 2, 2013 Permit T16 issued. This action was an administrative amendment that addressed EPA's concerns that Permit T15 was issued before the EPA Notice period ended. EPA ultimately did not suggest any changes to the permit.
- July 18, 2014 Permit T17 issued in response to application .11A. This action finished the two-step application process begun by permits T10 and T11. This action also modified the ozone season requirements, removed State BACT requirements, and removed unused compliance options from the NSPS Subpart KKKK language in the permit.

4. Application Chronology:

- June 26, 2014 Application .14A received. This was for renewal of the Title IV permit.
- June 12, 2015 Applications .15A and .15B received in FRO. These were for renewal of the Title V and Title IV permits.
- August 3, 2015 .15A and .15B received in RCO from FRO.
- October 2, 2015 Application .15C received. This was for a name change.
- October 19, 2015 Email sent to Ann Quillian (environmental specialist for Duke) regarding the resumption of operations for Units 7 and 8. She responded the same day.
- November 17, 2015 An initial draft of the permit and review were sent to DAQ staff (Mark Cuilla, Tom Anderson, Samir Parekh, Greg Reeves, Robert Hayden) and Duke staff (Ann Quillian). For a summary of comments received, see Attachment 2.
- December 29, 2015 The EPA / Public Notice periods began.

5. Permit Modifications/Changes and TVEE Discussion:

As requested by Duke, the name of the facility has been updated. Previously, the facility name was "Duke Energy Progress - Richmond County Turbines".

CAIR has been replaced by CSAPR. See Section 6 for details.

Based on the initial draft of the permit, Duke submitted a list of several insignificant activities that needed to be added to the permit. This list was primarily storage tanks, but also included an emergency-use engine. This engine will be insignificant, but still subject to MACT and NSPS.

The list of changes to the permit can be found in Attachment 1.

6. Regulatory Review:

Duke is subject to the following regulations, in addition to the requirements in the General Conditions:

- a. 15A NCAC 2D .0503 "Particulates from Fuel Burning Indirect Heat Exchangers"
- b. 15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes"
- c. 15A NCAC 2D .0516 "Sulfur Dioxide from Combustion Sources"
- d. 15A NCAC 2D .0521 "Control of Visible Emissions"
- e. 15A NCAC 2D .0524 "New Source Performance Standards"
(40 CFR Part 60 Subparts Dc, GG, and KKKK)
- f. 15A NCAC 2D .0530 "Prevention of Significant Deterioration"
- g. 15A NCAC 2D .0530(u) "Use of projected actual emissions to avoid applicability of PSD requirements"
- h. 15A NCAC 2D .1109 "112(j) Case-by-Case Maximum Achievable Control Technology"
- i. 15A NCAC 2D .1111 "Maximum Achievable Control Technology"
(40 CFR Part 63 Subparts YYYY and DDDDD)
- j. 15A NCAC 2Q .0400 "Acid Rain Procedures"
- k. 40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC (Cross State Air Pollution Rules)

An extensive review for each applicable regulation is not included in this document, as the facility's status with respect to these regulations has not changed. The permit will be updated to reflect the most current stipulations for all applicable regulations. For a discussion of the changes to the Case-by-Case MACT and MACT Subpart DDDDD, see Section 7.b. For a discussion of the removal of NSPS Subpart Kb, see Section 7.a. For a discussion of the transition from the Clean Air Interstate Rules (CAIR) to the Cross State Air Pollution Rules (CSAPR), see below:

a. CAIR requirements

According to 40 CFR 52.35(f) and 52.36(e), CAIR no longer applies as of January 1, 2015. CAIR has been moved to Section 2.4. in the permit, which is for non-applicable regulations.

According to 15A NCAC 2D .2401(a), the purpose of the 2D .2400 rules was to implement CAIR. Given that CAIR no longer applies, the NC rules that implement CAIR also do not apply. Therefore, references to 2D .2400 rules have been moved to Section 2.4. in the permit.

b. CSAPR requirements

CSAPR (specifically, 40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC) was originally scheduled to take effect on January 1, 2012. This rule was planned as a replacement for CAIR. However, CSAPR was challenged in court and initially vacated by the DC Circuit Court. Legal issues were finally resolved in April 2014, when the US Supreme Court reversed that decision. Because the regulation was delayed by court proceedings, the effective date of the rule was moved to January 1, 2015.

Under this rule, each of the boilers at the facility is considered a "large electric generating unit", per 40 CFR 52.34. This rule and all requirements thereof are considered Federal-enforceable only. Compliance will be determined by the US EPA, not NC DAQ. A reference to this rule has been added to the permit.

7. NSPS, MACT/GACT, PSD/NSR, 112(r), RACT, CAM:

a. NSPS

1. *Subpart Dc "Small Industrial-Commercial-Institutional Steam Generating Units"*

This rule applies to all boilers with a heat input greater than 10 mmBtu/hr and constructed after 1989. Boilers ES-10 and ES-15 are subject to the rule.

For NG-fired boilers with a heat input less than 30 mmBtu/hr, the only requirement is that the facility keep records of fuel fired in the boiler.

Continued compliance with these recordkeeping requirements is expected.

2. *Subpart Kb "Volatile Organic Liquid Storage Vessels"*

This rule applies to storage tanks with a capacity greater than 75 m³ that store volatile organic liquids with a vapor pressure greater than 15 kPa. For tanks with a capacity greater than 150 m³, the pressure requirement is 3.5 kPa.

The storage tanks at this facility only store No. 2 fuel oil. According to AP-42 Table 7.1-2, the true vapor pressure of No. 2 fuel oil at 100 °F is 0.022 psi (0.152 kPa). Because this is well below the threshold in the NSPS, this regulation doesn't apply to any No. 2 storage tank at the facility.

Therefore, NSPS Subpart Kb has been removed from the permit.

3. *Subpart GG "Stationary Gas Turbines"*

This rule applies to turbines built after 1977 (but also not subject to NSPS Subpart KKKK). Units 1, 2, 3, 4, 6, 7, and 8 are subject to the rule.

The rule has emission limits for NO_x and SO₂. SO₂ emissions are limited by monitoring fuel sulfur content. NO_x emissions are limited by using a water injection system and either monitoring parameters of the turbine or by using a CEMS.

The rule also requires regular recordkeeping and reporting for NO_x and SO₂ emissions.

Continued compliance with these recordkeeping requirements is expected.

4. *Subpart IIII "Stationary Compression Ignition Internal Combustion Engines"*

This rule applies to compression ignition engines built after 2004. The new fire pump I-19 is subject to the rule.

In general, the requirements for emergency-use engines are to: purchase a certified engine, and install an hour meter.

Because the rule only applies to an insignificant source, no condition will be added to the permit.

5. *Subpart KKKK "Stationary Combustion Turbines"*

This rule applies to turbines built after 2005. ES-13 and 14 are subject to the rule.

The rule has emission limits for NO_x and SO₂. The emission limits are different for turbines operating in simple-cycle or combined-cycle modes.

For NO_x emissions, the rule requires initial and subsequent testing for each turbine for both simple and combined-cycle modes. Duke has completed initial testing for each turbine and firing mode. As an alternative to subsequent testing, Duke may instead use a NO_x CEMS.

For SO₂ emissions, Duke must conduct fuel sampling or demonstrate that only compliant fuels are used.

The rule also requires regular recordkeeping and reporting for NO_x and SO₂ emissions.

Continued compliance with these recordkeeping requirements is expected.

b. MACT/GACT

1. *Subpart YYYY "Stationary Combustion Turbines"*

This rule applies to turbines located at HAP-Major facilities. This facility is HAP-Major, so all of the turbines are subject to the rule.

40 CFR 63.6090(a)(1) defines "Existing stationary combustion turbine" as a unit that commenced construction or reconstruction before January 14, 2003. Units 1, 2, 3, 4, 6, 7, and 8 meet this definition. 40 CFR 63.6090(a)(4) states that existing turbines do not have to meet the requirements of 40 CFR Part 63, Subparts A or YYYY.

Turbines ES-13 and 14 are considered "lean premix gas-fired stationary combustion turbines" by 40 CFR 63.6175. The emission standards for these types of turbines were stayed by USEPA on August 8, 2004 (See 69 FR 51184). As of the issuance of this permit, USEPA has neither lifted the stay, nor updated the relevant sections of MACT Subpart YYYY. Therefore, there are currently no requirements for ES-13 and 14 under MACT Subpart YYYY, as long as these turbines remain classified as lean premix gas-fired stationary combustion turbines. The permit has recordkeeping and reporting requirements so that Duke will be able to demonstrate that ES-13 and 14 continue to meet this definition.

2. *Subpart ZZZZ "Stationary Reciprocating Internal Combustion Engines"*

This rule applies to all engines located at HAP-major and minor facilities. Therefore, the new fire pump I-19 is subject to the rule.

According to 40 CFR 63.6590(c)(7), a compression ignition engine with a capacity of less than 500 horsepower must comply with NSPS Subpart IIII. There are no further requirements under the MACT.

Because the rule only applies to an insignificant source, no condition will be added to the permit.

3. *Subpart DDDDD "Industrial, Commercial, and Institutional Boilers and Process Heaters"*

This rule applies to boilers and process heaters located at HAP-Major facilities. All of the boilers at this facility are subject to this rule.

Because North Carolina implemented the 112(j) Case-by-Case MACT (CBCM) for boilers and process heaters, that rule will supersede MACT Subpart DDDDD until the CBCM expires.

Sources subject to this rule must conduct regular tune-ups and operate with good work practices. Furthermore, before the compliance date, the facility must perform a one-time energy assessment.

The rule requires regular monitoring and recordkeeping. These records must be reported on an annual basis.

The requirements of this rule will not take effect until the CBCM expires.

4. *Case-by-Case MACT (CBCM) for boilers and process heaters*

After USEPA's initial version of MACT Subpart DDDDD was vacated by court order, NCDAQ created and implemented a CBCM for boilers, as required by Section 112(j) of the Clean Air Act. Based on the requirements of 112(j), the CBCM will remain effective until eight years after the revised version of MACT Subpart DDDDD was promulgated, i.e. May 20, 2019. A statement regarding the expiration of the CBCM has been added to the permit.

In the meantime, the CBCM requires annual boiler inspections and maintenance as recommended by the manufacturer. Records of these actions must be kept and reported regularly.

c. PSD/NSR

This facility has triggered a PSD review for multiple sources and pollutants. In general, the permit has BACT limits and annual emission limits that were established during PSD reviews. This renewed permit will not change any limits in the permit.

In addition, a stipulation for 2D .0530(u) is in the permit. This requires Duke to maintain records of actual emissions from Units 7 and 8 in order to demonstrate that previous modifications to these sources did not require a PSD review. The recordkeeping and reporting requirements triggered when Units 7 and 8 resumed normal operation (in December, 2012). Duke will continue to report actual emissions from these sources for 10 years following the resumption of normal operations.

d. 112(r)

The facility does not appear to store any 112(r)-subject materials above their respective thresholds. Therefore, the facility is not subject to any increased requirements under Section 112(r) of the Clean Air Act.

e. RACT

The facility is located in Richmond County, which is not considered an area of ozone nonattainment. Therefore, RACT does not apply to the facility.

f. CAM

CAM applies to a control device if the following criteria are met:

1. The unit being controlled is subject to a non-exempt emission standard (as defined by 2D .0614(b)(1)),
2. The control device is being used to comply with the emission standard, and
3. The unit being controlled has potential emissions of the pollutant subject to the emission standard of greater than major source thresholds.

Each of the turbines has a control device used to control NOx: water injection for Units 1 – 6 and water injection and SCR for Units 7 and 8 and ES-13 and 14. The potential NOx emissions from each unit is greater than 100 ton/yr.

Each of these emission sources uses a continuous demonstration method (As per 2D .0614(b)(1)(F)), and therefore none of them are subject to CAM.

8. Toxic Air Pollutants

This facility has not performed any TAP emission rate modeling. This permitting action is not expected to affect TAP emission rates.

9. Facility Emissions Review

For a record of recent annual emissions from the facility, see the table on the first page of this review.

This permitting action is not expected to affect annual emissions from the facility.

10. Compliance Status

- a. Notices of Violation/Recommendation for Enforcement since the previous renewal

None.

- b. Inspection status

The facility was most recently inspected by Robert Hayden on November 6, 2014. The facility appeared to be in compliance with the air quality permit at the time of that inspection.

11. Other Regulatory Concerns

A PE seal was not required for this permit renewal.

A zoning consistency form was not required for this permit renewal.

12. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 2Q .0521. 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. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA.

Also pursuant to 2Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 2Q .0521 above.

13. Recommendations

Issue permit 08759T18.

DRAFT

Change List

Page*	Section*	Change
Throughout	Throughout	<ul style="list-style-type: none"> • Updated permit/application numbers. • Updated dates. • Changed facility name. • Removed references to CAIR. • Added references for CSAPR. • Removed heat input rate from section headers. This information is kept in the permitted emission source list. • Fixed formatting.
Insignificant Activities List	Insignificant Activities List	<ul style="list-style-type: none"> • Fixed formatting of source descriptions. • Removed portable sources.
3	Permitted Emission Source List	<ul style="list-style-type: none"> • Added footnote regarding MACT Subpart YYYY applicability.
	2.1.A.1., 2.1.B.1.	<ul style="list-style-type: none"> • Added requirement that recordkeeping also note how many hours of operation remain before the next Method 9 test.
	2.1.B.4.	<ul style="list-style-type: none"> • Added date for the resumption of operations.
	2.1.C.1.	<ul style="list-style-type: none"> • Added reporting requirement per 15A NCAC 2Q .0508(f).
	2.1.E.4.	<ul style="list-style-type: none"> • Added reporting requirement per 15A NCAC 2Q .0508(f).
	2.1.E.6., 2.1.G.6. 2.1.J.4.	<ul style="list-style-type: none"> • Added end-date for the case-by-case MACT. • Added reporting requirement per 15A NCAC 2Q .0508(f).
	2.1.E.7., 2.1.G.7. 2.1.J.5.	<ul style="list-style-type: none"> • Added MACT Subpart DDDDD
	2.1.I.1. (former)	<ul style="list-style-type: none"> • Removed NSPS Subpart Kb.
	2.1.I.1.	<ul style="list-style-type: none"> • Added reporting requirement per 15A NCAC 2Q .0508(f).
	2.3.	<ul style="list-style-type: none"> • Removed CAIR. • Added CSAPR.
	2.4.	<ul style="list-style-type: none"> • Added section for permit shield for non-applicable requirements.
	3.	<ul style="list-style-type: none"> • Updated General Conditions to v3.7.

* This refers to the current permit unless otherwise stated.

Comments received on initial draft

- Ann Quillian, by email on December 14 and 16, 2015.
 1. Why was a PSD increment tracking statement included in the cover letter of the draft permit? This is a permit renewal and therefore PSD increment tracking will not be effected.
Response: This office has recently adopted a policy where every permit issued will include a PSD increment tracking statement. This will be included regardless if PSD increment tracking was affected.
 2. Ann included a list of insignificant activities that should be included in the permit.
Response: I agree that all of the activities mentioned qualify for the insignificant activities list. I have added them to that list.
 3. Ann pointed out that Duke has submitted two acid rain permit renewal applications, one in 2014 and one in 2015. She suggested that wherever the permit references the 2015 application, it should also reference the 2014 application.
Response: Our policy is to only reference the most recent application, as that is the only one that will be considered effective.
 4. Ann pointed out several instances in the permit where reporting of "observations" is required. In these instances, "observations" is far too vague and does not make sense.
Response: This was an error. In these instances I have replaced "observations" with "monitoring and recordkeeping".
 5. Does the Case-by-Case MACT expire on the beginning or end of May 19? The draft is not clear in this regard.
Response: It applies through the end of May 19. I have updated the permit to be clearer.
 6. The stipulations for MACT Subpart DDDDD mention "gas 1 fuels". This looks like a typo.
Response: "gas 1" is a category under MACT Subpart DDDDD. I have updated the permit to mention the origin and definition of "gas 1".
 7. NSPS Subpart Kb was removed from the permit, but no mention of this action was included in the review. This should be discussed in the review.
Response: This was an oversight on my part. I have included a discussion in the review.
 8. Ann pointed out several typos throughout the permit and review.
Response: These have been fixed.

- Mark Cuilla, by email on December 18, 2015.

1. Mark pointed out several typos throughout the permit and review.

Response: These have been fixed.

2. Mark asked if turbines 1 through 8 are subject to MACT Subpart YYYYY and have no requirements, or are excluded from MACT Subpart YYYYY entirely. The footnote in the equipment list is not clear.

Response: They are subject with no requirements. I have updated the footnote to be clearer.

3. Why was the recordkeeping requirement for 2D .0521 updated to include the time elapsed since the previous Method 9 test and how many hours of operation remain until the next test is required?

Response: I added this because I feel it is necessary for both Duke and any DAQ inspector in order to determine if the Method 9 tests have been performed in a timely manner.

4. Mark pointed out that the numbering format should be 2.1.A.1.a.i.(A). Some points in the permit have 1. instead of (A).

Response: These have been fixed.

5. Mark pointed out that the NOx limit in the table in 2.1.G.5. is incorrect.

Response: This has been fixed.