GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Jeffrey W. Cown, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

NARRATIVE

TO: Cynthia Dorrough

FROM: Alexander Lagunas

DATE: November 9, 2023

Facility Name:	**QTS Fayetteville I, LLC**
AIRS No.:	113-00073
Location:	Fayetteville, GA (Fayette County)
Application #:	29080
Date of Application:	November 1, 2023

Background Information

QTS Fayetteville I, LLC (QTS) is currently permitted as a synthetic minor source with Permit No. 7374-113-0073-S-01-0, issued on October 11, 2023, for the construction and operation of a new data center. The facility will engage in processing and storing data and applications on servers that will be housed in six buildings. It would be a major source with respect to Title V and PSD; however, the facility has a fuel limit of 670,000 gallons during any 12 consecutive month period that will limit NO_X emissions to be less than 100 tpy to be permitted as a synthetic minor source with respect to Title V and PSD.

Purpose of Application

Application #29080 was received on November 1, 2023 for the construction and operation of two additional diesel-fired 1.25 MW generators. Public Advisory period started on November 15, 2023 and expired on December 15, 2023. No comments were received.

Updated Equipment List

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
EG001-EG205	Emergency Generator 001 through 205 Diesel-fired emergency generator, each rated at 2.5MWe (Caterpillar Model 3516C) or 2.25MWe (MTU DS2250)	2023	--	--
FP001	Diesel Fire Pump Clarke JU4H-UFADP0	2023	--	--
EG206 and EG207	**Emergency Generators 206 and 207** **Diesel-fired emergency generator, each rated at 1.25 MW (Caterpillar Model C32)**	**2024***	--	--

*proposed within current application

Storage Tanks

Source Code	Capacity (gallons)	Contents	Installation Date	True Vapor Pressure (psia)
	9,000	Diesel fuel	2023	~0.77
	140	Diesel fuel	2023	~0.77

*proposed within current application

Emissions Summary

Potential-to-emit values are based on the fuel limit of 670,000 gallons of diesel fuel fired per 12 consecutive month period established in Condition 2.1 of Permit No. 7374-113-0073-S-01-0. The table below demonstrates the PTE for NO_X. The table lists the four engine types that the diesel fuel may be fired in, including the 1.25 MW Caterpillar G32 proposed in this application, and calculates the NO_X emissions in tons per year if all 670,000 were fired in that engine type.

Engine	Fuel Limit (gal/yr)	NO_X emission rate (lb/gal)	Total NO_X emissions (tons/yr)
2.5MW Caterpillar 3516C	670,000	0.298	99.93
2.25MW MTU DS2250	670,000	0.285	95.48
1.25MW Caterpillar G32	670,000	0.293	98.16
Fire Pump	670,000	0.083	27.81

The table above demonstrates the worst-case scenario where all fuel was fired in the engine type with the highest NO_X emissions (the 2.5MW Caterpillar 3516C). All criteria pollutants will be under the 100 tpy major source threshold and thus allowing the facility to be a synthetic minor source. The 2.5MW Caterpillar 3516C was determined to be the engine type with the highest NO_X emissions in the previous application and is why there is zero change in emissions after this modification.

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	5.46/5.81	5.46/5.81	0.0	--	--	--
NOx	99.93	99.93	0.0	--	--	--
SO_2	0.0695	0.0695	0.0	--	--	--
CO	50.60	50.60	0.0	--	--	--
VOC	18.05	18.05	0.0	--	--	--
Max. Individual HAP	0.0356	0.0356	0.0	--	--	--
Total HAP	0.0723	0.0723	0.0	--	--	--
Total GHG (if applicable)	7,511	7,511	0.0	--	--	--

Regulatory Applicability

40 CFR 60 Subpart Kb – "Standards of Performance for volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984"

Not applicable.

This subpart applies to storage vessels with a capacity equal to or greater than 75 cubic meters that are used to store volatile organic liquids for which construction, reconstruction, or modification commenced after July 23, 1984.

The storage tanks that accompany the emergency generators have a capacity less than 75 cubic meters and thus are not subject to this subpart.

40 CFR 60 Subpart IIII – "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines"

Applicable to the emergency generators (Source Code: EG206 and EG207)

This subpart applies to owners of stationary CI ICE that commenced construction after July 11, 2005 and manufactured after April 1, 2006.

The emergency generators will be constructed after July 11, 2005 and thus are subject to this subpart. The emergency generators must comply with the emission standards for new nonroad CI engines in 60.4202, which are Tier 2 emissions standards in 40 CFR 1039, per 40 CFR 60.4205. These standards apply for the life of the engine, per 40 CFR 60.4206. The emergency engines must fire diesel that meet the requirement of 40 CFR 1090.305 for nonroad diesel fuel, per 40 CFR 60.4207. The emergency generators must meet the requirements of an emergency stationary ICE, per 40 CFR 60. 4211(f).

40 CFR 63 Subpart ZZZZ – "National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines"

Applicable to the emergency generators (Source Code: EG206 and EG207).

This subpart applies to stationary RICE at major and area sources of HAPs.

The emergency generators are located at an area source of HAPs and thus are subject to this subpart. The emergency engines have a site rating greater than 500 HP and will be constructed after December 19, 2002, and are considered *new*. *New* stationary RICE located at an area source meet the requirements of this subpart by meeting the requirements of 40 CFR 60 Subpart IIII, per 40 CFR 63.6590(c)(1). No further requirements apply for the emergency engines under this subpart.

391-3-1-.02(2)(b) – "Visible Emissions"

Applicable to the emergency generators (Source Code: EG206 and EG207).

This rule applies to sources that are subject to other emission limitations under 391-2-1-.02(2). The emergency generators are subject to Rule (g), (yy), and (mmm), and thus subject to this rule. The generators may not emit emissions with opacity of which is equal to or greater than 40 percent.

391-3-1-.02(2)(g) – "Sulfur Dioxide"

Applicable to the emergency generators (Source Code: EG206 and EG207)

This rule applies to fuel-burning sources. The emergency generators used diesel fuel and thus are subject to this rule. The emergency generators may not burn fuel containing more than 2.5 percent sulfur, by weight.

391-3-1-.02(2)(yy) – "Emissions of Nitrogen Oxides from Major Sources"

Applicable to the emergency generators (Source Code: EG206 and EG207).

This rule applies to major sources of NO_X in a listed county. The facility is a major source located in Fayette County, one of the listed counties, and thus is subject to this rule. This rule triggers RACT for the emergency generators.

By installing certified engines and operating the engines in accordance with manufacturer's specification, the facility satisfies RACT requirements.

391-3-1-.02(2)(mmm) – "NO_X Emissions from Stationary Gas Turbines and Stationary Engines used to Generate Electricity"

Applicable to the emergency generators (Source Code: EG206 and EG207).

This rule applies to stationary gas turbines or engines used to generate electricity. The emergency generators generate electricity and thus are subject to this rule. Stationary engines at data centers are not subject to the emission limit if they meet the following criteria: operate only for routine testing and maintenance, operate for less than 500 hours per year, operate for routine testing and maintenance within a certain time frame, and maintain records of all operation.

Permit Conditions

Condition 2.1 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition includes the new emergency generators under the fuel limit as part of Part 70 avoidance.

Condition 2.2 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition establishes the applicability of 40 CFR 60 Subpart A and Subpart IIII to the emergency generators.

Condition 2.5 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition sets the standard for diesel fuel fired in the emergency generators, per 40 CFR 60 Subpart IIII, subsuming Rule (g).

Condition 2.8 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition establishes the criteria for the operation of emergency generators at data centers, per Rule (mmm)8.

Condition 2.9 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition establishes the applicability of 40 CFR 63 Subpart A and ZZZZ.

Condition 2.10 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition sets the visible emissions standards, per Rule (b).

Condition 5.1 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition requires the installation of a non-resettable hour meter to record the hours of operation.

Condition 7.2 was modified to include the two additional emergency generators (Source Code: EG206 and EG207). This condition requires records of the engines' certifications and manufacturer's written operating and maintenance instructions.

Toxic Impact Assessment

The facility performed a toxic impact assessment. All but one pollutant was under the MER. Modeling was required for benzene. The facility used SCREEN3 modeling and demonstrated that the maximum modeled concentration for benzene was below the AAC. No further action was taken. The modeling data can be found in the application.

Summary & Recommendations

I recommend that Permit No. 7374-113-0073-S-01-1 be issued to QTS Fayetteville I, LLC for the construction and operation of two additional diesel-fired emergency generators. The facility is located in Fayetteville, Georgia and will remain a synthetic minor. A public advisory expired on December 15, 2023 and no comments were received.

Addendum to Narrative

The 30-day public review started on January 9, 2024 and ended on February 9, 2024. Comments were received by the Division.

From QTS Fayetteville I, Inc., the following administrative edits to the narrative were requested. There were no comments on the permit draft. The changes are in bold.

From the Updated Equipment List section:

1. Corrected "MW" to "MWe" for consistency.

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
EG001-EG205	Emergency Generator 001 through 205 Diesel-fired emergency generator, each rated at 2.5MWe (Caterpillar Model 3516C) or 2.25MWe (MTU DS2250)	2023	--	--
FP001	Diesel Fire Pump Clarke JU4H-UFADP0	2023	--	--
EG206 and EG207	Emergency Generators 206 and 207 Diesel-fired emergency generator, each rated at 1.25 **MWe** (Caterpillar Model C32)	2024*	--	--

*proposed within current application

2. Added the house generator diesel fuel tanks to the list

Storage Tanks

Source Code	Capacity (gallons)	Contents	Installation Date	True Vapor Pressure (psia)
	9,000	Diesel fuel	2023	~0.77
	140	Diesel fuel	2023	~0.77
	4,200	**Diesel fuel**	**2024**	**~0.77**

From the Emission Summary section:

1. Corrected model number of proposed unit from "G32" to "C32" in the first paragraph and in the list.

Potential-to-emit values are based on the fuel limit of 670,000 gallons of diesel fuel fired per 12 consecutive month period established in Condition 2.1 of Permit No. 7374-113-0073-S-01-0. The table below demonstrates the PTE for NO_X. The table lists the four engine types that the diesel fuel may be fired in, including the 1.25 MW Caterpillar **C32** proposed in this application, and calculates the NO_X emissions in tons per year if all 670,000 were fired in that engine type.

Engine	Fuel Limit (gal/yr)	NO_X emission rate (lb/gal)	Total NO_X emissions (tons/yr)
2.5MW Caterpillar 3516C	670,000	0.298	99.93
2.25MW MTU DS2250	670,000	0.285	95.48
1.25MW Caterpillar **C32**	670,000	0.293	98.16
Fire Pump	670,000	0.083	27.81