GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

David B. Dove, Interim Director

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

NARRATIVE

TO: Cynthia Dorrough

FROM: Alexander Lagunas

DATE: July 5, 2023

Facility Name:	**QTS Fayetteville I, LLC**
AIRS No.:	113-00073
Location:	Fayetteville, GA (Fayette County)
Application #:	28924
Date of Application:	June 26, 2023

Background Information

QTS Fayetteville I, LLC (QTS) plans to construct a new data center with 205 diesel-fired emergency generators and one diesel-fired fire pump. The facility will engage in processing and storing data and applications on servers that will be housed in six buildings. It currently does not have a permit. The facility would be considered major with respect to Title V and PSD; however, the facility proposes 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 in order to be permitted as a synthetic minor source with respect to PSD and Title V.

Due to potential changes in availability of generator models, the facility proposes two make and model options for the emergency generators.

Purpose of Application

Application #28924 was received on June 26, 2023 for the construction and operation of a new data center consisting of 205 diesel-fired emergency generators and one diesel-fired fire pump. Public Advisory period started on June 28, 2023 and expired on July 28, 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*	--	--

*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 emissions are based on the facility's proposed limit of a 670,000 gallon of diesel fuel fired per 12 consecutive month period in all engines, facility wide.

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	95.475

The table above demonstrates the PTE for NO_X. The fuel limit will cause the NO_X emissions to be below 100 tpy, regardless of whether all 205 engines are the Caterpillar model, the MTU model, or a combination of both.

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	--	--	--
NOx	--	99.93	+99.93	--	--	--
SO_2	--	0.0695	+0.0695	--	--	--
CO	--	50.60	+50.60	--	--	--
VOC	--	18.05	+18.05	--	--	--
Max. Individual HAP	--	0.0356	+0.0356	--	--	--
Total HAP	--	0.0723	+0.0723	--	--	--
Total GHG (if applicable)	--	7,511	+7,511	--	--	--

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 is 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: EG001 – EG205).

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: EG001 – EG205).

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: EG001 – EG205).

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 emission 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: EG001 – EG205).

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: EG001 – EG205).

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: EG001 – EG205).

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.

The expected hours of operation based on the proposed fuel limit is an average of 19.5 hr/yr. These values are significantly lower than the 500 hours permitted in this rule for data centers.

Permit Conditions

Condition 2.1 limits the facility to 670,000 gallons of diesel fuel burned in the emergency generators (Source Code: EG001 through EG205) and the fire pump (Source Code: FP001) to remain a synthetic minor.

Condition 2.2 establishes the applicability of 40 CFR 60 Subpart A and IIII to the emergency generators (Source Code: EG001 through EG205).

Condition 2.3 lists the emission standards of 40 CFR 60 Subpart IIII, applicable to the emergency generators (Source Code: EG001 through EG205).

Condition 2.4 limits the smoke opacity from the emergency generators (Source Code: EG001 through EG205), per 40 CFR 60 Subpart IIII.

Condition 2.5 limits the sulfur content and either the cetane index or aromatic content of the diesel fuel fired in the emergency generators (Source Code: EG001 through EG205), per 40 CFR 60 Subpart IIII and subsumes Rule (g).

Condition 2.6 requires the Permittee to comply with the emission standards by buying an engine certified to those standards, per 40 CFR 60 Subpart IIII, and satisfy RACT criteria, per Rule (yy).

Condition 2.7 limits the emergency and non-emergency operation of the emergency generators (Source Code: EG001 through EG205), per 40 CFR 60 Subpart IIII.

Condition 2.8 lists the criteria for the operation of the emergency generators (Source Code: EG001 through EG205) at a data center, per Rule (mmm).

Condition 2.9 establishes the applicability of 40 CFR 63 Subpart A and ZZZZ.

Condition 2.10 limits the opacity from the emergency generators (Source Code: EG001 through EG205), per Rule (b).

Condition 2.11 limits the fuel oil allowed to be fired in the emergency generators (Source Code: EG001 through EG205).

Condition 3.1 is the standard fugitive emissions condition.

Condition 4.1 requires the operation and maintenance of the engines according to manufacturer's written specifications, per 40 CFR 60 Subpart IIII.

Condition 5.1 requires the installation of a non-resettable hour meter to record the hours of operation of the emergency generators (Source Code: EG001 through EG205).

Condition 5.2 requires the verification that the diesel fuel complies with Condition 2.11.

Condition 6.1 is the standard performance testing condition.

Condition 7.1 is the standard notification of startup condition.

Condition 7.2 requires records of the engine certifications and manufacturer's written operating and maintenance instructions.

Condition 7.3 requires recordkeeping of the diesel fuel fired complies with Condition 2.5.

Condition 7.4 requires recordkeeping of all fuel burned in the emergency generators (Source Code: EG001 through EG205) for 5 years.

Condition 7.5 requires initial notification for each emergency generator, per 40 CFR 60 Subpart IIII.

Condition 7.6 requires a report if the emergency generators are used as specified in Condition 2.7.c.i, per 40 CFR 60 Subpart IIII.

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-01-0 be issued to QTS Fayetteville I, LLC for the construction and operation of a data center with 205 emergency generators and a fire pump. The facility is in Fayetteville, Fayette County and will be a synthetic minor. A public advisory expired on July 28, 2023 and no comments were received.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//