GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Jeng-Hon Su

FROM: Dawn Wu

DATE: May 30, 2023

Facility Name:	**Caterpillar Inc. – Griffin Facility**
AIRS No.:	255-00058
Location:	Griffin, GA (Spalding County)
Application #:	28859
Date of Application:	May 3, 2023

Background Information

Caterpillar Inc. – Griffin Facility (hereinafter "facility") operates an engine manufacturing facility at 560 Rehoboth Road in Griffin, Georgia (Spalding County), which is currently permitted as a synthetic minor source under Air Quality Permit No. 3621-255-0058-S-03-0 dated February 6, 2015. The permit contains a facility-wide annual VOC and NOx limit not to exceed 99 tons each. The facility is also limited to 10 tons per year of any single HAP and 25 tons per year of total HAPs. This permit also covers Caterpillar's RANEW APA painting facility located adjacent to the Caterpillar plant at 50 Boyd's Crossing Road, Griffin, Georgia. Emissions from sources at both these sites are subject to the synthetic minor NOx, VOC and HAPs emission limits.

Purpose of Application

On May 3, 2023, Caterpillar submitted an expedited SIP permit application (assigned Application No. 28859) for the construction and operation of a new1.9 MW natural gas fired generator to help conduct annual tests on the ESS 50-Hz units. A 30-day public advisory for this application was issued on May 10, 2023 and expired on June 9, 2023.

Updated Equipment List

Emission Units		Associated Control Devices	
Source Code	**Description**	**Source Code**	**Description**
DTC1	Dyno Test Cell No. 1	--	--
DTC2	Dyno Test Cell No. 2	--	--
DTC3	Dyno Test Cell No. 3	--	--
DTC4	Dyno Test Cell No. 4	--	--
S-1	Gen. Set Test Cell No. 1	--	--
S-2	Gen. Set Test Cell No. 2	--	--

Emission Units		Associated Control Devices	
Source Code	**Description**	**Source Code**	**Description**
S-3	Gen. Set Test Cell No. 3	--	--
S-4	Gen. Set Test Cell No. 4	--	--
WSTC1	Well Service Test Cell No. 1		
WSTC2	Well Service Test Cell No. 2		
TC-1	Power module engine test cell	--	--
TC-2	Power module engine test cell	--	--
S-11	Dyno Medium System Test Cell Heater for Test Cell Nos. 1 & 2	--	--
S-14	Dyno Medium System Test Cell Heater for Test Cell Nos. 3 & 4	--	--
S-18 & S-19	System Paint Booth	FF1	Fiberglass Filter
S-20 & S-21	Wash heaters, dryers, ovens	--	--
APA-1	Paint Booth	FAPA1	Fiberglass Filter
APA-9, APA-10, APA-11 and APA-13	Engine Touch up Paint Booths	FAPA9, FAPA10 FAPA11 and FAPA13	Filtration Systems for the Touch up Paint Booths (Dry Filters)
S-27	Standby Diesel Generator No. 1 – Demo Unit	--	--
S-28	Standby Diesel Generator No. 2 – Utility Bldg.	--	--
S-29	Standby Propane Generator No. 3 – Utility Bldg.	--	--
S-30*	1.9 MW natural gas fired generator	--	--

*Proposed in current permit application.

Storage Tanks

Source Code	Capacity (gallons)	Contents	True Vapor Pressure (psia)
T-1	50000	No. 2 Low Sulfur Diesel Fuel Storage Tank	8.6 E-03
T-2	12000	Ethylene Glycol Coolant Storage Tank	8.0 E-02
T-5	5000	Ethylene Glycol Coolant Storage Tank	8.0 E-02
T-6	1250	Diesel fuel storage tank	8.6 E-03
T-7	1250	Diesel fuel storage tank	8.6 E-03

Emissions Summary

The new 1.9 MW generator is the only addition to the emission unit list in this permit amendment. The facility is a SM source with emissions of all criteria pollutants limited below 99 tons/year including NOx and VOC. HAPs emissions are limited to the 10/25 tpy limit for single and Total HAPs.

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	99	99	0	6.55	6.69	0.14
NOx	99	99	0	52.46	58.09	5.63
SO_2	99	99	0	6.13	6.14	0.01
CO	99	99	0	20.00	29.25	9.25
VOC	99	99	0	14.17	15.40	1.23
Max. Individual HAP	10	10	0	<10	<10	<0.31
Total HAP	25	25	0	<25	<25	<0.48
Total GHG (if applicable)	<100,000	<100,000	3,313	<100,000	<100,000	<3,313

Regulatory Applicability

The facility is a SM source with emissions of all criteria pollutants limited below 99 tons/year including NOx and VOC. HAPs emissions are limited to the 10/25 tpy limit for single and Total HAPs.

Georgia Rule 391-3-1-.02(2)(b) – Visible Emissions. This limitation is applicable to the existing and proposed emission units to be located at the facility. Since any equipment (including product testing) burn only distilled oil or natural gas, PM emissions are expected to be minimal; therefore, compliance with the Georgia Rule (b) limit is expected for the engines.

Georgia Rule 391-3-1-.02(2)(e) – PM Emissions from Manufacturing Processes. The rule applies to all the process units with particulate matter (PM) emissions at this facility that are not covered by a more specific rule or regulation, including all the painting application units.

Georgia Rule 391-3-1-.02(2)(g) – Sulfur Dioxide. Because all fuel burning sources will burn natural gas or ultra-low sulfur diesel exclusively, the facility will inherently comply with the 2.5% sulfur content limit of this rule.

Georgia Rule 391-3-1-.02(2)(n) – Fugitive Dust. This regulation requires facilities to take reasonable precautions to prevent fugitive dust from becoming airborne.

The facility in Griffin is not subject to a NOx RACT determination and Georgia Rule (yy) because all NOx emissions from the facility are limited below 99 tpy.

Georgia Rule 391-3-1-.02(2)(mmm) – NOx Emissions from Stationary Gas Turbines and Stationary Engines used to Generate Electricity. The new 1.9 MW generator will be subject to Georgia Rule (mmm).

40 CFR Part 60 Subpart JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. The new 1.9 MW generator will be subject to this rule. Owners and operators of a stationary SI

RICE greater than 75KW (100 HP), per 40 CFR 60.4233(e), must comply with the emission standards in Table 1 to 40 CFR 63 Subpart JJJJ. Generator S-30 is subject to the emission standards for non-emergency SI Natural Gas engines greater than 500 HP and manufactured after July 1st, 2010. The facility normally would comply with the emission standards by purchasing certified engines and operate according to the engine vendor's instructions. Otherwise, the facility must conduct the initial and repeated testing required in Conditions 6.2 and 6.3 of the permit.

40 CFR Part 63 Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The new 1.9 MW generator will be subject to this rule and comply with the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR part 60 subpart JJJJ per 40 CFR 63.6590(c).

Permit Conditions

Condition 2.1 limits NOx emissions from the facility to 99 tpy for Title V avoidance and Georgia Rule (yy) avoidance.

Condition 2.2 limits VOC emissions from the facility to 99 tpy for Title V avoidance.

Condition 2.3 limits HAP emissions from the facility to 10/25 tpy for Title V avoidance.

Condition 2.4 is the 40% opacity limit per Georgia Rule (b) for the facility.

Condition 2.5 is the PM emission limit for the facility per Georgia Rule (e).

Condition 2.6 is the standard fugitive emission conditions requiring Permittee to take all precaution to limit fugitive emissions per Georgia Rule (n).

Condition 2.7 is the SO_2 emission limit for the facility wide fuel oil usage associated with Georgia Rule (g).

Condition 2.8 is the NOx emission limit for the generator (ID No. S-30) during the ozone season per Georgia Rule (mmm).

Condition 2.9 is the 40 CFR 60 Subpart IIII general applicability condition for all diesel engines.

Condition 2.10 subjects Generator S-30 to 40 CFR 60 Subpart A and Subpart JJJJ.

Condition 2.11 includes the 40 CFR 60 Subpart JJJJ emission limits for Generator S-30.

Condition 2.12 includes the operating requirements and compliance demonstration requirements for the emission limits specified in Condition 2.11.

Condition 2.13 is the MACT Subpart ZZZZ requirement for the generator (ID No. S-30).

Condition 2.14 allows testing of engines in both test cells (TC-1 and TC-2) simultaneously.

Condition 4.2 requires all spray booth emissions to be controlled whenever the spray booths are operated. This condition also requires the spray booth filters to be replaced within 24 hours of the filter pressure drops exceeding the manufacturer recommended levels.

Conditions 5.1 and 5.2 are the consumption monitoring requirements for fuel oil and natural gas.

Condition 5.3 requires monitoring of the pressure drop across all operating paint booths and recording of the pressure drops daily.

Condition 5.4 contains the monitoring requirements for Generator S-30 per Georgia Rule (mmm).

Conditions 6.2 through 6.4 are the testing requirements in case Generator S-30 was not certified by the engine manufacturer to comply with the 40 CFR 60 Subpart JJJJ emission limits.

Conditions 7.3 through 7.5 are the facility wide recordkeeping requirements for NOx.

Conditions 7.6 through 7.8 are the facility wide recordkeeping requirements for VOC.

Conditions 7.9 through 7.11 are the facility wide recordkeeping requirements for HAPs.

Condition 7.12 requires the Permittee to maintain a log of pressured drops of the paint booth filters and the date the paint booth filters were last changed.

Condition 7.13 requires reporting of any paint booth pressure drops that exceeds the manufacturer recommended pressure for more than 24 hours without being corrected.

Conditions 7.14 through 7.16 are the recordkeeping requirements for the generator (ID No. S-30) per NSPS Subpart JJJJ.

Toxic Impact Assessment

The facility performed a toxic impact assessment (TIA) to demonstrate compliance with Georgia Air Toxic Guidelines. Toxic Air Pollutant (TAP) emissions from all sources at the facility, including fuel oil, natural gas combustion and material usage. Air toxics mainly include Acetaldehyde, Acrolein, Benzene, 1,3-Butadiene, 1,2-Dibromethane, and Formaldehyde.

Table 1: Comparison of Facility-Wide TAP Emissions to Georgia MERs

TAP	Facility-Wide Emissions		Georgia MER (lb/yr)	BELOW MER?
	(lb/hr)	(lb/yr)		
Acetaldehyde	7.11E-02	8.44E+01	1.11E+03	Yes
Acrolein	**6.64E-02**	**7.93E+01**	**4.87E+00**	**No**
Benzene	**8.00E-02**	**6.77E+01**	**3.16E+01**	**No**
1,3-Butadiene	**1.86E-02**	**2.09E+01**	**7.30E+00**	**No**
1,2-Dibromethane	5.32E-04	6.40E-01	4.06E+00	Yes
Formaldehyde	**5.17E-01**	**6.18E+02**	**2.67E+02**	**No**

SCREEN3 dispersion model which calculates maximum 1-hour average impacts was used to assess the ambient impact of each of the toxic air pollutants being emitted from this facility. The facility was considered as a point source. All the toxic air pollutants assessed were VOC compounds.

Pollutant	Emissions (lb/hr)	MGLC (1-hr) ($\mu g/m^3$)	MGLC (Annual) ($\mu g/m^3$)	MGLC (15-min) ($\mu g/m^3$)	Annual AAC ($\mu g/m^3$)	15-min AAC ($\mu g/m^3$)
Acetaldehyde	7.11E-02	7.27E-02	5.82E-03	9.60E-02	4.55E+00	4.50E+03
Acrolein	6.64E-02	6.79E-02	5.43E-03	8.96E-02	2.00E-02	2.30E+01
Benzene	8.00E-02	8.19E-02	6.55E-03	1.08E-01	1.30E-01	1.60E+03
1,3-Butadiene	1.86E-02	1.91E-02	1.53E-03	2.52E-02	3.00E-02	1.10E+03
1,2-Dibromethane	5.32E-04	5.44E-04	4.36E-05	7.19E-04	1.67E-02	2.31E+04
Formaldehyde	5.17E-01	5.29E-01	4.23E-02	6.98E-01	1.10E+00	2.45E+02

None of the MGLCs examined has exceeded its corresponding AAC. Therefore, the ambient impact/MGLC of each of the toxic air pollutants involved is acceptable according to the "Guidelines" adopted by the Division.

Summary & Recommendations

Caterpillar Inc. – Griffin Facility is a manufacturing facility to assemble and test diesel and natural gas powered generators, manufacturing and testing of oil service units and using emergency power generators. The facility is located in Griffin, Spalding County. The facility operates with limitations for VOC and NOx, and single/combined HAP emissions, and therefore is considered a synthetic minor source. SSCP is responsible for compliance and inspection of this facility. I recommend the issuance of Permit No. 3621-255-0058-S-04-0 to Caterpillar Inc. – Griffin Facility.

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.//