



Louisville Metro Air Pollution Control District
 701 West Ormsby Avenue, Suite 303
 Louisville, Kentucky 40203-3137



Permit No.: C-0126-1010-16-V

Plant ID: 0126

Effective Date: 0/00/2016

Expiration Date: 0/00/2017

Owner: Louisville Gas & Electric Company
Source: Cane Run Generating Station
 5252 Cane Run Road
 Louisville, KY 40232

is authorized to install the described process equipment by the Louisville Metro Air Pollution Control District. Authorization is based on information provided with the application submitted by the company and in accordance with applicable regulations and the conditions specified herein.

Process equipment description:

Four (4) diesel emergency generators, make Cummins, model C3000 D6e, each rated 3,000 KW (4,307 HP). These generators are installed for reliability. They will provide electrical power to start either one of the NGCC primary turbines during emergency blackout conditions. These emergency generators will be incorporated into unit 18.

Applicable Regulation(s): 2.03, 5.00, 5.01, 5.02, 5.20, 5.21, 5.22, 5.23, 7.02, 40 CFR 60-Subpart III, 40 CFR 63-Subpart ZZZZ

Control reference(s): N/A

Application No. 77081
 79169

Application Received: 5/9/2016
 8/29/2016

Permit Writer: Yiqiu Lin

Date of Public Comment 9/18/2016

{Manager1}
 Air Pollution Control Officer
 {date1}

Construction Permit Revisions/Changes

Revision No.	Permit No.	Issue Date	Public Notice Date	Change Type	Change Scope	Description
N/A	C-0126-1010-16-V	0/00/2016	9/18/2016	Initial	Entire Permit	Initial Permit Issuance

This permit covers only the provisions of Kentucky Revised Statutes Chapter 77 Air Pollution Control, the regulations of the Louisville Metro Air Pollution Control District (District) and, where appropriate, certain federal regulations. The issuance of this permit does not exempt any owner or operator to whom it has been issued from prosecution on account of the emission or issuance of any air contaminant caused or permitted by such owner or operator in violation of any of the provisions of KRS 77 or District regulations. The permit contains general permit conditions and specific permit conditions. General conditions are applicable unless a more stringent requirement is specified elsewhere in the permit.

General Conditions

- G1. The owner or operator of the affected facility covered by this permit shall notify the District of any process change, equipment change, material change, or change in method or hours of operation. This requirement is applicable to those changes (except equipment changes) that may have the potential for increasing the emission of air contaminants to a level in excess of the applicable limits or standards specified in this permit or District regulations.
- G2. The owner or operator shall obtain new or revised permits from the District in accordance with District Regulation 2.16 for Title V sources, District Regulation 2.17 for FEDOOP sources or District Regulation 2.03 for other sources including:
- a. The company relocates to a different physical address.
 - b. The ownership of the company is changed.
 - c. The name of the company as shown on the permit is changed.
 - d. Permits are nearing expiration or have expired.
- G3. The owner or operator shall submit a timely application for changes according to G2. Timely renewal is not always achievable; therefore, the company is hereby authorized to continue operation in compliance with the latest District permit(s) until the District issues the renewed permit(s).
- G4. The owner or operator shall not be authorized to transfer ownership or responsibility of the permit. The District may transfer permits after appropriate notification (Form AP-100A) has been received and review has been made.
- G5. The owner or operator shall pay the required permit fees within 45 days after issuance of the SOF by the District, unless other arrangements have been proposed and accepted by the District.
- G6. This permit allows operation 8,760 hours per year unless specifically limited elsewhere in this permit.

- G7. The owner or operator shall submit emission inventory reports as required by Regulation 1.06.
- G8. The owner or operator shall timely report abnormal conditions or operational changes, which may cause excess emissions as required by Regulation 1.07.
- G9. Unless specified elsewhere in this permit, the owner or operator shall complete required monthly record keeping within 30 days following the end of each calendar month.
- G10. If a change in the Responsible Official (RO) occurs during the term of this permit, the owner or operator shall provide written notification (Form AP-100A) to the District within 30 calendar days of the date the RO change occurs.

Specific Conditions

S1. Standards (Regulation 2.03, section 6.1)

a. Unit Operation

- i. The owner or operator of 2007 model year or later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in 40 CFR 60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE. (40 CFR 60.4205(b))

Engine manufacturers shall certify the engines with the exhaust emission standards in the following table. In lieu of the NO_x standards, NMHC + NO_x standards, and PM standards, manufacturers may elect to include engine families in the averaging, banking, and trading program. The manufacturer must set a family emission limit (FEL) not to exceed the levels contained in the following table: (40 CFR 60.4202(a) refers to 40 CFR 89.112 and 113)

unit: g/KW-hr	NO_x	HC	NMHC+ NO_x	CO	PM
Emission Standards (Table 1 to 40 CFR 89.112(a))	N/A	N/A	6.4	3.5	0.2
Family Emission Limits (Table 2 to 40 CFR 89.112(d))	N/A	N/A	10.5	N/A	0.54
Smoke emission standard (40 CFR 89.113(a))	1) 20% during the acceleration mode; 2) 15% during the lugging mode; 3) 50% during the peaks in either the acceleration or lugging modes.				

- ii. The owner or operator must operate and maintain stationary CI ICE that achieve the emission standards as required in 40 CFR 60.4205 over the entire life of the engine. (40 CFR 60.4206)
- iii. The owner or operator that must comply with the emission standards specified in 40 CFR 60, Subpart IIII shall do all of the following: (40 CFR 60.4211(a))
 - 1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; (40 CFR 60.4211(a)(1))
 - 2) Change only those emission-related settings that are permitted by the manufacturer; (40 CFR 60.4211(a)(2))

- iv. The owner or operator shall purchase an engine certified to the emission standards in 40 CFR 60.4205(b), as applicable for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.¹ (40 CFR 60.4211(c))
- v. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in 60 CFR 60.4211(f)(1) through (3), is prohibited. If the owner or operator does not operate the engine according to the requirements in 60 CFR 60.4211(f)(1) through (3), the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines. (40 CFR 60.4211(f))
 - 1) There is no time limit on the use of emergency stationary ICE in emergency situations. (40 CFR 60.4211(f)(1))
 - 2) The owner or operator may operate the emergency stationary ICE for any combination of the purposes specified in 60 CFR 60.4211(f)(2)(i) through (iii) for a maximum of 100 hours per calendar year.² Any operation for non-emergency situations as allowed by 60 CFR 60.4211(f)(3) counts as part of the 100 hours per calendar year allowed by this paragraph. (40 CFR 60.4211(f)(2)).
 - (a) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. (40 CFR 60.4211(f)(2)(i))
 - (b) Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability

¹ Certificate of conformity for the permitted engines was submitted on 8/29/2016.

² This requirement is for each emergency stationary ICE.

Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see § 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3. (40 CFR 60.4211(f)(2)(ii))

- (c) Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency. (40 CFR 60.4211(f)(2)(iii))
- 3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations.³ The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in 40 CFR 60.4211(f)(2). Except as provided in 40 CFR 60.4211(f)(3)(i), the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. (40 CFR 60.4211(f)(3))
- (a) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: (40 CFR 60.4211(f)(3)(i))
 - (i) The engine is dispatched by the local balancing authority or local transmission and distribution system operator; (40 CFR 60.4211(f)(3)(i)(A))
 - (ii) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region. (40 CFR 60.4211(f)(3)(i)(B))
 - (iii) The dispatch follows reliability, emergency operation or similar protocols that follow specific

³ This requirement is for each emergency stationary ICE.

NERC, regional, state, public utility commission or local standards or guidelines. (40 CFR 60.4211(f)(3)(i)(C))

- (iv) The power is provided only to the facility itself or to support the local transmission and distribution system. (40 CFR 60.4211(f)(3)(i)(D))
- (v) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator. (40 CFR 60.4211(f)(3)(i)(E))

b. Fuel requirements

Beginning October 1, 2010, the owner or operator of a stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that uses diesel fuel shall use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted: (40 CFR 60.4207(b))

- 1) Sulfur content: 15 parts per million (ppm) maximum for NR diesel fuel. (40 CFR 80.510(b)(1)(i))
- 2) A minimum cetane index of 40; or (40 CFR 80.510(b)(2)(i))
- 3) A maximum aromatic content of 35 volume percent. (40 CFR 80.510(b)(2)(ii))

c. HAP

The equipment listed in this emission unit is subject to 40 CFR 63, Subpart ZZZZ, however, there are no HAP standards.⁴

⁴ This emergency generator is subject to 40 CFR 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because it involves a stationary reciprocating internal combustion engine (RICE) located at an area source of HAP emissions. However, according to 40 CFR 63.6590(c), this emergency generator must meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. No further requirements apply for the engine under 40 CFR 63 Subpart ZZZZ except for the initial notification requirements of 40 CFR 63.6645(f).

d. **TAC**

- i. The owner or operator shall not allow emissions of any TAC to exceed environmentally acceptable (EA) levels, whether specifically established by modeling or determined by the District to be *de minimis*.⁵ (Regulations 5.00 and 5.21) (See Comment 1)
- ii. The owner or operator shall not operate each of the four emergency generators for more than 500 hours during any 12 consecutive month period. The 500 hours of operation includes time operated during emergency and non-emergency situations. (Regulation 5.21, section 4.3)

S2. **Monitoring and Record Keeping** (Regulation 2.03, section 6.1)

The owner or operator shall maintain the required records for a minimum of 5 years and make the records readily available to the District upon request.

a. **Unit Operation**

- i. The owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine. (40 CFR 60.4209(a))
- ii. The owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator shall keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. (40 CFR 60.4214(b))

b. **Fuel requirements**

The owner or operator shall maintain records of the fuel MSDS/SDS sheets and receipts showing dates, amounts of fuel purchased, sulfur content of fuel purchased and supplier's name and address.

c. **HAP**

There are no compliance monitoring or record keeping requirements for HAP.

⁵ The source submitted an EA demonstration for the permitted engines on 8/29/2016, using AERMOD dispersion model, and demonstrated that these engines are in compliance with STAR program.

d. **TAC**

- i. The owner or operator shall maintain records sufficient to demonstrate environmental acceptability, including, but not limited to MSDS, analysis of emissions, and/or modeling results.
- ii. The owner or operator shall re-evaluate the environmental acceptability and document the environmentally acceptable emissions if a new TAC is introduced or the content of a TAC in a raw material increases above *de minimis*.
- iii. The owner or operator shall record, on the first working day after the end of each month, the engine’s running time meter reading, and calculate (by difference) and record, the engine’s operating time and the 12 month rolling total for the previous month.

S3. **Reporting** (Regulation 2.03, section 6.1)

The owner or operator shall submit quarterly compliance reports that include the information in this section. All reports shall include the company name, plant ID number, and the beginning and ending date of the reporting period. The compliance reports shall clearly identify any deviation from a permit requirement. The compliance reports shall be postmarked within 60 days following the end of each reporting period. All compliance reports shall include the following certification statement per Regulation 2.16, section 3.5.11.

- “Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this document are true, accurate, and complete”.
- Signature and title of the responsible official of the company.

The compliance reports are due on or before the following dates of each calendar year:

<u>Reporting Period</u>	<u>Report Due Date</u>
January 1 st through March 31 th	May 30 th
April 1 st through June 30 th	August 29 th
July 1 st through September 30 th	November 29 th
October 1 st through December 31 st	March 1 st

a. **Unit Operation**

- i. The owner or operator shall identify all periods of exceeding the hour limits during the reporting period. The compliance report shall include the following:
 - 1) Identification of all periods during which a deviation occurred;
 - 2) A description, including the magnitude, of the deviation;

- 3) If known, the cause of the deviation;
- 4) A description of all corrective actions taken to abate the deviation; and
- 5) If no deviations occur during a reporting period, the report shall contain a negative declaration.

b. **Fuel requirements**

There are no routine compliance reporting requirements for this equipment.

c. **HAP**

There are no routine compliance reporting requirements for this equipment.

d. **TAC**

- i. The owner or operator shall report any conditions that were inconsistent with those conditions analyzed in the most recent Environmental Acceptability Demonstration or a negative declaration stating that operations were within the conditions analyzed. This includes, but is not limited to, control device upset conditions.
- ii. For any conditions outside the analysis, the owner or operator shall re-analyze to determine whether these conditions comply with the STAR program. Changes to the air dispersion modeling program or meteorological data used in the most recent Environmental Acceptability Demonstration do not trigger the requirement to re-analyze. (Regulation 5.21 sections 4.22 – 4.24)
- iii. The owner or operator shall submit the re-evaluated EA demonstration to the District within 6 months after a change of a raw material.
- iv. The owner or operator shall report any exceedances of the hours of operation limits for every month in the reporting period in which the 12 month rolling total hours of operation exceeded the limits. If there are no exceedances during the reporting period, the owner or operator shall submit a negative declaration stating that there were no exceedances.

Comments

1. LG&E Cane Run submitted an EA demonstration for the permitted engines on 8/29/2016, using AERMOD dispersion model. The following table demonstrates that the carcinogen risk and non-carcinogen risk values, calculated using PTE for each engine and modeling results from the source's EA Demonstration, comply with the STAR EA goals required in Regulation 5.21.

Emission Point	Diesel PM		POM (50-32-8)	
	R _C	R _{NC}	R _C	R _{NC}
E35	0.53	0.0004	N/A	N/A
E38-A	0.20	0.0001	0.007	N/A
E38-B	0.19	0.0001	0.006	N/A
E38-C	0.20	0.0001	0.007	N/A
E38-D	0.18	0.0001	0.006	N/A
Total	1.31	0.001	0.026	N/A

Updated plant-wide risk summary are as the following:

Plant-wide Summary	All existing & new		All new P/PE	
	Industrial Total R _C	1.67	< 75	1.33
Non-Ind. Total R _C	1.67	< 7.5	1.33	< 3.8
Industrial Max. R _{NC}	0.008	< 3.0		
Non-Ind. Max. R _{NC}	0.008	< 1.0		

		R _{NC} Total			U11		U18 (5 EGs)		U20		
		Indus.	Non-Ind.	R _{NC}	EA	R _C	R _{NC}	Ind./Non-Ind.	Ind./Non-Ind.	Ind./Non-Ind.	
TAC	CAS #	R _{NC}	R _{NC}	R _{NC}	EA	R _C	R _{NC}	R _C	R _{NC}	R _C	R _{NC}
Total R_C/ Max. R_{NC}		0.01	0.01	0	0.10			1.33		0.24	
Arsenic and arsenic com	7440-38-2	0.00	0.00	<3.0/1.0	0.03	0.00	0.00	0.00	2.3E-01	3.5E-03	
Cadmium and cadmium co	7440-43-9	0.00	0.00	<3.0/1.0	0.00	0.00	0.00	0.00	0.00	0.00	
Chromium hexavalent & C	7440-47-3	0.00	0.00	<3.0/1.0	0.07	0.00	0.00	0.00	0.00	0.00	
Cobalt and cobalt compo	7440-48-4	0.00	0.00	<3.0/1.0	0.00	0.00	0.00	0.00	0.01	0.00	
Manganese and Mangan	7439-96-5	0.01	0.01	<3.0/1.0	0.00	0.01	0.00	0.00	0.00	0.00	
Diesel particulate matter	Feb-27	0.00	0.00	<3.0/1.0	0.00	0.00	1.31	0.00	0.00	0.00	
Polycyclic organic matter	50-32-8	0.00	0.00	<3.0/1.0	0.00	0.00	0.03	0.00	0.00	0.00	

Fee Comment

The permit fees are based on new construction permit fee for a Title V source (\$2,594.24), NESHAP review per area source MACT (\$518.85), NSPS review (\$1,037.69), STAR EA Demo with modeling review (\$1,556.54) and De Minimis determination (\$518.90). The total permit fees are \$6,226.22.