

217/782-2113

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT

PERMITTEE

City of McLeansboro
Attn: Dave McDaniel, Plant Superintendent
102 West Main Street
McLeansboro, Illinois 62859

<u>Application No.:</u> 77070049	<u>I.D. No.:</u> 065020AAW
<u>Applicant's Designation:</u> POWER PLNT	<u>Date Received:</u> September 18, 2001
<u>Subject:</u> Power Generating Plant	
<u>Date Issued:</u>	<u>Expiration Date:</u>
<u>Location:</u> McLeansboro Municipal Power Plant, 305 West Market Street, McLeansboro, Hamilton County	

This permit is hereby granted to the above-designated Permittee to OPERATE emission source(s) and/or air pollution control equipment consisting of an electric power plant with six diesel fuel fired engine generators (Engines 2, 3, 4, 5, 6 and 7), with nominal capacity of 600 kW, 1,136 kW, 1,136 kW, 2,070 kW, 2,400 kW, and 2,000 kW, respectively, as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This Federally Enforceable State Operating Permit (FESOP) is issued to limit the emissions of air pollutants from all the emission units combined, as listed in the above paragraph to less than major source thresholds, for example, less than 100 tons per year of nitrogen oxide (NO_x), as further described in Attachment A. As a result, the source is excluded from requirements to obtain a Clean Air Act Permit Program (CAAPP) permit.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- 2a.
 - i. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at the point beyond the property line of the source unless the wind speed is greater than 25 miles per hour, pursuant to 35 IAC 212.301 and 212.314.
 - ii. The Permittee shall not allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any of these six diesel engine units, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 212.123(b) and during startup, malfunction and breakdown as addressed below.
 - iii. The Permittee is authorized to operate each of these six engine units in excess of 30 percent opacity limit, during startup pursuant to 35 IAC 201.262, as the applicant has affirmatively

demonstrated that all reasonable efforts will be made to minimize excess emissions during startup, and during malfunction or breakdown, as necessary to prevent injury to persons or severe damage to equipment, or provide essential services, provided, however, that continued operation solely for the economic benefit of the Permittee is not authorized. This authorization is subject to the following requirements:

- A. This authorization for excess opacity during startup only extends for a period of up to two hours for a unit, following initial firing of fuel in the engine during each startup event.
- B. The Permittee shall take the following measures to minimize startup emissions, the duration of startups, and minimize the frequency of startups.
- C. This authorization for excess opacity during malfunction or breakdown only extends for the period of time until the engine may be safely removed from service.
- D. The Permittee shall fulfill the applicable recordkeeping requirements of Condition 8(b), (c), (d) and (e).

3a. Fuels with a sulfur content greater than 0.05 weight percent on an annual average as determined below, shall not be fired in the Engine 7, pursuant to the Permittee's representation that the unit is exempt from the Acid Rain Program by meeting the new unit exemption requirement of 40 CFR 72.7(a). The Engine 7 is subject to the Acid Rain Program provisions of 40 CFR 72.2 through 72.7 and 72.10 through 72.13.

b. The Permittee shall use the following equation to address compliance with the above sulfur limit pursuant to 40 CFR 72.7(d)(3):

$$\% S_{\text{annual}} = \frac{\sum_{n=1}^{\text{last}} \% S_n M_n d_n}{\sum_{n=1}^{\text{last}} M_n d_n}$$

Where:

$\% S_{\text{annual}}$ = Annual average sulfur content of the fuel burned during the year by the unit, as a percentage by weight;

$\% S_n$ = Sulfur content of the nth sample of the fuel delivered during the year to the unit, as a percentage by weight;

M_n = Mass of the nongaseous fuel in a delivery during the year to the unit of which the nth sample is taken, in lb; or for fuel delivered during the year to the unit continuously by pipeline, mass of the nongaseous fuel delivered starting

from when the nth sample of such fuel is taken until the next sample of such fuel is taken, in lb;

- d_n = Density of the nth sample of the fuel delivered during the year to the unit, in lb per gallon; and
- n = Each sample taken of the fuel delivered during the year to the unit, taken at least once for each delivery; or, for fuel that is delivered during the year to the unit continuously by pipeline, at least once each quarter during which the fuel is delivered.

- c. The Illinois EPA shall be allowed to sample all fuels stored at the source.
- 4a. The only fuel fired in the engines shall be diesel fuel (distillate oil).
- b. Total fuel consumption for all diesel engines combined shall not exceed 457,600 gallons per year.
- c. i. Emissions from the existing engines (Units 2, 3, 4, 5 and 6) shall not exceed the following limits. These limits are based on the information provided in the application with emissions calculated using standard emission factors, and the maximum firing rates of the engines.

<u>Pollutant</u>	<u>Factors (Lb/mmBtu)</u>	<u>Hourly Limit (Lb/Hr Each)</u>				
		<u>Unit 2</u>	<u>Unit 3</u>	<u>Unit 4</u>	<u>Unit 5</u>	<u>Unit 6</u>
NO _x	3.2	21.12	40.00	40.00	72.86	84.48
CO	0.85	5.61	10.62	10.62	19.35	22.44
SO ₂	0.0505	0.33	0.63	0.63	1.15	1.33
VOM	0.09	0.60	1.12	1.12	2.05	2.38
PM	0.0697	0.46	0.87	0.87	1.60	1.84

- ii. Emissions from the engine (Unit 7) shall not exceed the following limits. These limits are based on the information provided in the application including manufacturer's data at the maximum firing rate of the new engine.

<u>Pollutant</u>	<u>Emission Factor (Lb/mmBtu)</u>	<u>Hourly Limits (Lb/Hr - Each)</u>
NO _x	2.40	51.35
CO	0.06	1.28
SO ₂	0.0505	1.08
VOM	0.03	0.73
PM	0.02	0.43

- iii. Total annual emissions from the source shall not exceed the following limits. These limits are based on information provided in the permit application.

<u>Pollutant</u>	<u>Limit - Total of All Units (Tons/Year)</u>
NO _x	94.96
CO	21.33
SO ₂	1.58
VOM	2.45
PM	1.84

- iv. Compliance with the above annual limits shall be determined from a running total of 12 months of data.
- d. The sulfur content of the diesel fuel shall not exceed 0.05 weight percent.
- 5. The emissions of Hazardous Air Pollutants (HAPs) as listed in Section 112(b) of the Clean Air Act shall not equal or exceed 10 tons per year of any single HAP or 25 tons per year of any combination of such HAPs, or such lesser quantity as USEPA may establish in rule which would require the Permittee to obtain a CAAPP permit from the Illinois EPA. As a result of this condition, this permit is issued based on the emissions of any HAP from this source not triggering the requirement to obtain a CAAPP permit from the Illinois EPA.
- 6. At all times, the Permittee shall to the extent practicable, maintain and operate the above referenced emission sources, in a manner consistent with good air pollution control practice for minimizing emissions.
- 7. Organic liquid by-products or waste materials shall not be used in these engines without written approval from the Illinois EPA.
- 8a. The Permittee shall maintain the following records for the source:
 - i. Records for each shipment of fuel oil received, the amount received, maximum sulfur content, and supplier;
 - ii. Records of the sulfur content of the fuel oil supply to all units, with supporting calculations using the equation in Condition 3(b); and
 - iii. Records of operation of an engine with an oil in excess of the applicable sulfur content (Condition 3), with date, duration, sulfur content of oil, and explanation.
- b. The Permittee shall maintain records of the following items to address compliance with the limits in Condition 4.

- i. Hours of operation for each unit including startup and shutdown when fuel is being fired in the unit;
 - ii. Total fuel usage for all engines combined (gallons/month and gallons/year);
 - iii. Fuel usage of individual engines or other operating data, e.g., hours of operation or megawatts generated from each engine, to allow total fuel usage, as recorded above, to be apportioned among the individual engines as necessary to calculate emissions;
 - iv. Fuel analysis sheets indicating sulfur content for each shipment or purchase of fuel; and
 - v. Emissions of NO_x, CO, SO₂, VOM and PM in tons/month and tons/year from the source (facility total), with supporting calculations.
- c. The Permittee shall keep a maintenance and repair log for each engine, listing significant activities performed with date.
- d. The Permittee shall maintain records for each startup of each affected engine, that at a minimum shall include:
- i. The following information for each startup of an engine:
 - A. Date and time of startup;
 - B. Whether startup is "remote", i.e., initiated by off-site personnel or automated procedures;
 - C. Whether operating personnel for the engines or air environmental staff are on site during startup, even if startup is remote; and
 - D. A description of startup, if operating problems are identified during the startup.
 - ii. The following information for each engine when above normal opacity has been observed by source personnel as identified in (i)(C) above:
 - A. Name of observer, position and reason for being at site;
 - B. Date and duration of above normal opacity, including start time and time normal operation was achieved;
 - C. If normal operation was not achieved within 30 minutes, an explanation why normal operation could not be achieved in 30 minutes;
 - D. A detailed description of the startup, including reason for operation and an explanation why established startup procedures could not be performed, if not performed;

- E. The nature of opacity following the end of startup or two hours of operation, whichever occurs first, and duration of operation until achievement of normal opacity or shutdown; and
 - F. Whether exceedance of Condition 2(a) may have occurred during startup, with explanation, if a qualified observer was on-site.
 - e. The Permittee shall maintain records for each malfunction or breakdown of an engine during which operation continued that include as a minimum:
 - i. Date, time and duration of malfunction or breakdown;
 - ii. Description of malfunction or breakdown;
 - iii. Whether operating personnel for the engines or air environmental staff are on site during malfunction or breakdown; and
 - iv. If excess opacity was observed during malfunction or breakdown of a unit:
 - A. Date and duration of excess opacity, including start time and end time excess opacity occurred during startup;
 - B. If excess opacity occurred during malfunction or breakdown, an explanation why the unit could not be immediately shutdown;
 - C. An explanation of the cause of the excess opacity and documentation that established procedures for minimizing emissions were followed; and
 - D. Whether opacity may have exceeded 30 percent as allowed by 35 IAC 212.123.
- 9. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
- 10a. The Permittee shall submit an Annual Emissions Statement to the Illinois EPA by May 1st of each year. This report shall include the fuel oil consumption by diesel engines. If there has been no exceedance during the prior year, the Annual Emissions Statement shall include a statement to that effect.

- b. If there is an exceedance of the requirements of this permit, as determined by the records required by this permit or by other means, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, a description of the exceedance and efforts to reduce emissions and future occurrences.
- 11. Two (2) copies of required reports and notifications concerning equipment operation or repairs, performance testing or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811 Facsimile: 217/782-6348

and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
2009 Mall Street
Collinsville, Illinois 62234

Telephone: 618/346-5120 Facsimile: 618/346-5155

It should be noted that this permit has been reissued to raise the limitations on operation and emissions and to include Engine 7, which was installed pursuant to Construction Permit No. 01090027.

If you have any questions concerning this permit, please contact Youra Benofamil at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

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cc: Illinois EPA, FOS Region 3
Illinois EPA, Compliance Section
Lotus Notes, USEPA

I.D.: 065020AAW
P.N.: 77070049
Facility: City of McLeansboro

Attachment A - Emissions Summary

Emissions from all emission units combined:

<u>NO_x</u> <u>(Tons/Year)</u>	<u>CO</u> <u>(Tons/Year)</u>	<u>SO₂</u> <u>(Tons/Year)</u>	<u>PM</u> <u>(Tons/Year)</u>	<u>VOM</u> <u>(Tons/Year)</u>
94.96	21.33	1.58	1.84	2.45

This table describes the potential emissions from all emission units at the facility, based on the maximum usage of diesel fuel as stated in Condition 2. Emissions are calculated based on standard emission factors for diesel engines and information provided in the permit application.

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PROJECT SUMMARY

I. INTRODUCTION

The City of McLeansboro has submitted an application for renewal of their federally enforceable state operating permit covering an electric power plant with six diesel engine generators. This permit prevents the site from being classified as a major source of emissions under the Clean Air Act. Therefore, the City will not have to obtain a federal permit under the Clean Air Act Permit Program. The renewal permit would contain limitations and accompanying recordkeeping and reporting requirements to assure that the site is operated as a non-major source.

II. SOURCE DESCRIPTION

These six diesel engine generators are used by the City of McLeansboro to generate electrical power for the community during peak demand periods which usually occur during the summer months. Each generator consists of a reciprocating engine which drives an electric generator by means of a rotating shaft. The reciprocating engines are driven by the combustion of distillate diesel fuel.

III. EMISSIONS

The primary air pollutants from the reciprocating engines are nitrogen oxide (NO_x), carbon monoxide (CO), volatile organic material (VOM), sulfur dioxide (SO₂), and particulate matter (PM). These emissions are exhausted through a pipe to a vent located on the roof.

NO_x is formed thermally by the combination of oxygen and nitrogen in the air at the temperature at which the fuel is burned. CO, VOM, and PM are formed from incomplete combustion of the fuel. Emissions of SO₂ are found in varying amounts from the combustion of diesel fuel, depending on the sulfur content of the oil.

The proposed permit includes limitations that restrict the potential annual emissions of NO_x, CO, VOM, and SO₂ to levels below major source thresholds.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board's emission standards. The Board's emission standards represent the basic requirements for sources in Illinois. The Board has standards for sources of particulate matter, volatile organic material, and sulfur dioxide for reciprocating engines. This site readily complies with those Board standards.

V. PROPOSED PERMIT

The conditions of the proposed permit contain limitations and requirements to assure that this site will be operated as a non-major source. The permit establishes limitations on the amount of fuel which may be burned.

The permit conditions also establish appropriate compliance procedures, including record keeping requirements and reporting requirements. The city must carry out these procedures on a continual basis to demonstrate that the generators are operating within the limitations established by the permit.

VI. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that these generators meet all applicable state and federal air pollution control requirements, subject to the conditions of the draft permit. The Illinois EPA is therefore proposing to issue a permit with federally enforceable limits for the above referenced equipment to the City of McLeansboro.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If there is significant public interest in this matter, the Illinois EPA may hold a public hearing in accordance with 35 Ill. Adm. Code Part 166.

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