

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Devonshire Power Partners, L.L.C.  
Attn: Michael Carolan  
138th Street and Cottage Grove Avenue  
Dolton, Illinois 60419

Application No.: 00060013

I.D. No.: 031069ABX

Applicants Designation: DOLTONGN

Date Received: June 5, 2000

Subject: Landfill Gas Engine Generator

Date Issued: December 4, 2000

Source Location: 138th Street and Cottage Grove Avenue, Dolton, Illinois

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a five landfill gas fired internal combustion engine driven electrical generator sets as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Source Description

This Permit covers the construction of a cogeneration (electrical generation) facility that will control landfill gas emissions by using collected landfill gas as a fuel. The facility consists of five landfill gas fired internal combustion engine driven electrical generator sets.

2. Applicable State Regulations

- a. No person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit in the facility, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 212.123(b) and 212.124.
- b. This facility is subject to 35 IAC Part 220 - Nonmethane Organic Compounds.

3. Non-Applicability of Regulations of Possible Concern

As a result of limits in Condition 4, this permit is issued based on the emissions from the above referenced project not constituting a new major source or major modification subject to Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

4. Facility Limitation

- a. This permit is issued based upon the five landfill gas fired internal combustion engines being used to control emissions of landfill gas including emissions nonmethane organic compounds (NMOC).

- b. i. Landfill gas, supplemented as needed with natural gas or other gaseous fuel, shall be the only fuels fired in the engines and the combined fuel usage (five engines) shall not exceed the following limits. Compliance with the annual limit shall be based upon a rolling average of 12 months of fuel usage and thermal loading for the engines.

	<u>Hourly Limit</u>	<u>Annual Limit</u>
Engines (Combined)	117,129 scf/hr	1026 mmscf/yr

These limits are based on the maximum fuel usage for the facility and an assumed average thermal loading of 425 BTU/scf.

- ii. The maximum braking horsepower of each engine shall not exceed 1,468 bhp.
- iii. Emissions of the landfill gas fired internal combustion engines shall not exceed the following:

<u>Pollutant</u>	<u>Each</u>	<u>(Lb/Hr)</u>	<u>(Tons/Yr)</u>	<u>Combined</u>
				<u>(Tons/Yr)</u>
NO <sub>x</sub>	4.85	21.3	106.3	
CO	11.33	49.61	248.0	
SO <sub>2</sub>	0.19	0.85	4.24	
PM	0.62	2.71	13.54	

5. Test Methods And Procedures

- a. Within 60 days after achieving the maximum production rate at which the landfill gas fired internal combustion engine(s) will be operated, but not later than 180 days after initial startup of the engine(s), emissions from the engine(s) shall be measured by an approved testing service, during conditions which are represent of maximum emissions. This testing shall include measurement of the following:

Opacity and emissions of NO<sub>x</sub> and CO.

- b. This engine may be operated for 180 days under this construction permit for purpose of shakedown and emission testing. This supersedes Standard Condition 6.
- c. Within 90 days of a written request from the Illinois EPA, the Permittee shall perform such other emissions and/or performance tests specified by the Illinois EPA. [40 CFR 60.8(a) and 35 Ill. Adm. Code 201.282] The 90 day time period

will automatically be extended for an additional 60 days upon written request by the Permittee. The Illinois EPA may provide additional time for the performance of these tests upon written request by the Permittee.

- d. Unless otherwise specified, each test shall consist of three separate runs each of at least sixty (60) minutes in duration. For the purpose of determining, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Illinois EPA approval, be determined using the arithmetic mean of the results of the two other runs. [40 CFR 60.8(f)]

- e. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the Illinois EPA: Refer to 40 CFR 60, Appendix A.

Sample and Velocity Traverses	USEPA Method 1
Stack Gas Velocity and Volumetric Flow Rate	USEPA Method 2
Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight	USEPA Method 3
Moisture Content in Stack Gases	USEPA Method 4
Nitrogen Oxide Emissions	USEPA Method 7
Visual Determination of Opacity	USEPA Method 9
Carbon Monoxide Emissions	USEPA Method 10

- f. At least 60 days prior to the actual date of testing a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:
  - i. The name and identification of the affected unit(s);
  - ii. The person(s) who will be performing sampling and analysis and their experience with similar tests.
  - iii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the source and any control equipment will be determined.
  - iv. The specific determinations of emissions and operation which are intended to be made, including sampling and

monitoring locations.

- v. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods.
  - vi. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
  - vii. Any proposed use of an alternative test method, with detailed justification.
  - viii. The format and content of the Source Test Report.
- g. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual test date.
- h. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized. The Final Report shall include as a minimum:
- i. A summary of results.
  - ii. General information.
  - iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule
  - iv. Detailed description of test conditions, including:
    - A. Total flow of landfill gas to the facility;
    - B. Engine operating parameters, i.e., landfill gas flow to the engine, average engine cylinder combustion temperature, RPM, etc.
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.
  - vi. The results of all quality control evaluations,

including a copy of all quality control data.

6. Monitoring Requirements

N/A

7. Recordkeeping Requirements

a. The Permittee shall maintain records of the following items

i. Annual landfill gas usage determined each month based on the current month of records usage plus the usage for the preceding 11 months;

ii. Total hours of operation per year for the control system (e.g., the total combined hours of operation of all the engines) determined each month based on the current month of records hours of operation for the control system plus the hours of operation for the control system for the preceding 11 months;

iii. Total annual NO<sub>x</sub>, PM, SO<sub>2</sub>, CO, and VOM emissions from the engines, based on the current month of records months landfill gas usage plus the usage for the preceding 11 and the applicable emission factors, with supporting calculations;

iv. A maintenance and repair log for each engine, listing each activity performed with date.

b. Records shall be retained for five years and shall be readily available for inspection and copying by the Illinois EPA upon request. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

8. Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA, Compliance Section of non-compliance with the operating requirements and emissions limitations of this permit. This shall include:

i. Emissions of NO<sub>x</sub>, PM, SO<sub>2</sub>, CO, or VOM in excess of the limits in Condition 4, calculated by using emission factors and equation from Condition 10 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence;

ii. Notification within 60 days of operation of an engine that may not have been in compliance with the opacity

limitations of Condition 2(a), as determined from the records required by Condition 8(e), with a copy of such record for each incident;

iii. If there is any other exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the exceedance. The report shall include the emissions released in accordance with recordkeeping requirements, a copy of the relevant records, and a description of the exceedances or violation and efforts to reduce emissions and future occurrences.

b. Any required reports and notifications concerning equipment operation, emissions, performance testing, or a continuous monitoring system shall be sent to the following address(s) unless otherwise indicated:

i. Two copies of reports and notifications shall be sent to:

Illinois Environmental Protection Agency (MC 40)  
Bureau of Air  
Compliance Section  
P.O. Box 19276  
Springfield, Illinois 62794-9276  
217/782-5811

Questions regarding testing shall be directed to the Illinois EPA - Bureau of Air -Compliance Section

ii. One copy to the Regional Office

Illinois Environmental Protection Agency  
Division of Air Pollution Control - Regional Office  
1701 First Avenue  
Maywood, Illinois 60153

9. Compliance Provisions

a. Compliance with the emission limits in Condition 4 shall be based on the recordkeeping requirements in Condition 7 and calculated based on the emission factors developed from the emission testing required by Condition 5 the emission rates below, whichever is higher, and formulas listed below:

<u>Pollutant</u>	Emission Rates per Engine <u>(Lb/Hr)</u>	<u>Notes</u>
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PM	0.62	1
NO <sub>x</sub>	4.85	2
SO <sub>2</sub>	0.19	3
VOM	0.28	4
CO	11.33	5

Notes:

1. Emissions factor based upon the AP-42 emission factor (26.4 lb/mmcf) and the maximum gas flow rate (fuel consumption) provided by the engine manufacturer (390 scfm).
2. Emission factor provided by the engine manufacturer (1.50 g/bhp-hr) and the maximum braking horsepower of the engine (1468 bhp)
3. Emissions factor based upon the calculation procedures in AP-42 and the maximum gas flow rate (fuel consumption) provided by the engine manufacturer (390 scfm)
4. Emission factor based on the calculation procedures in AP-42 and the maximum gas flow rate (fuel consumption) provided by engine manufacturer (390 cfm).
5. Emission factor provided by the engine manufacturer (3.5 g/bhp-hr) and the maximum braking horsepower of the engine (1468 bhp)

Engine Emissions (lb) = appropriate emission factor X total operating hours of the engines

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If you have any questions regarding this permit please contact Minesh Patel at 217/782-2113.

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

DES:MVP:psj

cc: Region 1