



State of Ohio Environmental Protection Agency

**RE: FINAL PERMIT TO INSTALL  
KNOX COUNTY**

**CERTIFIED MAIL**

Street Address:

122 S. Front Street

Lazarus Gov. Center TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center  
P.O. Box 1049

**Application No: 01-08795**

**Fac ID: 0142010079**

**DATE: 9/21/2004**

Rolls Royce Energy Systems Inc  
Louis Burcsak  
105 N Sandusky St  
Mount Vernon, OH 43050

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed within thirty (30) days after the notice of the Directors action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
309 South Fourth Street, Room 222  
Columbus, Ohio 43215

Sincerely,

Michael W. Ahern, Manager  
Permit Issuance and Data Management Section  
Division of Air Pollution Control

cc: USEPA

CDO



**Permit To Install  
Terms and Conditions**

**Issue Date: 9/21/2004  
Effective Date: 9/21/2004**

**FINAL PERMIT TO INSTALL 01-08795**

Application Number: 01-08795  
Facility ID: 0142010079  
Permit Fee: **\$5200**  
Name of Facility: Rolls Royce Energy Systems Inc  
Person to Contact: Louis Buresak  
Address: 105 N Sandusky St  
Mount Vernon, OH 43050

Location of proposed air contaminant source(s) [emissions unit(s)]:

**105 N Sandusky St  
Mt Vernon, Ohio**

Description of proposed emissions unit(s):

**Natural gas and/or petroleum distillate fired jet engines driving a turbine compressor or electrical generator.**

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

## Part I - GENERAL TERMS AND CONDITIONS

### A. Permit to Install General Terms and Conditions

#### 1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

#### 2. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

#### 3. Records Retention Requirements

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

#### 4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized

representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

**5. Scheduled Maintenance/Malfunction Reporting**

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

**6. Permit Transfers**

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

**7. Air Pollution Nuisance**

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

**8. Termination of Permit to Install**

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

**9. Construction of New Sources(s)**

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio

Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

**10. Public Disclosure**

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

**11. Applicability**

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

**12. Best Available Technology**

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

**13. Source Operation and Operating Permit Requirements After Completion of Construction**

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

6

**Rolls Royce Energy Systems Inc**

**PTI Application: 01-08795**

**Issued: 9/21/2004**

**Facility ID: 0142010079**

**14. Construction Compliance Certification**

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

**15. Fees**

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

**B. Permit to Install Summary of Allowable Emissions**

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)  
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons Per Year</u>
NOx	92.4
CO	14.2
VOC	0.25
PE	0.81
SO2	0.98
single HAP	0.09
total HAPs	0.12

**PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. Applicable Emissions Limitations and/or Control Requirements**

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P001 - Turbine/Compressor Test Stand firing natural gas or petroleum distillate (stack 115-S-01)	OAC rule 3745-31-05(A)(3)
(Terms in this permit supersede those identified in PTI 01-08077 issued on 03/29/2000 for this emissions unit)	OAC rule 3745-31-05(C)

	<u>Applicable Emissions Limitations/Control Measures</u>
OAC rule 3745-17-07(A)(1)	
OAC rule 3745-18-06(A)	Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(F)	Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
40 CFR 60, Subpart GG	Sulfur dioxide (SO <sub>2</sub> ) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
	Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.
	Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
	The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-05(C), 3745-17-11(B)(4), 3745-17-07(A)(1), 3745-18-06(F), and federal regulation 40 CFR 60, Subpart GG.
OAC rule 3745-17-11(B)(4)	Total NOx emissions from emissions units P001, P004, P019, P020 and P023 shall not

**Rolls 1**

**PTI A**

Emissions Unit ID: **P001**

**Issued: 9/21/2004**

<p>exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>MMBTU of actual heat input.</p>
<p>Total CO emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Visible PE shall not exceed 20% opacity as a six-minute average, except as provided by rule.</p>
<p>Total SO<sub>2</sub> emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Emissions from total combined HAPs from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Exempt from SO<sub>2</sub> limitations when burning only natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.</p>
<p>Total VOC emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Total PE from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>See A.2.f. below.</p>
<p>Total SO<sub>2</sub> emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>See B.1, B.2, B.3, and B.4 below.</p>	<p>SO<sub>2</sub> emissions shall not exceed 0.5 pound per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.</p>
<p>Total SO<sub>2</sub> emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>PE shall not exceed 0.040 pound per</p>	<p>See A.2.b, A.2.c, A.2.d, and A.2.e below.</p>

**Rolls Royce Energy Systems Inc**  
**PTI Application: 01 08705**  
**Issued**

**Facility ID: 0142010079**

**Emissions Unit ID: P001**

## 2. Additional Terms and Conditions

**2.a** The hourly mass emission limitations in term A.1. were established to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these limits.

**2.b** Any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0075 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals  $0.4(N)$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight,

then F (NO<sub>x</sub> percent by volume) equals 0.005.

- 2.c** Any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NO<sub>x</sub> emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0150 * (14.4 / Y)] + F$$

where

STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacture's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen (NO<sub>x</sub> percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.4(N).

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NO<sub>x</sub> percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.005.

- 2.d** Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- 2.e** The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- 2.f** On August 19, 2003, OAC rule 3745-18-06(A) was revised to exempt fuel burning equipment from SO<sub>2</sub> emissions limits while burning natural gas without heat and sulfur content limits. However, that rule revision had not yet been submitted to the U.S. EPA as a revision to Ohio State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-18-06(A), this emissions unit is only exempt from SO<sub>2</sub> emissions limits while burning natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

## **B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene or other petroleum distillate.
2. The quality of jet fuel, kerosene, or other petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:
  - a. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBTU of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and
  - b. greater than 130,000 Btu per gallon of oil.
3. Annual natural gas usage in emissions units P001, P004, P019, P020 and P023 shall not exceed

**Rolls I****PTI A****Issued: 9/21/2004**Emissions Unit ID: **P001**

225,000,000 cubic feet per rolling 12-month summation of the monthly natural gas usage figures. The permittee has existing natural gas usage records and therefore does not need to be limited the first year on a monthly basis.

4. Annual jet fuel, kerosene and other petroleum distillate usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 50,000 gallons per rolling 12-month summation of the monthly jet fuel, kerosene and other petroleum distillate usage figures. The permittee has existing jet fuel, kerosene and other petroleum distillate usage records and therefore does not need to be limited the first year on a monthly basis.

**C. Monitoring and/or Record keeping Requirements**

1. The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to track all fuel usage for each turbine unit tested at this emissions unit during periods of operation.
2. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods (such as, ASTM methods D240 and D4294), or equivalent methods as approved by the Director.

The permittee shall maintain records of the petroleum distillates (jet fuel, kerosene or other petroleum distillate) or with any change in the quality of natural gas received at the facility, burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillates received for burning in this emissions unit, the permittee shall collect or require the petroleum distillates supplier to collect a representative grab sample of petroleum distillates and maintain records of the total quantity of petroleum distillates received, the permittee's or petroleum distillates supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

b. Alternative 2:

The permittee shall collect a representative grab sample of petroleum distillates that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel petroleum distillates is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the petroleum distillates burned in this emissions unit. A representative grab sample of petroleum distillates does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of petroleum distillates burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the

formula specified in OAC rule 3745-18-04(F).)

- c. for natural gas that has been documented (and maintained on record) to have a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.5 pound per million standard cubic feet, the sulfur dioxide emission rate shall be considered to be equal to and recorded as 0.0 pound of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
- d. for natural gas with a heat content equal to or less than 950 Btu per standard cubic foot and/or a sulfur content equal to or more than 0.6 pound per million standard cubic feet, the representative sulfur dioxide emission rate from any sample shall be determined per OAC rule 3745-18-04(F)(3).

A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

3. The permittee shall maintain a record of each turbine tested at this emissions unit which includes:
  - a. the company identification of each turbine;
  - b. the turbine size based on the heat input needed at peak load, in MMBTU per hour or gigajoules per hour;
  - c. the type and manufacturer of the turbine; and
  - d. the date each turbine was install and removed from this emissions unit.
4. The permittee shall maintain records for emissions units P001, P004, P019, P020 and P023 which include the following:
  - a. the total monthly amount of each fuel burned (natural gas, jet fuel, kerosene, and/or other petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month;
  - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, jet fuel, kerosene, and/or other petroleum distillate), in cubic feet per rolling 12-month period (for natural gas) or gallons per rolling 12-month period;
  - c. the total monthly emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs,

total combined HAPs, and particulates) emitted from each emissions unit during the month, in pounds of pollutant per month; and

- d. the rolling 12-month summation of emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:
  - a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
  - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator.
6. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the vent serving this emissions unit after 3 hours of operation. The presence or absence of any visible emissions shall be noted in a operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
  - a. the color of the emissions;
  - b. whether the emissions are representative of normal operations;
  - c. the emissions are not representative of normal operation, the cause of the abnormal emissions;
  - d. the total duration of any visible emission incident; and
  - e. any corrective actions taken to eliminate the visible emissions.

#### **D. Reporting Requirements**

1. The permittee shall notify the Director (the appropriate District Office or local air agency) in writing of any record which shows a deviation of the allowable sulfur dioxide emission limitation based upon the calculated sulfur dioxide emission rates from Section A.III above. The notification shall include a copy of such record and shall be sent to the Director (the appropriate District Office or local air agency) within 45 days after the deviation occurs.
2. If a petroleum distillate (jet fuel, kerosene, and/or other petroleum distillate) is used in this

emissions unit, the permittee shall submit, on a quarterly basis, copies of the permittee's or oil supplier's analysis for each shipment of oil which is received. The following information shall be included for each shipment:

- a. the type of distillate received;
- b. the total quantity received (in gallons);
- c. the permittee's or oil supplier's analysis for sulfur content (in percent); and
- d. the permittee's or oil supplier's analysis for heat content (in BTU per gallon).

These quarterly reports shall be submitted to the Ohio EPA Central District Office by January 31, April 30, July 30 and October 31 of each year and shall cover the oil shipments received during the previous calendar quarters. If petroleum distillates were not used during the quarter, the permittee shall submit a report which states that no petroleum distillates were not used.

3. The permittee shall submit deviation (excursion) reports that identify all exceedances of:
  - a. the rolling 12-month natural gas, jet fuel, kerosene, and/or other petroleum distillate usage limitations.

These reports shall be submitted to the Ohio EPA Central District Office by January 31, April 31, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviation occurred during a calendar quarter, the permittee shall submit a report which states that no deviations occurred during that calendar quarter.

4. The permittee shall submit annual reports which specify:
  - a. the total emissions from this emissions unit; and
  - b. fuel usage from this emissions unit for the previous calendar year.

The annual fuel usage and emissions report shall be submitted to the Ohio EPA Central District Office by April 15th of each year.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit quarterly reports, as required by 40 CFR 60, Subpart GG, to the Ohio EPA Central District Office. The following information

shall also be included in this report:

- a. any period of time during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during any performance test; and
- b. any period of time during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent by weight or emissions of sulfur dioxide exceed 0.015 percent by volume at 15 percent oxygen on a dry basis.

These quarterly emissions reports (only required if a turbine is in operation 60 days from the first test day) shall include the average fuel consumption, ambient conditions, gas turbine load, the sulfur and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures used to compute the emissions, and shall be postmarked by the 30th day following the end of each calendar quarter.

6. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit the following reports at the appropriate times:
  - a. construction date (no later than 30 days after such date);
  - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
  - c. actual start-up date (within 15 days after such date); and
  - d. date of performance testing (if required, at least 30 days prior to testing).

Reports shall include reference to the company identification of the turbine, the unit or serial number, and are to be sent to:

Ohio Environmental Protection Agency  
DAPC - Permit Management Unit  
P.O. Box 163669  
Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency  
Central District Office/DAPC

3232 Alum Creek Drive  
Columbus, Ohio 43207-3417

**E. Testing Requirements**

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

a. Emissions Limitations:

Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 191.8 pounds of NOx per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 302.7 pounds of NOx per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

b. Emissions Limitations:

Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 29.4 pounds of CO per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 47.8 pounds of CO per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

c. Emissions Limitations:

Sulfur dioxide (SO2) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of  $0.94 * S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated with the previous emissions testing data of 65.3 pounds of SO<sub>2</sub> per hour plus ten percent (May 30, 2003 emissions test).

d. Emissions Limitations:

Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0021 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.00041 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

e. Emissions Limitations:

Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0066 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.012 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

f. Emissions Limitations:

Total nitrogen oxide (NOx) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 211.0 pounds NO<sub>x</sub> per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 333.0 pounds NO<sub>x</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

g. Emissions Limitations:

Total carbon monoxide (CO) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 32.3 pounds CO per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 52.6 pounds CO per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

h. Emissions Limitations:

Total sulfur dioxide (SO<sub>2</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor  $0.94 \times S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 71.8 pounds SO<sub>2</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

i. Emissions Limitations:

Total volatile organic compound (VOC) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0021 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00041 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

j. Emissions Limitations:

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00071 pound single HAP per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00079 pound single HAP per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

k. Emissions Limitations:

Emissions from total combined hazardous air pollutants (HAPs) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00103 pound total combined HAPs per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

l. Emissions Limitations:

Total particulate emissions (PE) from emissions units P001, P004, P019, P020 and P023

Emissions Unit ID: **P001**

shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0066 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.012 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

m. Emission Limitation:

Particulate emissions (PE) shall not exceed 0.040 pound per MMBTU of actual heat input.

Applicable Compliance Method:

Compliance with this limit shall be demonstrated by the appropriate emissions factors: 0.0066 pound PE per MMBTU for natural gas and 0.012 pound PE per MMBTU for jet fuel, kerosene or other petroleum distillate (AP-42, Table 3.1-2a, April 2000).

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

n. Emission Limitation:

Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations

performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

o. Emission Limitation:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.5 pounds per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Method:

Compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as per Section C.2 of these terms and conditions.

The SO<sub>2</sub> emission rate from jet fuel, kerosene or other petroleum distillate shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$$ER = (1,000,000 / H) * D * S * 1.974$$

where

ER = the emissions rate in pounds of SO<sub>2</sub> per MMBTU;

H = the heat content of the liquid fuel in Btu per gallon;

D = the density of the liquid fuel in pounds per gallon; and

S = the decimal fraction of sulfur in the liquid fuel.

p. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.b of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

q. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.c of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

r. Emissions Limitations:

For any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:

- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

**Rolls Royce Energy Systems Inc**

**PTI Application: 01 08705**

**Issued**

**Facility ID: 0142010079**

**Emissions Unit ID: P001**

**Applicable Compliance Methods:**

Compliance with the SO<sub>2</sub> emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing jet fuel, kerosene or other petroleum distillate).

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and Record keeping requirements in terms C.2 of these terms and conditions.

**F. Miscellaneous Requirements**

None



	<u>Applicable Emissions Limitations/Control Measures</u>
OAC rule 3745-17-11(B)(4)	Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-17-07(A)(1)	
OAC rule 3745-18-06(A)	Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(F)	Sulfur dioxide (SO2) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
40 CFR 60, Subpart GG	<p>Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.</p> <p>Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-05(C), 3745-17-11(B)(4), 3745-17-07(A)(1), 3745-18-06(F), and federal regulation 40 CFR 60, Subpart GG.</p> <p>Total NOx emissions from emissions units</p>

Issued

Emissions Unit ID: P004

P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

opacity as a six-minute average, except as provided by rule.

Total CO emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Exempt from SO2 limitations when burning only natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

Total SO2 emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from total combined HAPs from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

See A.2.f. below.

SO2 emissions shall not exceed 0.5 pound per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Total VOC emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while

Total PE from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

See A.2.b, A.2.c, A.2.d, and A.2.e below.

See B.1, B.2, B.3, and B.4 below.

PE shall not exceed 0.040 pound per MMBTU of actual heat input.

Visible PE shall not exceed 20%

35

**Rolls 1**

**PTI A**

**Issued: 9/21/2004**

Emissions Unit ID: **P004**

## 2. Additional Terms and Conditions

- 2.a** The hourly mass emission limitations in term A.1. were established to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these limits.
- 2.b** Any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0075 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacture's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals 0.4(N).

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

Emissions Unit ID: P004

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight,  
 then F (NOx percent by volume) equals 0.005.

- 2.c** Any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0150 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals  $0.4(N)$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight,  
 then F (NOx percent by volume) equals 0.005.

- 2.d** Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- 2.e** The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- 2.f** On August 19, 2003, OAC rule 3745-18-06(A) was revised to exempt fuel burning equipment from SO<sub>2</sub> emissions limits while burning natural gas without heat and sulfur content limits. However, that rule revision had not yet been submitted to the U.S. EPA as a revision to Ohio State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-18-06(A), this emissions unit is only exempt from SO<sub>2</sub> emissions limits while burning natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

## **B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene or other petroleum distillate.
2. The quality of jet fuel, kerosene, or other petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:
  - a. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBTU of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and
  - b. greater than 130,000 Btu per gallon of oil.

Emissions Unit ID: **P004**

3. Annual natural gas usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 225,000,000 cubic feet per rolling 12-month summation of the monthly natural gas usage figures. The permittee has existing natural gas usage records and therefore does not need to be limited the first year on a monthly basis.
4. Annual jet fuel, kerosene and other petroleum distillate usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 50,000 gallons per rolling 12-month summation of the monthly jet fuel, kerosene and other petroleum distillate usage figures. The permittee has existing jet fuel, kerosene and other petroleum distillate usage records and therefore does not need to be limited the first year on a monthly basis.

**C. Monitoring and/or Record keeping Requirements**

1. The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to track all fuel usage for each turbine unit tested at this emissions unit during periods of operation.
2. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods (such as, ASTM methods D240 and D4294), or equivalent methods as approved by the Director.

The permittee shall maintain records of the petroleum distillates (jet fuel, kerosene or other petroleum distillate) or with any change in the quality of natural gas received at the facility, burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillates received for burning in this emissions unit, the permittee shall collect or require the petroleum distillates supplier to collect a representative grab sample of petroleum distillates and maintain records of the total quantity of petroleum distillates received, the permittee's or petroleum distillates supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

b. Alternative 2:

The permittee shall collect a representative grab sample of petroleum distillates that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel petroleum distillates is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the petroleum distillates burned in this emissions unit. A representative grab sample of petroleum distillates does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of petroleum distillates burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

- c. for natural gas that has been documented (and maintained on record) to have a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.5 pound per million standard cubic feet, the sulfur dioxide emission rate shall be considered to be equal to and recorded as 0.0 pound of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
- d. for natural gas with a heat content equal to or less than 950 Btu per standard cubic foot and/or a sulfur content equal to or more than 0.6 pound per million standard cubic feet, the representative sulfur dioxide emission rate from any sample shall be determined per OAC rule 3745-18-04(F)(3).

A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

- 3. The permittee shall maintain a record of each turbine tested at this emissions unit which includes:
  - a. the company identification of each turbine;
  - b. the turbine size based on the heat input needed at peak load, in MMBTU per hour or gigajoules per hour;
  - c. the type and manufacturer of the turbine; and
  - d. the date each turbine was install and removed from this emissions unit.
- 4. The permittee shall maintain records for emissions units P001, P004, P019, P020 and P023 which include the following:
  - a. the total monthly amount of each fuel burned (natural gas, jet fuel, kerosene, and/or other petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month;
  - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, jet fuel, kerosene, and/or other petroleum distillate), in cubic feet per rolling 12-month period (for natural gas) or gallons per rolling 12-month period;
  - c. the total monthly emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs,

**Rolls Royce Energy Systems Inc**

**PTI Application: 01-08705**

**Issued**

**Facility ID: 0142010079**

Emissions Unit ID: **P004**

total combined HAPs, and particulates) emitted from each emissions unit during the month, in pounds of pollutant per month; and

- d. the rolling 12-month summation of emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:
  - a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
  - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator.
  
6. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the vent serving this emissions unit after 3 hours of operation. The presence or absence of any visible emissions shall be noted in a operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
  - a. the color of the emissions;
  - b. whether the emissions are representative of normal operations;
  - c. the emissions are not representative of normal operation, the cause of the abnormal emissions;
  - d. the total duration of any visible emission incident; and
  - e. any corrective actions taken to eliminate the visible emissions.

#### **D. Reporting Requirements**

1. The permittee shall notify the Director (the appropriate District Office or local air agency) in writing of any record which shows a deviation of the allowable sulfur dioxide emission limitation based upon the calculated sulfur dioxide emission rates from Section A.III above. The notification shall include a copy of such record and shall be sent to the Director (the appropriate District Office or local air agency) within 45 days after the deviation occurs.

2. If a petroleum distillate (jet fuel, kerosene, and/or other petroleum distillate) is used in this emissions unit, the permittee shall submit, on a quarterly basis, copies of the permittee's or oil supplier's analysis for each shipment of oil which is received. The following information shall be included for each shipment:
  - a. the type of distillate received;
  - b. the total quantity received (in gallons);
  - c. the permittee's or oil supplier's analysis for sulfur content (in percent); and
  - d. the permittee's or oil supplier's analysis for heat content (in BTU per gallon).

These quarterly reports shall be submitted to the Ohio EPA Central District Office by January 31, April 30, July 30 and October 31 of each year and shall cover the oil shipments received during the previous calendar quarters. If petroleum distillates were not used during the quarter, the permittee shall submit a report which states that no petroleum distillates were not used.

3. The permittee shall submit deviation (excursion) reports that identify all exceedances of:
  - a. the rolling 12-month natural gas, jet fuel, kerosene, and/or other petroleum distillate usage limitations.

These reports shall be submitted to the Ohio EPA Central District Office by January 31, April 31, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviation occurred during a calendar quarter, the permittee shall submit a report which states that no deviations occurred during that calendar quarter.

4. The permittee shall submit annual reports which specify:
  - a. the total emissions from this emissions unit; and
  - b. fuel usage from this emissions unit for the previous calendar year.

The annual fuel usage and emissions report shall be submitted to the Ohio EPA Central District Office by April 15th of each year.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit quarterly reports, as required by 40 CFR 60, Subpart GG, to the Ohio EPA Central District Office. The following information

shall also be included in this report:

- a. any period of time during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during any performance test; and
- b. any period of time during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent by weight or emissions of sulfur dioxide exceed 0.015 percent by volume at 15 percent oxygen on a dry basis.

These quarterly emissions reports (only required if a turbine is in operation 60 days from the first test day) shall include the average fuel consumption, ambient conditions, gas turbine load, the sulfur and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures used to compute the emissions, and shall be postmarked by the 30th day following the end of each calendar quarter.

6. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit the following reports at the appropriate times:
  - a. construction date (no later than 30 days after such date);
  - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
  - c. actual start-up date (within 15 days after such date); and
  - d. date of performance testing (if required, at least 30 days prior to testing).

Reports shall include reference to the company identification of the turbine, the unit or serial number, and are to be sent to:

Ohio Environmental Protection Agency  
DAPC - Permit Management Unit  
P.O. Box 163669  
Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency

Central District Office/DAPC  
3232 Alum Creek Drive  
Columbus, Ohio 43207-3417

## E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

- a. Emissions Limitations:

Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 191.8 pounds of NO<sub>x</sub> per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 302.7 pounds of NO<sub>x</sub> per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- b. Emissions Limitations:

Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 29.4 pounds of CO per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 47.8 pounds of CO per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- c. Emissions Limitations:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

**Applicable Compliance Methods:**

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of  $0.94 * S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated with the previous emissions testing data of 65.3 pounds of SO<sub>2</sub> per hour plus ten percent (May 30, 2003 emissions test).

**d. Emissions Limitations:**

Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0021 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.00041 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

e. Emissions Limitations:

Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0066 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.012 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

f. Emissions Limitations:

Total nitrogen oxide (NO<sub>x</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 211.0 pounds NO<sub>x</sub> per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 333.0 pounds NO<sub>x</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

g. Emissions Limitations:

Total carbon monoxide (CO) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 32.3 pounds CO per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 52.6 pounds CO per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

h. Emissions Limitations:

Total sulfur dioxide (SO<sub>2</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor  $0.94 \cdot S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 71.8 pounds SO<sub>2</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

i. Emissions Limitations:

Total volatile organic compound (VOC) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0021 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00041 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

j. Emissions Limitations:

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00071 pound single HAP per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00079 pound single HAP per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

k. Emissions Limitations:

Emissions from total combined hazardous air pollutants (HAPs) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00103 pound total combined HAPs per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

l. Emissions Limitations:

Total particulate emissions (PE) from emissions units P001, P004, P019, P020 and P023

shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0066 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.012 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

m. Emission Limitation:

Particulate emissions (PE) shall not exceed 0.040 pound per MMBTU of actual heat input.

Applicable Compliance Method:

Compliance with this limit shall be demonstrated by the appropriate emissions factors: 0.0066 pound PE per MMBTU for natural gas and 0.012 pound PE per MMBTU for jet fuel, kerosene or other petroleum distillate (AP-42, Table 3.1-2a, April 2000).

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

n. Emission Limitation:

Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

**Rolls Royce Energy Systems Inc**

**PTI Application: 01-08705**

**Issued**

**Facility ID: 0142010079**

Emissions Unit ID: **P004**

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

o. Emission Limitation:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.5 pounds per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Method:

Compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as per Section C.2 of these terms and conditions.

The SO<sub>2</sub> emission rate from jet fuel, kerosene or other petroleum distillate shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$$ER = (1,000,000 / H) * D * S * 1.974$$

where

ER = the emissions rate in pounds of SO<sub>2</sub> per MMBTU;

H = the heat content of the liquid fuel in Btu per gallon;

D = the density of the liquid fuel in pounds per gallon; and

S = the decimal fraction of sulfur in the liquid fuel.

p. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.b of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

q. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating

value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.c of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

r. Emissions Limitations:

For any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:

- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

Applicable Compliance Methods:

Compliance with the SO<sub>2</sub> emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing jet fuel, kerosene or other petroleum distillate).

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and Record keeping requirements in terms C.2 of these terms and conditions.

## F. Miscellaneous Requirements

56

**Rolls Royce Energy Systems Inc**

**PTI Application: 01 08705**

**Issued**

**Facility ID: 0142010079**

**Emissions Unit ID: P004**

None



	<u>Applicable Emissions Limitations/Control Measures</u>
OAC rule 3745-17-11(B)(4)	
OAC rule 3745-17-07(A)(1)	Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(A)	Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(F)	Sulfur dioxide (SO2) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
40 CFR 60, Subpart GG	Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.
	Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
	The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-05(C), 3745-17-11(B)(4), 3745-17-07(A)(1), 3745-18-06(F), and federal regulation 40 CFR 60, Subpart GG.
	Total NOx emissions from emissions units P001, P004, P019, P020 and P023 shall not

**Rolls 1****PTI A****Issued: 9/21/2004**Emissions Unit ID: **P019**

<p>exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Visible PE shall not exceed 20% opacity as a six-minute average, except as provided by rule.</p>
<p>Total CO emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Exempt from SO<sub>2</sub> limitations when burning only natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.</p>
<p>Total SO<sub>2</sub> emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>Emissions from total combined HAPs from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p>	<p>See A.2.f. below.</p> <p>SO<sub>2</sub> emissions shall not exceed 0.5 pound per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.</p>
<p>Total VOC emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while</p>	<p>Total PE from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.</p> <p>See B.1, B.2, B.3, and B.4 below.</p> <p>PE shall not exceed 0.040 pound per MMBTU of actual heat input.</p>	<p>See A.2.b, A.2.c, A.2.d, and A.2.e below.</p>

60

**Rolls Royce Energy Systems Inc**

**PTI Application: 01 08705**

**Issued**

**Facility ID: 0142010079**

**Emissions Unit ID: P019**

## 2. Additional Terms and Conditions

**2.a** The hourly mass emission limitations in term A.1. were established to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these limits.

**2.b** Any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0075 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals  $0.4(N)$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight,

then F (NO<sub>x</sub> percent by volume) equals 0.005.

- 2.c** Any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NO<sub>x</sub> emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0150 * (14.4 / Y)] + F$$

where

STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacture's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen (NO<sub>x</sub> percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.4(N).

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.004 + [0.0067 \* (N - 0.1)].

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight, then F (NO<sub>x</sub> percent by volume) equals 0.005.

- 2.d** Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- 2.e** The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- 2.f** On August 19, 2003, OAC rule 3745-18-06(A) was revised to exempt fuel burning equipment from SO<sub>2</sub> emissions limits while burning natural gas without heat and sulfur content limits. However, that rule revision had not yet been submitted to the U.S. EPA as a revision to Ohio State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-18-06(A), this emissions unit is only exempt from SO<sub>2</sub> emissions limits while burning natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

## **B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene or other petroleum distillate.
2. The quality of jet fuel, kerosene, or other petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:
  - a. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBTU of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and
  - b. greater than 130,000 Btu per gallon of oil.
3. Annual natural gas usage in emissions units P001, P004, P019, P020 and P023 shall not exceed

**Rolls 1****PTI A****Issued: 9/21/2004**Emissions Unit ID: **P019**

225,000,000 cubic feet per rolling 12-month summation of the monthly natural gas usage figures. The permittee has existing natural gas usage records and therefore does not need to be limited the first year on a monthly basis.

4. Annual jet fuel, kerosene and other petroleum distillate usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 50,000 gallons per rolling 12-month summation of the monthly jet fuel, kerosene and other petroleum distillate usage figures. The permittee has existing jet fuel, kerosene and other petroleum distillate usage records and therefore does not need to be limited the first year on a monthly basis.

**C. Monitoring and/or Record keeping Requirements**

1. The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to track all fuel usage for each turbine unit tested at this emissions unit during periods of operation.
2. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods (such as, ASTM methods D240 and D4294), or equivalent methods as approved by the Director.

The permittee shall maintain records of the petroleum distillates (jet fuel, kerosene or other petroleum distillate) or with any change in the quality of natural gas received at the facility, burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillates received for burning in this emissions unit, the permittee shall collect or require the petroleum distillates supplier to collect a representative grab sample of petroleum distillates and maintain records of the total quantity of petroleum distillates received, the permittee's or petroleum distillates supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

b. Alternative 2:

The permittee shall collect a representative grab sample of petroleum distillates that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel petroleum distillates is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the petroleum distillates burned in this emissions unit. A representative grab sample of petroleum distillates does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of petroleum distillates burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the

formula specified in OAC rule 3745-18-04(F).)

- c. for natural gas that has been documented (and maintained on record) to have a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.5 pound per million standard cubic feet, the sulfur dioxide emission rate shall be considered to be equal to and recorded as 0.0 pound of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
- d. for natural gas with a heat content equal to or less than 950 Btu per standard cubic foot and/or a sulfur content equal to or more than 0.6 pound per million standard cubic feet, the representative sulfur dioxide emission rate from any sample shall be determined per OAC rule 3745-18-04(F)(3).

A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

3. The permittee shall maintain a record of each turbine tested at this emissions unit which includes:
  - a. the company identification of each turbine;
  - b. the turbine size based on the heat input needed at peak load, in MMBTU per hour or gigajoules per hour;
  - c. the type and manufacturer of the turbine; and
  - d. the date each turbine was install and removed from this emissions unit.
4. The permittee shall maintain records for emissions units P001, P004, P019, P020 and P023 which include the following:
  - a. the total monthly amount of each fuel burned (natural gas, jet fuel, kerosene, and/or other petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month;
  - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, jet fuel, kerosene, and/or other petroleum distillate), in cubic feet per rolling12-month period (for natural gas) or gallons per rolling12-month period;
  - c. the total monthly emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs,

total combined HAPs, and particulates) emitted from each emissions unit during the month, in pounds of pollutant per month; and

- d. the rolling 12-month summation of emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.
5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:
    - a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
    - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator.
  6. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the vent serving this emissions unit after 3 hours of operation. The presence or absence of any visible emissions shall be noted in a operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
    - a. the color of the emissions;
    - b. whether the emissions are representative of normal operations;
    - c. the emissions are not representative of normal operation, the cause of the abnormal emissions;
    - d. the total duration of any visible emission incident; and
    - e. any corrective actions taken to eliminate the visible emissions.

#### **D. Reporting Requirements**

Emissions Unit ID: **P019**

1. The permittee shall notify the Director (the appropriate District Office or local air agency) in writing of any record which shows a deviation of the allowable sulfur dioxide emission limitation based upon the calculated sulfur dioxide emission rates from Section A.III above. The notification shall include a copy of such record and shall be sent to the Director (the appropriate District Office or local air agency) within 45 days after the deviation occurs.
2. If a petroleum distillate (jet fuel, kerosene, and/or other petroleum distillate) is used in this emissions unit, the permittee shall submit, on a quarterly basis, copies of the permittee's or oil supplier's analysis for each shipment of oil which is received. The following information shall be included for each shipment:
  - a. the type of distillate received;
  - b. the total quantity received (in gallons);
  - c. the permittee's or oil supplier's analysis for sulfur content (in percent); and
  - d. the permittee's or oil supplier's analysis for heat content (in BTU per gallon).

These quarterly reports shall be submitted to the Ohio EPA Central District Office by January 31, April 30, July 30 and October 31 of each year and shall cover the oil shipments received during the previous calendar quarters. If petroleum distillates were not used during the quarter, the permittee shall submit a report which states that no petroleum distillates were not used.

3. The permittee shall submit deviation (excursion) reports that identify all exceedances of:
  - a. the rolling 12-month natural gas, jet fuel, kerosene, and/or other petroleum distillate usage limitations.

These reports shall be submitted to the Ohio EPA Central District Office by January 31, April 31, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviation occurred during a calendar quarter, the permittee shall submit a report which states that no deviations occurred during that calendar quarter.

4. The permittee shall submit annual reports which specify:
  - a. the total emissions from this emissions unit; and
  - b. fuel usage from this emissions unit for the previous calendar year.

The annual fuel usage and emissions report shall be submitted to the Ohio EPA Central District

Office by April 15th of each year.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit quarterly reports, as required by 40 CFR 60, Subpart GG, to the Ohio EPA Central District Office. The following information shall also be included in this report:
  - a. any period of time during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during any performance test; and
  - b. any period of time during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent by weight or emissions of sulfur dioxide exceed 0.015 percent by volume at 15 percent oxygen on a dry basis.

These quarterly emissions reports (only required if a turbine is in operation 60 days from the first test day) shall include the average fuel consumption, ambient conditions, gas turbine load, the sulfur and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures used to compute the emissions, and shall be postmarked by the 30th day following the end of each calendar quarter.

6. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit the following reports at the appropriate times:
  - a. construction date (no later than 30 days after such date);
  - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
  - c. actual start-up date (within 15 days after such date); and
  - d. date of performance testing (if required, at least 30 days prior to testing).

Reports shall include reference to the company identification of the turbine, the unit or serial number, and are to be sent to:

Ohio Environmental Protection Agency  
 DAPC - Permit Management Unit  
 P.O. Box 163669  
 Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency  
 Central District Office/DAPC  
 3232 Alum Creek Drive  
 Columbus, Ohio 43207-3417

## **E. Testing Requirements**

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:
  - a. Emissions Limitations:

Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 191.8 pounds of NO<sub>x</sub> per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 302.7 pounds of NO<sub>x</sub> per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

b. Emissions Limitations:

Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 29.4 pounds of CO per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 47.8 pounds of CO per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

c. Emissions Limitations:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of  $0.94 * S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated with the previous emissions testing data of 65.3 pounds of SO<sub>2</sub> per hour

plus ten percent (May 30, 2003 emissions test).

d. Emissions Limitations:

Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0021 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.00041 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

e. Emissions Limitations:

Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0066 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.012 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

f. Emissions Limitations:

Total nitrogen oxide (NOx) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 211.0 pounds NO<sub>x</sub> per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 333.0 pounds NO<sub>x</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

g. Emissions Limitations:

Total carbon monoxide (CO) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 32.3 pounds CO per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 52.6 pounds CO per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

h. Emissions Limitations:

Total sulfur dioxide (SO<sub>2</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor  $0.94 \times S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 71.8 pounds SO<sub>2</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

i. Emissions Limitations:

Total volatile organic compound (VOC) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0021 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00041 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

j. Emissions Limitations:

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00071 pound single HAP per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00079 pound single HAP per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

k. Emissions Limitations:

Emissions from total combined hazardous air pollutants (HAPs) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00103 pound total combined HAPs per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

l. Emissions Limitations:

Total particulate emissions (PE) from emissions units P001, P004, P019, P020 and P023

Emissions Unit ID: **P019**

shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0066 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.012 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

m. Emission Limitation:

Particulate emissions (PE) shall not exceed 0.040 pound per MMBTU of actual heat input.

Applicable Compliance Method:

Compliance with this limit shall be demonstrated by the appropriate emissions factors: 0.0066 pound PE per MMBTU for natural gas and 0.012 pound PE per MMBTU for jet fuel, kerosene or other petroleum distillate (AP-42, Table 3.1-2a, April 2000).

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

n. Emission Limitation:

Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations

performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

o. Emission Limitation:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.5 pounds per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Method:

Compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as per Section C.2 of these terms and conditions.

The SO<sub>2</sub> emission rate from jet fuel, kerosene or other petroleum distillate shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$$ER = (1,000,000 / H) * D * S * 1.974$$

where

ER = the emissions rate in pounds of SO<sub>2</sub> per MMBTU;

H = the heat content of the liquid fuel in Btu per gallon;

D = the density of the liquid fuel in pounds per gallon; and

S = the decimal fraction of sulfur in the liquid fuel.

p. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.b of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

q. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating

Emissions Unit ID: **P019**

value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.c of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

r. Emissions Limitations:

For any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:

- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

Applicable Compliance Methods:

Compliance with the SO<sub>2</sub> emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing jet fuel, kerosene or other petroleum distillate).

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and Record keeping requirements in terms C.2 of these terms and conditions.

**F. Miscellaneous Requirements**

81

**Rolls 1**

**PTI A**

**Issued: 9/21/2004**

Emissions Unit ID: **P019**

None



	<u>Applicable Emissions Limitations/Control Measures</u>
OAC rule 3745-17-11(B)(4)	Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-17-07(A)(1)	
OAC rule 3745-18-06(A)	Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(F)	Sulfur dioxide (SO2) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
40 CFR 60, Subpart GG	<p>Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.</p> <p>Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-05(C), 3745-17-11(B)(4), 3745-17-07(A)(1), 3745-18-06(F), and federal regulation 40 CFR 60, Subpart GG.</p> <p>Total NOx emissions from emissions units</p>

P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total CO emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total SO<sub>2</sub> emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total VOC emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while

firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from total combined HAPs from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total PE from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

See B.1, B.2, B.3, and B.4 below.

PE shall not exceed 0.040 pound per MMBTU of actual heat input.

Visible PE shall not exceed 20% opacity as a six-minute average,

except as provided by rule.

Exempt from SO<sub>2</sub> limitations when burning only natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

See A.2.f. below.

SO<sub>2</sub> emissions shall not exceed 0.5 pound per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

See A.2.b, A.2.c, A.2.d, and A.2.e below.

85

**Rolls 1**

**PTI A**

**Issued: 9/21/2004**

Emissions Unit ID: **P020**

## 2. Additional Terms and Conditions

**2.a** The hourly mass emission limitations in term A.1. were established to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these limits.

**2.b** Any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0075 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals  $0.4(N)$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight,

Emissions Unit ID: P020

then F (NOx percent by volume) equals 0.005.

- 2.c** Any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0150 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals  $0.4(N)$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight, then F (NOx percent by volume) equals 0.005.

- 2.d** Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- 2.e** The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- 2.f** On August 19, 2003, OAC rule 3745-18-06(A) was revised to exempt fuel burning equipment from SO<sub>2</sub> emissions limits while burning natural gas without heat and sulfur content limits. However, that rule revision had not yet been submitted to the U.S. EPA as a revision to Ohio State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-18-06(A), this emissions unit is only exempt from SO<sub>2</sub> emissions limits while burning natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

## **B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene or other petroleum distillate.
2. The quality of jet fuel, kerosene, or other petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:
  - a. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBTU of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and
  - b. greater than 130,000 Btu per gallon of oil.
3. Annual natural gas usage in emissions units P001, P004, P019, P020 and P023 shall not exceed

**Rolls Royce Energy Systems Inc**

**PTI Application: 01-09705**

**Issued**

**Facility ID: 0142010079**

Emissions Unit ID: **P020**

225,000,000 cubic feet per rolling 12-month summation of the monthly natural gas usage figures. The permittee has existing natural gas usage records and therefore does not need to be limited the first year on a monthly basis.

4. Annual jet fuel, kerosene and other petroleum distillate usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 50,000 gallons per rolling 12-month summation of the monthly jet fuel, kerosene and other petroleum distillate usage figures. The permittee has existing jet fuel, kerosene and other petroleum distillate usage records and therefore does not need to be limited the first year on a monthly basis.

**C. Monitoring and/or Record keeping Requirements**

1. The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to track all fuel usage for each turbine unit tested at this emissions unit during periods of operation.
2. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods (such as, ASTM methods D240 and D4294), or equivalent methods as approved by the Director.

The permittee shall maintain records of the petroleum distillates (jet fuel, kerosene or other petroleum distillate) or with any change in the quality of natural gas received at the facility, burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillates received for burning in this emissions unit, the permittee shall collect or require the petroleum distillates supplier to collect a representative grab sample of petroleum distillates and maintain records of the total quantity of petroleum distillates received, the permittee's or petroleum distillates supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

b. Alternative 2:

The permittee shall collect a representative grab sample of petroleum distillates that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel petroleum distillates is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the petroleum distillates burned in this emissions unit. A representative grab sample of petroleum distillates does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of petroleum distillates burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the

formula specified in OAC rule 3745-18-04(F).)

- c. for natural gas that has been documented (and maintained on record) to have a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.5 pound per million standard cubic feet, the sulfur dioxide emission rate shall be considered to be equal to and recorded as 0.0 pound of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
- d. for natural gas with a heat content equal to or less than 950 Btu per standard cubic foot and/or a sulfur content equal to or more than 0.6 pound per million standard cubic feet, the representative sulfur dioxide emission rate from any sample shall be determined per OAC rule 3745-18-04(F)(3).

A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

- 3. The permittee shall maintain a record of each turbine tested at this emissions unit which includes:
  - a. the company identification of each turbine;
  - b. the turbine size based on the heat input needed at peak load, in MMBTU per hour or gigajoules per hour;
  - c. the type and manufacturer of the turbine; and
  - d. the date each turbine was install and removed from this emissions unit.
- 4. The permittee shall maintain records for emissions units P001, P004, P019, P020 and P023 which include the following:
  - a. the total monthly amount of each fuel burned (natural gas, jet fuel, kerosene, and/or other petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month;
  - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, jet fuel, kerosene, and/or other petroleum distillate), in cubic feet per rolling 12-month period (for natural gas) or gallons per rolling 12-month period;

**Rolls Royce Energy Systems Inc**

**PTI Application: 01-08705**

**Issued**

**Facility ID: 0142010079**

Emissions Unit ID: **P020**

- c. the total monthly emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit during the month, in pounds of pollutant per month; and
- d. the rolling 12-month summation of emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:
  - a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
  - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator.
6. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the vent serving this emissions unit after 3 hours of operation. The presence or absence of any visible emissions shall be noted in a operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
  - a. the color of the emissions;
  - b. whether the emissions are representative of normal operations;
  - c. the emissions are not representative of normal operation, the cause of the abnormal emissions;
  - d. the total duration of any visible emission incident; and
  - e. any corrective actions taken to eliminate the visible emissions.

#### **D. Reporting Requirements**

1. The permittee shall notify the Director (the appropriate District Office or local air agency) in writing of any record which shows a deviation of the allowable sulfur dioxide emission limitation based upon the calculated sulfur dioxide emission rates from Section A.III above. The notification shall include a copy of such record and shall be sent to the Director (the appropriate District Office or local air agency) within 45 days after the deviation occurs.

2. If a petroleum distillate (jet fuel, kerosene, and/or other petroleum distillate) is used in this emissions unit, the permittee shall submit, on a quarterly basis, copies of the permittee's or oil supplier's analysis for each shipment of oil which is received. The following information shall be included for each shipment:
  - a. the type of distillate received;
  - b. the total quantity received (in gallons);
  - c. the permittee's or oil supplier's analysis for sulfur content (in percent); and
  - d. the permittee's or oil supplier's analysis for heat content (in BTU per gallon).

These quarterly reports shall be submitted to the Ohio EPA Central District Office by January 31, April 30, July 30 and October 31 of each year and shall cover the oil shipments received during the previous calendar quarters. If petroleum distillates were not used during the quarter, the permittee shall submit a report which states that no petroleum distillates were not used.

3. The permittee shall submit deviation (excursion) reports that identify all exceedances of:
  - a. the rolling 12-month natural gas, jet fuel, kerosene, and/or other petroleum distillate usage limitations.

These reports shall be submitted to the Ohio EPA Central District Office by January 31, April 31, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviation occurred during a calendar quarter, the permittee shall submit a report which states that no deviations occurred during that calendar quarter.

4. The permittee shall submit annual reports which specify:
  - a. the total emissions from this emissions unit; and
  - b. fuel usage from this emissions unit for the previous calendar year.

The annual fuel usage and emissions report shall be submitted to the Ohio EPA Central District Office by April 15th of each year.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit quarterly reports, as required by 40 CFR 60, Subpart GG, to the Ohio EPA Central District Office. The following information

shall also be included in this report:

- a. any period of time during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during any performance test; and
- b. any period of time during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent by weight or emissions of sulfur dioxide exceed 0.015 percent by volume at 15 percent oxygen on a dry basis.

These quarterly emissions reports (only required if a turbine is in operation 60 days from the first test day) shall include the average fuel consumption, ambient conditions, gas turbine load, the sulfur and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures used to compute the emissions, and shall be postmarked by the 30th day following the end of each calendar quarter.

6. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit the following reports at the appropriate times:
  - a. construction date (no later than 30 days after such date);
  - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
  - c. actual start-up date (within 15 days after such date); and
  - d. date of performance testing (if required, at least 30 days prior to testing).

Reports shall include reference to the company identification of the turbine, the unit or serial number, and are to be sent to:

Ohio Environmental Protection Agency  
DAPC - Permit Management Unit  
P.O. Box 163669  
Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency

Central District Office/DAPC  
3232 Alum Creek Drive  
Columbus, Ohio 43207-3417

## E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

- a. Emissions Limitations:

Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 191.8 pounds of NO<sub>x</sub> per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 302.7 pounds of NO<sub>x</sub> per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- b. Emissions Limitations:

Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 29.4 pounds of CO per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 47.8 pounds of CO per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- c. Emissions Limitations:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

**Applicable Compliance Methods:**

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of  $0.94 * S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated with the previous emissions testing data of 65.3 pounds of SO<sub>2</sub> per hour plus ten percent (May 30, 2003 emissions test).

**d. Emissions Limitations:**

Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0021 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.00041 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

e. Emissions Limitations:

Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0066 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.012 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

f. Emissions Limitations:

Total nitrogen oxide (NO<sub>x</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 211.0 pounds NO<sub>x</sub> per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 333.0 pounds NO<sub>x</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

g. Emissions Limitations:

Total carbon monoxide (CO) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 32.3 pounds CO per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 52.6 pounds CO per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

h. Emissions Limitations:

Total sulfur dioxide (SO<sub>2</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor  $0.94 \cdot S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 71.8 pounds SO<sub>2</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

i. Emissions Limitations:

Total volatile organic compound (VOC) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0021 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00041 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

j. Emissions Limitations:

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00071 pound single HAP per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00079 pound single HAP per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

k. Emissions Limitations:

Emissions from total combined hazardous air pollutants (HAPs) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00103 pound total combined HAPs per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

l. Emissions Limitations:

Total particulate emissions (PE) from emissions units P001, P004, P019, P020 and P023

shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0066 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.012 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

m. Emission Limitation:

Particulate emissions (PE) shall not exceed 0.040 pound per MMBTU of actual heat input.

Applicable Compliance Method:

Compliance with this limit shall be demonstrated by the appropriate emissions factors: 0.0066 pound PE per MMBTU for natural gas and 0.012 pound PE per MMBTU for jet fuel, kerosene or other petroleum distillate (AP-42, Table 3.1-2a, April 2000).

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

n. Emission Limitation:

Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

Emissions Unit ID: **P020**

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

o. Emission Limitation:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.5 pounds per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Method:

Compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as per Section C.2 of these terms and conditions.

The SO<sub>2</sub> emission rate from jet fuel, kerosene or other petroleum distillate shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$$ER = (1,000,000 / H) * D * S * 1.974$$

where

ER = the emissions rate in pounds of SO<sub>2</sub> per MMBTU;

H = the heat content of the liquid fuel in Btu per gallon;

D = the density of the liquid fuel in pounds per gallon; and

S = the decimal fraction of sulfur in the liquid fuel.

p. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.b of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

q. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.c of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

r. Emissions Limitations:

For any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:

- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

**Applicable Compliance Methods:**

Compliance with the SO<sub>2</sub> emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing jet fuel, kerosene or other petroleum distillate).

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and Record keeping requirements in terms C.2 of these terms and conditions.

**F. Miscellaneous Requirements**

None

**PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P023 - Turbine/Compressor Test Stand firing natural gas or petroleum distillate (stack 87-S-09)	OAC rule 3745-31-05(A)(3)
(Terms in this permit supersede those identified in PTI 01-08077 issued on 03/29/2000 for this emissions unit)	OAC rule 3745-31-05(C)

	<u>Applicable Emissions Limitations/Control Measures</u>
OAC rule 3745-17-07(A)(1)	Nitrogen oxide (NOx) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(A)	Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
OAC rule 3745-18-06(F)	Sulfur dioxide (SO2) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
40 CFR 60, Subpart GG	Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.
	Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.
	The requirements of this rule also include compliance with the requirements of OAC rules 3745-31-05(C), 3745-17-11(B)(4), 3745-17-07(A)(1), 3745-18-06(F), and federal regulation 40 CFR 60, Subpart GG.
OAC rule 3745-17-11(B)(4)	Total NOx emissions from emissions units P001, P004, P019, P020 and P023 shall not

**Rolls I**

**PTI A**

**Issued: 9/21/2004**

Emissions Unit ID: **P023**

exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total CO emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total SO2 emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total VOC emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while

firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Emissions from total combined HAPs from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Total PE from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

See B.1, B.2, B.3, and B.4 below.

PE shall not exceed 0.040 pound per MMBTU of actual heat input.

Visible PE shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Exempt from SO2 limitations when burning only natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

See A.2.f. below.

SO2 emissions shall not exceed 0.5 pound per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

See A.2.b, A.2.c, A.2.d, and A.2.e below.

## 2. Additional Terms and Conditions

**2.a** The hourly mass emission limitations in term A.1. were established to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these limits.

**2.b** Any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0075 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals 0.4(N).

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight, then F (NOx percent by volume) equals 0.005.

- 2.c Any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

$$\text{STD} = [0.0150 * (14.4 / Y)] + F$$

where

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and a dry basis)

Y = manufacture's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NOx emission allowance for fuel-bound nitrogen (NOx percent by volume) as defined according to N, the fuel-bound nitrogen content of the fuel (percent by weight), as follows:

If N (fuel-bound nitrogen content of the fuel) is equal to or less than 0.015% by weight, then F (NOx percent by volume) equals 0.

If N (fuel-bound nitrogen content of the fuel) is greater than 0.015% by weight and less than or equal to 0.1% by weight, then F (NOx percent by volume) equals 0.4(N).

If N (fuel-bound nitrogen content of the fuel) is greater than 0.1% by weight and less than or equal to 0.25% by weight, then F (NOx percent by volume) equals  $0.004 + [0.0067 * (N - 0.1)]$ .

If N (fuel-bound nitrogen content of the fuel) is greater than 0.25% by weight, then F (NOx percent by volume) equals 0.005.

- 2.d** Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- 2.e** The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- 2.f** On August 19, 2003, OAC rule 3745-18-06(A) was revised to exempt fuel burning equipment from SO<sub>2</sub> emissions limits while burning natural gas without heat and sulfur content limits. However, that rule revision had not yet been submitted to the U.S. EPA as a revision to Ohio State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-18-06(A), this emissions unit is only exempt from SO<sub>2</sub> emissions limits while burning natural gas having a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.6 pound per million standard cubic feet.

## **B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene or other petroleum distillate.
2. The quality of jet fuel, kerosene, or other petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:
  - a. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBTU of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and
  - b. greater than 130,000 Btu per gallon of oil.

**Rolls 1****PTI A****Issued: 9/21/2004**Emissions Unit ID: **P023**

3. Annual natural gas usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 225,000,000 cubic feet per rolling 12-month summation of the monthly natural gas usage figures. The permittee has existing natural gas usage records and therefore does not need to be limited the first year on a monthly basis.
4. Annual jet fuel, kerosene and other petroleum distillate usage in emissions units P001, P004, P019, P020 and P023 shall not exceed 50,000 gallons per rolling 12-month summation of the monthly jet fuel, kerosene and other petroleum distillate usage figures. The permittee has existing jet fuel, kerosene and other petroleum distillate usage records and therefore does not need to be limited the first year on a monthly basis.

**C. Monitoring and/or Record keeping Requirements**

1. The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to track all fuel usage for each turbine unit tested at this emissions unit during periods of operation.
2. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods (such as, ASTM methods D240 and D4294), or equivalent methods as approved by the Director.

The permittee shall maintain records of the petroleum distillates (jet fuel, kerosene or other petroleum distillate) or with any change in the quality of natural gas received at the facility, burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillates received for burning in this emissions unit, the permittee shall collect or require the petroleum distillates supplier to collect a representative grab sample of petroleum distillates and maintain records of the total quantity of petroleum distillates received, the permittee's or petroleum distillates supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

b. Alternative 2:

The permittee shall collect a representative grab sample of petroleum distillates that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel petroleum distillates is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the petroleum distillates burned in this emissions unit. A representative grab sample of petroleum distillates does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of petroleum distillates burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/mmBtu). (The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).)

- c. for natural gas that has been documented (and maintained on record) to have a heat content greater than 950 Btu per standard cubic foot and a sulfur content less than 0.5 pound per million standard cubic feet, the sulfur dioxide emission rate shall be considered to be equal to and recorded as 0.0 pound of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
- d. for natural gas with a heat content equal to or less than 950 Btu per standard cubic foot and/or a sulfur content equal to or more than 0.6 pound per million standard cubic feet, the representative sulfur dioxide emission rate from any sample shall be determined per OAC rule 3745-18-04(F)(3).

A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

3. The permittee shall maintain a record of each turbine tested at this emissions unit which includes:
  - a. the company identification of each turbine;
  - b. the turbine size based on the heat input needed at peak load, in MMBTU per hour or gigajoules per hour;
  - c. the type and manufacturer of the turbine; and
  - d. the date each turbine was install and removed from this emissions unit.
4. The permittee shall maintain records for emissions units P001, P004, P019, P020 and P023 which include the following:
  - a. the total monthly amount of each fuel burned (natural gas, jet fuel, kerosene, and/or other petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month;
  - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, jet fuel, kerosene, and/or other petroleum distillate), in cubic feet per rolling 12-month period (for natural gas) or gallons per rolling 12-month period;
  - c. the total monthly emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit during the

month, in pounds of pollutant per month; and

- d. the rolling 12-month summation of emissions of each pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, individual HAPs, total combined HAPs, and particulates) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:
  - a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
  - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator.
  
6. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the vent serving this emissions unit during operation. The presence or absence of any visible emissions shall be noted in a operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
  - a. the color of the emissions;
  - b. whether the emissions are representative of normal operations;
  - c. the emissions are not representative of normal operation, the cause of the abnormal emissions;
  - d. the total duration of any visible emission incident; and
  - e. any corrective actions taken to eliminate the visible emissions.

#### **D. Reporting Requirements**

1. The permittee shall notify the Director (the appropriate District Office or local air agency) in writing of any record which shows a deviation of the allowable sulfur dioxide emission limitation based upon the calculated sulfur dioxide emission rates from Section A.III above. The notification shall include a copy of such record and shall be sent to the Director (the appropriate District Office or local air agency) within 45 days after the deviation occurs.

2. If a petroleum distillate (jet fuel, kerosene, and/or other petroleum distillate) is used in this emissions unit, the permittee shall submit, on a quarterly basis, copies of the permittee's or oil supplier's analysis for each shipment of oil which is received. The following information shall be included for each shipment:
  - a. the type of distillate received;
  - b. the total quantity received (in gallons);
  - c. the permittee's or oil supplier's analysis for sulfur content (in percent); and
  - d. the permittee's or oil supplier's analysis for heat content (in BTU per gallon).

These quarterly reports shall be submitted to the Ohio EPA Central District Office by January 31, April 30, July 30 and October 31 of each year and shall cover the oil shipments received during the previous calendar quarters. If petroleum distillates were not used during the quarter, the permittee shall submit a report which states that no petroleum distillates were not used.

3. The permittee shall submit deviation (excursion) reports that identify all exceedances of:
  - a. the rolling 12-month natural gas, jet fuel, kerosene, and/or other petroleum distillate usage limitations.

These reports shall be submitted to the Ohio EPA Central District Office by January 31, April 31, July 31, and October 31 of each year and shall cover the previous calendar quarter. If no deviation occurred during a calendar quarter, the permittee shall submit a report which states that no deviations occurred during that calendar quarter.

4. The permittee shall submit annual reports which specify:
  - a. the total emissions from this emissions unit; and
  - b. fuel usage from this emissions unit for the previous calendar year.

The annual fuel usage and emissions report shall be submitted to the Ohio EPA Central District Office by April 15th of each year.

5. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit quarterly reports, as required by 40 CFR 60, Subpart GG, to the Ohio EPA Central District Office. The following information

shall also be included in this report:

- a. any period of time during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during any performance test; and
- b. any period of time during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent by weight or emissions of sulfur dioxide exceed 0.015 percent by volume at 15 percent oxygen on a dry basis.

These quarterly emissions reports (only required if a turbine is in operation 60 days from the first test day) shall include the average fuel consumption, ambient conditions, gas turbine load, the sulfur and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures used to compute the emissions, and shall be postmarked by the 30th day following the end of each calendar quarter.

6. Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at the emissions unit, the permittee shall submit the following reports at the appropriate times:
  - a. construction date (no later than 30 days after such date);
  - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
  - c. actual start-up date (within 15 days after such date); and
  - d. date of performance testing (if required, at least 30 days prior to testing).

Reports shall include reference to the company identification of the turbine, the unit or serial number, and are to be sent to:

Ohio Environmental Protection Agency  
DAPC - Permit Management Unit  
P.O. Box 163669  
Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency

Central District Office/DAPC  
3232 Alum Creek Drive  
Columbus, Ohio 43207-3417

## E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

- a. Emissions Limitations:

Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 211.0 pounds per hour while firing natural gas and 333.0 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 191.8 pounds of NO<sub>x</sub> per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 302.7 pounds of NO<sub>x</sub> per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- b. Emissions Limitations:

Carbon monoxide (CO) emissions shall not exceed 32.3 pounds per hour while firing natural gas and 52.6 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

Compliance with the hourly limit shall be demonstrated with the previous emissions testing data: 29.4 pounds of CO per hour plus ten percent for natural gas (March 21, 2002 emissions test) and 47.8 pounds of CO per hour plus ten percent for jet fuel, kerosene or other petroleum distillate (May 30, 2003 emissions test).

- c. Emissions Limitations:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.20 pound per hour while firing natural gas and 71.8 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Methods:

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of  $0.94 * S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated with the previous emissions testing data of 65.3 pounds of SO<sub>2</sub> per hour plus ten percent (May 30, 2003 emissions test).

d. Emissions Limitations:

Volatile organic compound (VOC) emissions shall not exceed 0.59 pound per hour while firing natural gas and 0.11 pound per hour while firing jet fuel, kerosene or other petroleum distillate.

**Applicable Compliance Methods:**

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0021 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.00041 pound of VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

**e. Emissions Limitations:**

Particulate emissions (PE) shall not exceed 1.85 pounds per hour while firing natural gas and 3.22 pounds per hour while firing jet fuel, kerosene or other petroleum distillate.

**Applicable Compliance Methods:**

For natural gas, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.0066 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (269,139 cubic feet per hour) and by the heat content of the fuel (1040 Btu per cubic foot) and dividing by 1,000,000 MMBTU per Btu.

For jet fuel, kerosene or other petroleum distillate, compliance with the hourly limit shall be demonstrated by multiplying the emission factor of 0.012 pound of PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the maximum hourly fuel usage (2000 gallons per hour) and by the heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu.

**f. Emissions Limitations:**

Total nitrogen oxide (NOx) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 88.2 tons per year while firing natural gas and 4.16 tons per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

**Applicable Compliance Methods:**

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated

by multiplying the emission factor of 211.0 pounds NO<sub>x</sub> per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 333.0 pounds NO<sub>x</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

g. Emissions Limitations:

Total carbon monoxide (CO) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 13.5 tons per year while firing natural gas and 0.66 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 32.3 pounds CO per hour (March 21, 2002 emissions testing) by the total 12-month fuel usage in cubic feet per 12-months and dividing by the maximum hourly fuel usage (269,139 cubic feet per hour) and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 52.6 pounds CO per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

h. Emissions Limitations:

Total sulfur dioxide (SO<sub>2</sub>) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.08 ton per year while firing natural gas and 0.90 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

Emissions Unit ID: **P023**

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor  $0.94 \cdot S$  pound SO<sub>2</sub> per MMBTU, where S is the percent of sulfur in the fuel, (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 71.8 pounds SO<sub>2</sub> per hour (May 30, 2003 emissions testing) by the total 12-month fuel usage in gallons per 12-months and dividing by the maximum hourly fuel usage (2000 gallons per hour) and by 2000 tons per pound.

i. Emissions Limitations:

Total volatile organic compound (VOC) emissions from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.25 ton per year while firing natural gas and 0.001 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0021 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00041 pound VOC per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

j. Emissions Limitations:

Emissions from any single hazardous air pollutant (HAP) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.083 ton per year while firing natural gas and 0.003 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00071 pound single HAP per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00079 pound single HAP per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

k. Emissions Limitations:

Emissions from total combined hazardous air pollutants (HAPs) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.12 ton per year while firing natural gas and 0.004 ton per year while firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.00103 pound total combined HAPs per MMBTU (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

l. Emissions Limitations:

Total particulate emissions (PE) from emissions units P001, P004, P019, P020 and P023 shall not exceed 0.77 ton per year while firing natural gas and 0.04 ton per year while

Emissions Unit ID: **P023**

firing jet fuel, kerosene or other petroleum distillate, based on a rolling 12-month summation of monthly emissions.

Applicable Compliance Methods:

For natural gas, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.0066 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

For jet fuel, kerosene or other petroleum distillate, compliance with the rolling 12-month emission limit shall be demonstrated by multiplying the emission factor of 0.012 pound PE per MMBTU (AP-42, Table 3.1-2a, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound.

m. Emission Limitation:

Particulate emissions (PE) shall not exceed 0.040 pound per MMBTU of actual heat input.

Applicable Compliance Method:

Compliance with this limit shall be demonstrated by the appropriate emissions factors: 0.0066 pound PE per MMBTU for natural gas and 0.012 pound PE per MMBTU for jet fuel, kerosene or other petroleum distillate (AP-42, Table 3.1-2a, April 2000).

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

n. Emission Limitation:

Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures

specified in OAC rule 3745-17-03(B)(1).

o. Emission Limitation:

Sulfur dioxide (SO<sub>2</sub>) emissions shall not exceed 0.5 pounds per MMBTU of actual heat input, while firing jet fuel, kerosene or other petroleum distillate.

Applicable Compliance Method:

Compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as per Section C.2 of these terms and conditions.

The SO<sub>2</sub> emission rate from jet fuel, kerosene or other petroleum distillate shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$$ER = (1,000,000 / H) * D * S * 1.974$$

where

ER = the emissions rate in pounds of SO<sub>2</sub> per MMBTU;

H = the heat content of the liquid fuel in Btu per gallon;

D = the density of the liquid fuel in pounds per gallon; and

S = the decimal fraction of sulfur in the liquid fuel.

p. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.b of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

q. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBTU per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO<sub>x</sub> emissions shall not exceed the value as calculated in section A.2.c of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing jet fuel, kerosene or other petroleum distillate).

r. Emissions Limitations:

For any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:

- i. SO<sub>2</sub> emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

Applicable Compliance Methods:

**Rolls Royce Energy Systems Inc****PTI Application: 01 08705****Issued****Facility ID: 0142010079**Emissions Unit ID: **P023**

Compliance with the SO<sub>2</sub> emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand. The emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing jet fuel, kerosene or other petroleum distillate).

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and Record keeping requirements in terms C.2 of these terms and conditions.

**F. Miscellaneous Requirements**

None