



State of Ohio Environmental Protection Agency

Street Address:

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P.O. Box 1049  
Columbus, OH 43216-1049

**RE: DRAFT PERMIT TO INSTALL  
KNOX COUNTY  
Application No: 01-7991**

**CERTIFIED MAIL**

	TOXIC REVIEW
	PSD
X	SYNTHETIC MINOR
	CEMS
	MACT
X	NSPS
	NESHAPS
	NETTING
	MAJOR NON-ATTAINMENT
	MODELING SUBMITTED
	GASOLINE DISPENSING FACILITY

**DATE: August 25, 1999**

Cooper Energy Services  
Louis Burcsak  
105 North Sandusky  
Mount Vernon, OH 43050

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install may be issued in proposed or final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install a fee of **\$1000** will be due. Please do not submit any payment now.

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. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Very truly yours,

Thomas G. Rigo, Manager  
Field Operations and Permit Section  
Division of Air Pollution Control

cc: USEPA  
DAPC, CDO



**Permit To Install  
Terms and Conditions**

**Issue Date: To be entered upon final issuance  
Effective Date: To be entered upon final issuance**

**DRAFT PERMIT TO INSTALL 01-7991**

Application Number: 01-7991

APS Premise Number: 0142010112

Permit Fee: **To be entered upon final issuance**

Name of Facility: Cooper Energy Services

Person to Contact: Louis Burcsak

Address: 105 North Sandusky  
Mount Vernon, OH 43050

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

**105 North Sandusky Street  
Mount Vernon, Ohio**

Description of proposed emissions unit(s):

**MODIFICATION OF LIMITS FOR 5 TURBINE TEST STANDS.**

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

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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 Related to Monitoring and Recordkeeping 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 are inadequate 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 prove to be inadequate 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 application must be made to the Director for the installation or modification of any other emissions unit(s).

**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 thirty (30) days after commencing operation of the emissions unit(s) covered by this permit.

**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>
Facility Limits	Turbine
*NO <sub>x</sub> w/NG	23.71
w/distillate	4.17
*CO w/NG	8.12
w/distillate	0.14
*VOC w/NG	1.28
w/distillate	0.06
*PM w/NG	0.86
w/distillate	0.08
*SO <sub>x</sub> w/NG	0.03
w/distillate	0.98

- Limits are for all facility turbines (5) test stands.

**PART II: SPECIAL TERMS AND CONDITIONS [Continued]**

**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>	<u>Applicable Emissions Limitations/Control Measures</u>
Turbine/Compressor Test Stand (stack 115-S-01) using Natural Gas, Jet Fuel, Kerosene, or other Petroleum Distillate	OAC rule 3745-17-11(B)(4)	Particulate emissions shall not exceed 0.040 pound per MMBtu of actual heat input
	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from any stack shall not exceed twenty per cent opacity, as a six-minute average, except as otherwise specified by rule
	OAC rule 3745-18-06(F)	Sulfur dioxide (SO <sub>2</sub> ) emissions shall not exceed 0.5 pound per MMBtu of actual heat input, when using jet fuel, kerosene or other petroleum distillate, and see A.2.c
	OAC rule 3745-18-06(A)	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, and see A.2.c
	OAC rule 3745-31-05	Hourly emissions from the combustion of natural gas in this emissions unit shall not exceed the following limits:  287.06 lbs NO <sub>x</sub> /hr with RB211 turbine; 29.24 lbs NO <sub>x</sub> /hr with RB211 turbine with DLE; 122.27 lbs NO <sub>x</sub> /hr with Avon or Allison turbine; 50.50 lbs CO/hr; 7.97 lbs VOC/hr;

OAC rule 3745-31-05(D)

5.32 lbs PM/hr; and  
0.19 lbs SO<sub>2</sub>/hr

Hourly emissions from the combustion of jet fuel/kerosene/petroleum distillate in this emission unit shall not exceed the following limits:

568.81 lbs NO<sub>x</sub>/hr;  
18.61 lbs CO/hr;  
7.97 lbs VOC/hr;  
10.63 lbs PM/hr; and  
132.90 lbs SO<sub>2</sub>/hr

Annual emissions from the combustion of natural gas in emissions units P001, P004, P019, P020, and P023 shall not exceed the following limits:

23.71 tons NO<sub>x</sub> per rolling 12 months;  
8.12 tons CO per rolling 12 months;  
1.28 tons VOC per rolling 12 months;  
0.86 ton PM per rolling 12 months; and  
0.03 ton SO<sub>2</sub> per rolling 12 months

Annual emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in emissions units P001, P019, and P020 shall not exceed the following limits:

4.17 tons NO<sub>x</sub> per rolling 12 months;  
0.14 ton CO per rolling 12 months;  
0.06 ton VOC per rolling 12 months;  
0.08 ton PM per rolling 12 months; and  
0.98 ton SO<sub>2</sub> per rolling 12 months

See Section B1 through B4, and A.2.d

See Section A.2.a through A.2.c below

40 CFR 60, Subpart GG,  
Standards of Performance for  
Stationary Gas Turbines

## 2. Additional Terms and Conditions

- 2.a** Any stationary gas turbine used at this test stand with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hr) but less than or equal to 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F=NOx emission allowance for fuel-bound nitrogen.

N (below)=the nitrogen content of the fuel (percent by weight)

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NOx percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NOx percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NOx percent by volume (F) will equal  $0.004 + 0.0067(N-0.1)$ .

If fuel bound N is greater than 0.25% (percent by wt.), NOx percent by volume (F) will equal to 0.005.

- 2.b** Any stationary gas turbine used at this test stand with a heat input at peak load greater than 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F=NOx emission allowance for fuel-bound nitrogen.

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NOx percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NOx percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NOx percent by volume (F) will equal 0.004 + 0.0067(N-0.1).

If fuel bound N is greater than 0.25% (percent by wt.), NOx percent by volume (F) will equal to 0.005.

**2.c** 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 meet the following limits within this 60 days and not later than 180 days after initial startup of the unit:

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

**2.d** If any turbine other than the RB211, the RB211 with the dry-low-emission controls (DLE), the Avon turbine, or the Allison turbine are tested or operated at this test stand, emission testing shall be conducted to provide emission factors and show compliance with the limits contained in this permit as per Section E.10. Test data shows that NOx emissions from natural gas vary with the size and type turbine used; emission factors used to calculate NOx, CO, VOC, PM, and SO<sub>2</sub> emissions shall be maintained along with the record of fuel usage.

**B. Operational Restrictions**

- 1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene, or other petroleum distillate oil.
- 2. Annual natural gas usage in emissions units P001, P004, P019, P020, and P023, shall not exceed 90,000,000 cubic feet per rolling 12-months; and

Annual jet fuel, kerosene, and other petroleum distillate usage in emissions units P001, P019, and P020, shall not exceed 30,000 gallons per rolling 12-months.

- 3. The quality of the 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 pound sulfur dioxide/MMBtu actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and,
  - b. greater than 130,000 Btu/gallon of oil.

Compliance with the above-mentioned specifications shall be determined by using monitoring and testing methods described in Sections C and E of this permit.

- 4. To ensure enforceability during the first 12 calendar months of operation, the fuel usage in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, and all turbines burning distillate fuels, including emissions units P001, P019, and P020 shall not exceed the following natural gas and distillate fuel (including jet fuel and kerosene) usage limits, as specified in the following table:

Month	Natural Gas (ft3)	Distillate fuels (gal)
1	7,500,000	2,500
2	15,000,000	5,000
3	22,500,000	7,500
4	30,000,000	10,000
5	37,500,000	12,500
6	45,000,000	15,000
7	52,500,000	17,500
8	60,000,000	20,000
9	67,500,000	22,500
10	75,000,000	25,000
11	82,500,000	27,500
12	90,000,000	30,000

After the first twelve months, compliance shall be demonstrated by maintaining 12-month rolling records of fuel usage.

**C. Monitoring and/or Recordkeeping Requirements**

1. The facility shall install, maintain, and operate, in accordance with the manufacturers specifications, instrumentation sufficient to track all natural gas and jet fuel/kerosene/petroleum distillate usage for each turbine/compressor unit tested at this test stand during periods of operation. Records of fuel usage shall be maintained for each turbine/compressor unit installed at the test stand, per Section C.3 below.
2. The facility shall maintain a record of the company identification of each turbine installed at this test stand, which would reference the turbine size based on the heat input needed at peak load in MMBtu per hour and/or gigajoules per hour, the type of turbine and the manufacturer, and the date each turbine was installed and removed from the test stand.
3. The permittee shall maintain monthly records for emission units P001, P004, P019, P020, and P023 which include the following:
  - a. the total fuel burned, natural gas (ft<sup>3</sup>) and jet fuel/kerosene/petroleum distillate (gallons), summed for each turbine/compressor unit tested at each test stand during the month; and,
  - b. the rolling, 12-month summation of each type fuel used.
4. The permittee shall collect or require the oil supplier to collect a representative grab sample for each shipment of petroleum distillates received for burning in this emissions unit. The permittee shall perform or require the supplier to perform the analysis for sulfur content and heat content in accordance with the following ASTM methods: ASTM method D4294, ASTM method D240, or ASTM method 6010 for sulfur content; and ASTM method D240 for heat content. Alternative, equivalent methods may be used upon written approval by the Ohio EPA Central District Office. For each shipment of oil received for burning in this emissions unit, the permittee shall maintain records of the type of distillate, the total quantity received, and the permittee's or oil supplier's analysis for sulfur content and heat content.
5. With each shipment of petroleum distillate oil received (jet fuel, kerosene, and any other petroleum distillate), or with any change in the quality of natural gas received at the facility, the representative sulfur dioxide emission rate from turbine fuels shall be calculated as specified in OAC rule 3745-18-04(F):
  - a. each shipment of petroleum distillate oil received shall be tested for the sulfur content and heat content or the oil supplier's analysis shall be provided, and the records of testing results maintained, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO<sub>2</sub> per MMBtu emissions shall be determined per OAC rule 3745-18-04(F)(2);

- b. 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,
    - c. 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).
  6. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, 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 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 shall be determined and recorded daily, or if substantiated with the appropriate data and if approved by the Administrator, fuel vendors may develop custom schedules for determination of maximum sulfur and nitrogen content based on the design and operation of the source and the characteristics of the fuel supply; and,
    - c. results of the fuel analysis, taken after each new shipment of oil is received, shall be used as the daily value when calculating the 30-day rolling average until the next shipment is received.

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

1. If a petroleum distillate oil 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 permittee's or oil supplier's analysis shall document the sulfur content (percent) and heat content (Btu/gallon) for each shipment of oil. The following information shall also be included with the copies of the permittee's or oil supplier's analysis:
  - a. the total quantity of jet fuel, kerosene, and/or other petroleum distillate received in each shipment (gallons);
  - b. the weighted\* average sulfur dioxide emission rate (pounds/MMBtu) for the jet fuel, kerosene, and/or other petroleum distillate received during the calendar month; and,
  - c. the weighted\* average heat content (Btu/gallon) of the jet fuel, kerosene, and/or petroleum distillate received during the calendar month.

These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall cover the oil shipments received and fuel used during the previous calendar quarters.

If petroleum distillate oils are not used during the quarter, no report shall be required.

- \* In proportion to the quantity of jet fuel/kerosene/petroleum distillate received in each shipment during the month
- 2. The permittee shall submit deviation (excursion) reports that identify all exceedances of the rolling 12-month fuel usage limitations and/or limits established for the first 12 calendar months of operation following issuance of this permit, as per Section B.4. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under Section A.
- 3. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, the facility 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 testing date) 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.

- 4. The permittee shall also submit annual reports which specify the total emissions and fuel usage from this emissions unit for the previous calendar year. The annual fuel usage report shall be submitted by January 31<sup>st</sup> of each year. The emissions report may be satisfied by including this source in the submission of the annual Fee Emission Report or may be submitted with the fuel usage report.

## E. Testing Requirements

Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:

- 1. Emission Limitation

0.040 pound PM per million Btu of actual heat input

Applicable Compliance Method

Compliance shall be demonstrated by using the appropriate emission factors from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1, or if required, testing of the

exhaust stack, using Methods 1 through 5, found in 40 CFR Part 60, Appendix A:

Pollutant	Emission Factor	Source of Factor
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
PM w/ oil distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1

2. Emission limitation

0.5 lb SO<sub>2</sub>/MM Btu actual heat input

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 or the oil supplier's analysis, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO<sub>2</sub> per MMBtu emissions shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$ER = (1 \times 10E6) / H \times D \times S \times 1.974$ , where:

ER = emission rate in pounds of SO<sub>2</sub> per MM Btu

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

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

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 calculated per OAC rule 3745-18-04(F)(3) as follows:

$ER = (1 \times 10E6) / H \times D \times S \times 1.998$ , where:

ER = emission rate in pounds of SO<sub>2</sub> per MM Btu

H = the heat content of the gaseous fuel in Btu per standard cubic foot

D = the density of the gaseous fuel in Btu per standard cubic foot; and

S = the decimal fraction of sulfur in the gaseous fuel

3. SO<sub>2</sub> limitations contained in 40 CFR 60, Subpart GG

a. fuel shall not contain sulfur in excess of 0.8 percent by weight; or

b. gases discharged from this emissions unit shall not contain SO<sub>2</sub> in excess of 0.015 percent

by volume at 15 percent oxygen on a dry basis.

#### Applicable Compliance Method

Compliance with the fuel bound sulfur concentration and/or sulfur emissions limitation contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand.

- a. Fuel testing shall be conducted to demonstrate compliance with the allowable sulfur content and shall be determined as follows:

ASTM D2880 shall be used to determine the sulfur content of liquid fuels.

ASTM D1072, D3031, D4084, or D3246 shall be used to determine the sulfur content of gaseous fuels, as referenced in 40 CFR Part 60.335(d).

The fuel analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency. The method and date of testing must be recorded along with the results.

- b. Emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 6 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the sulfur dioxide concentration limits contained in Subpart GG.

4. NO<sub>x</sub> limitations contained in 40 CFR 60, Subpart GG

- a.  $\text{NO}_x \text{ \{STD\}} = 0.0150 * (14.4)/Y + F$  if peak load greater than 10 MM Btu/hr., and less than 100 MM Btu/hr, and

- b.  $\text{NO}_x \text{ \{STD\}} = 0.0075 * (14.4)/Y + F$  if peak load greater than 100 MM Btu/hr

where:

STD=allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour

F=NOx emission allowance for fuel-bound nitrogen

#### Applicable Compliance Method

Compliance with the nitrogen oxide emission limitations contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand. The emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 7 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the nitrogen oxide emissions and oxygen concentration limits contained in Subpart GG. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NOx emissions shall be determined at each of 4 load conditions of 30, 50, 75, and 100 percent of peak load or at 4 points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. The nitrogen oxides emission rate shall be computed for each run using the equation found in 40 CFR 60.335(c)(1).

5. Emission limitation

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

#### Compliance Method

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 3745-17-03(B)(1).

6. Rolling 12-month emission limitations when burning natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023

- 23.71 tons NOx per rolling 12 months;
- 8.12 tons CO per rolling 12 months;
- 1.28 tons VOC per rolling 12 months;
- 0.86 ton PM per rolling 12 months; and
- 0.03 ton SO2 per rolling 12 months

## Applicable Compliance Method

Compliance with the annual 12-month rolling emissions from the combustion of natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall be demonstrated through the monthly recordkeeping of the natural gas consumed in all turbines using natural gas, and adding the rolling 12-month total natural gas usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using RB211 turbine with *DLE	0.11 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using Avon or Allison turbine	0.46 lb/MM Btu	Facility Testing Results
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results
VOC w/ natural gas	0.03 lb/MM Bt	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Bt	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\*DLE= "Dry Low Emission"-new control technology

7. Rolling 12-month emission limitations when burning jet fuel, kerosene, and/or other petroleum distillate oils in all turbines using this fuel (P001, P019, and P020)

4.17 tons NOx per rolling 12 months;  
 0.14 ton CO per rolling 12 months;  
 0.06 ton VOC per rolling 12 months;  
 0.08 ton PM per rolling 12 months; and  
 0.98 ton SO2 per rolling 12 months

## Applicable Compliance Method

Compliance with the annual 12-month rolling emissions from the combustion of jet fuel, kerosene, and/or other petroleum distillate in turbine/compressor test stand emissions units P001, P019, and P020 shall be demonstrated through the monthly recordkeeping of the fuels consumed in these emissions units and adding the rolling 12-month total jet fuel, kerosene, and/or other petroleum distillate usage each month. Emissions shall be calculated using the following worst case emission

factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/distillates	2.14 lb/MM Btu	Facility Testing Results
CO w/distillates	0.07 lb/MM Btu	Facility Testing Results
VOC w/distillates	0.03 lb/MM Btu	Facility Testing Results
PM w/distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/distillates	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

8. Hourly emission limits when using natural gas

287.06 lbs NOx/hr with RB211 turbine;  
 29.24 lbs NOx/hr with RB211 with DLE turbine;  
 122.27 lbs NOx/hr with Avon or Allison turbine;  
 50.50 lbs CO/hr;  
 7.97 lbs VOC/hr;  
 5.32 lbs PM/hr; and  
 0.19 lb SO<sub>2</sub>/hr

Applicable Compliance Method

Until testing is completed, compliance with the hourly emission limits from the combustion of natural gas in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas	1.08 lb/MM Btu	Facility Testing Results (see Section E.10)
using RB211 turbine		
NOx w/ natural gas	0.11 lb/MM Btu	Facility Testing Results (see Section E.10)
using RB211 turbine with *DLE		
NOx w/ natural gas	0.46 lb/MM Btu	Facility Testing Results (see Section E.10)
using Avon or Allison turbine		
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results (see Section E.10)

VOC w/ natural gas	0.03 lb/MM Btu	E.10)
PM w/ natural gas	0.02 lb/MM Btu	Facility Testing Results
SOX w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\* DLE="Dry Low Emission"-new control technology

9. Hourly emission limits when using jet fuel, kerosene, or other petroleum distillate

- 568.81 lbs NOx/hr;
- 18.61 lbs CO/hr;
- 7.97 lbs VOC/hr;
- 10.63 lbs PM/hr; and
- 132.90 lbs SO2/hr

Applicable Compliance Method

Until testing has been conducted, compliance with the hourly emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ fuel oil	2.14 lb/MM Btu	Facility Testing Results (see Section E.10)
CO w/ fuel oil	0.07 lb/MM Btu	Facility Testing Results (see Section E.10)
VOC w/ fuel oil	0.03 lb/MM Btu	Facility Testing Results
PM w/ fuel oil	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ fuel oil	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing (see Section C.4 and Section E.10)

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

10. Emission limits

287.06 lbs NO<sub>x</sub>/hr with RB211 turbine when using natural gas;  
29.24 lbs NO<sub>x</sub>/hr with RB211 turbine with DLE when using natural gas;  
122.27 lbs NO<sub>x</sub>/hr with Avon or Allison turbine when using natural gas;  
50.50 lbs CO/hr when using natural gas;  
568.81 lbs NO<sub>x</sub>/hr when using jet fuel/kerosene/petroleum distillate;  
18.61 lbs CO/hr when using jet fuel/kerosene/petroleum distillate; and  
132.90 lbs SO<sub>2</sub>/hr when using jet fuel/kerosene/petroleum distillate

Applicable Compliance Method

The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. emission testing for the combustion of natural gas shall be conducted one time during the term of this permit on one of each type of turbine and within 6 months after issuance of the permit, or when installed if any one of the turbine types are not installed within this time frame; and if at any time, jet fuel, kerosene, and/ or other petroleum distillate is to be used in P001, P019, or P020, the permittee shall conduct, or have conducted, at the time of use or within 2 months of the use of this fuel, emission testing for one test turbine, to represent emissions of all test turbines burning jet fuel, kerosene, and/or other petroleum distillate;
- b. emission testing shall be conducted to demonstrate compliance with the hourly allowable mass emission rate of nitrogen oxides and carbon monoxide when using either fuel type and, in addition, sulfur oxides when using jet fuel, kerosene, or other petroleum distillate;
- c. the following test methods shall be employed to demonstrate compliance with the allowable mass emission rates:  
  
40 CFR Part 60, Appendix A, Methods 1 through 4, Method 20, Method 10, and Method 9  
  
Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- d. the tests shall be conducted for each turbine type using natural gas (RB211, RB211 with DLE, and a Avon or Allison) installed at any one of the emissions units represented in the rolling 12-month limits of this permit (P001, P004, P019, P020, and P023), and as per Section E.10.a for distillates;
- e. testing shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Ohio EPA Central District Office;
- f. not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be

conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Central District Office's refusal to accept the results of the emission tests;

- g. personnel from the Ohio EPA Central District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment; and,
- h. a comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Central District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Central District Office.

**F. Miscellaneous Requirements**

This Permit to Install (01-7991) replaces Permit to Install 01-4996

**PART II: SPECIAL TERMS AND CONDITIONS [Continued]**

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

- 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>	<u>Applicable Emissions Limitations/Control Measures</u>
Compressor Test Stand (stack 87-S-09) using Natural Gas	OAC rule 3745-17-11(B)(4)	Particulate emissions shall not exceed 0.040 pound per MMBtu of actual heat input
	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from any stack shall not exceed twenty per cent opacity, as a six-minute average, except as otherwise specified by rule
	OAC rule 3745-18-06(F)	Sulfur dioxide emissions shall not exceed 0.5 pound per MMBtu of actual heat input
	OAC rule 3745-18-06(A)	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
	OAC rule 3745-31-05	Hourly emissions from the combustion of natural gas in this emissions unit shall not exceed the following limits:  122.27 lbs NO <sub>x</sub> /hr; 50.50 lbs CO/hr; 7.97 lbs VOC/hr; 5.32 lbs PM/hr; and 0.19 lb SO <sub>2</sub> /hr
	OAC rule 3745-31-05(D)	Annual emissions from the combustion of natural gas in emissions units P001, P004, P019, P020, and P023 shall not exceed the following limits:

<p>40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines</p>	<p>23.71 tons NOx per rolling 12 months;  8.12 tons CO per rolling 12 months;  1.28 tons VOC per rolling 12 months;  0.86 ton PM per rolling 12 months; and  0.03 ton SO2 per rolling 12 months</p> <p>See Sections B1 through B3, and A.2</p> <p>This turbine was manufactured prior to 10/3/77 and is exempt from this subpart</p>
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**2. Additional Terms and Conditions**

**2.a** If the Avon turbine is replaced at this test stand a new Permit to Install shall be required prior to installation.

**B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas. The turbine installed at this test stand was manufactured in the 1960's and is exempt from 40 CFR 60 Subpart GG; this turbine cannot be changed-out and/or replaced with another without applying for a Permit to Install for the inclusion of these requirements.
2. Annual natural gas usage in emissions units P001, P004, P019, P020, and P023, shall not exceed 90,000,000 cubic feet per rolling 12-months.
3. To ensure enforceability during the first 12 calendar months of operation, the fuel usage from all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall not exceed the following natural gas usage limits, as specified in the following table:

Month	Natural Gas (ft3)
1	7,500,000
2	15,000,000
3	22,500,000
4	30,000,000
5	37,500,000
6	45,000,000
7	52,500,000
8	60,000,000

9	67,500,000
10	75,000,000
11	82,500,000
12	90,000,000

After the first twelve months, compliance shall be demonstrated by maintaining 12-month rolling records of fuel usage.

**C. Monitoring and/or Recordkeeping Requirements**

1. The facility shall install, maintain, and operate, in accordance with the manufacturers specifications, instrumentation sufficient to track all natural gas usage for each compressor unit tested at this test stand during periods of operation. Records of fuel usage shall be maintained for each compressor unit installed at the test stand, per Section C.3 below.
2. The facility shall maintain a record of the date each compressor was installed and removed from the test stand.
3. The permittee shall maintain monthly records for emission units P001, P004, P019, P020, and P023 which include the following:
  - a. the total fuel burned, natural gas (ft<sup>3</sup>), summed for each turbine and/or compressor unit tested at each test stand during the month; and,
  - b. the rolling, 12-month summation of natural gas used.
4. The representative sulfur dioxide emission rate from the natural gas used in this emissions unit shall be calculated as specified in OAC rule 3745-18-04(F):
  - a. 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 pounds of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
  - b. 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).

**D. Reporting Requirements**

1. The permittee shall submit deviation (excursion) reports that identify all exceedances of the rolling 12-month fuel usage limitations and/or limits established for the first 12 calendar months of operation following issuance of this permit, as per Section B.3. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under Section A.
2. The permittee shall also submit annual reports which specify the total emissions and fuel usage from this emissions unit for the previous calendar year. The annual fuel usage report shall be submitted by January 31<sup>st</sup> of each year. The emissions report may be satisfied by including this source in the submission of the annual Fee Emission Report or may be submitted with the fuel usage report.

**E. Testing Requirements**

Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:

1. Emission Limitation

0.040 pound PM per million Btu of actual heat input

Applicable Compliance Method

Compliance shall be demonstrated by using the appropriate emission factors from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1, or if required, testing of the exhaust stack, using Methods 1 through 5, found in 40 CFR Part 60, Appendix A:

Pollutant	Emission Factor	Source of Factor
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1

2. Emission limitation

0.5 lb SO2/mm Btu actual heat input

Applicable Compliance Method

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

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 calculated per OAC rule 3745-18-04(F)(3) as follows:

ER = (1 x 10E6 )/H x D x S x 1.998, where:

ER = emission rate in pounds of SO2 per MM Btu

H = the heat content of the gaseous fuel in Btu per standard cubic foot

D = the density of the gaseous fuel in Btu per standard cubic foot; and

S = the decimal fraction of sulfur in the gaseous fuel

3. Emission limitation

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

Compliance Method

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 3745-17-03(B)(1).

4. Rolling 12-month emission limitations when burning natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023

23.71 tons NOx per rolling 12 months;

8.12 tons CO per rolling 12 months;

1.28 tons VOC per rolling 12 months;

0.86 ton PM per rolling 12 months; and

0.03 ton SO2 per rolling 12 months

Applicable Compliance Method

Compliance with the annual 12-month rolling emissions from the combustion of natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall be demonstrated through the monthly recordkeeping of the natural gas consumed in all turbines using natural gas, and adding the rolling 12-month total natural gas usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results

NOx w/ natural gas using RB211 turbine w/DLE*	0.11 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using Avon or Allison turbine	0.46 lb/MM Btu	Facility Testing Results
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results
VOC w/ natural gas	0.03 lb/MM Btu	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\*DLE="Dry Low Emission"-new control technology

5. Hourly emission limits when using natural gas in the Avon turbine

122.27 lbs NOx/hr;  
50.50 lbs CO/hr;  
7.97 lbs VOC/hr;  
5.32 lbs PM/hr; and  
0.19 lb SO2/hr

Applicable Compliance Method

Until testing is completed, compliance with the hourly emission limits from the combustion of natural gas from the turbine, in the testing of any compressor installed at this test stand, shall be demonstrated through the calculation of emissions from the combustion of natural gas in the turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas w/Avon turbine	0.46 lb/MM Btu	Facility Testing Results (see Section E.6)
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results (see Section E.6)
VOC w/ natural gas	0.03 lb/MM Btu	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

6. Emission limits

122.27 lbs NO<sub>x</sub>/hr using natural gas with Avon turbine;  
50.50 lbs CO/hr using natural gas;

Applicable Compliance Method

The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. the emission testing shall be conducted one time during the term of this permit and within 6 months after issuance of the permit;
- b. emission testing shall be conducted to demonstrate compliance with the hourly allowable mass emission rate of nitrogen oxides and carbon monoxide;
- c. the following test methods shall be employed to demonstrate compliance with the allowable mass emission rates:

40 CFR Part 60, Appendix A, Methods 1 through 4, Method 20, Method 10, and Method 9

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

- d. the tests shall be conducted at this test stand or by testing any turbine of equal size (an Avon or Allison turbine), that is installed and operating at the time testing is scheduled, and at any one of the emissions units represented in the rolling 12-month limits of this permit (P001, P004, P019, P020, and P023);
- e. testing shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Ohio EPA Central District Office;
- f. not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Central District Office's refusal to accept the results of the emission tests;
- g. personnel from the Ohio EPA Central District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment; and,
- h. a comprehensive written report on the results of the emissions tests shall be signed by the

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Emissions Unit ID: P004

person or persons responsible for the tests and submitted to the Ohio EPA Central District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Central District Office.

**F. Miscellaneous Requirements**

This Permit to Install (01-7991) replaces Permit to Install 01-4996

**PART II: SPECIAL TERMS AND CONDITIONS [Continued]**

**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>	<u>Applicable Emissions Limitations/Control Measures</u>
Turbine/Compressor Test Stand (stack 87-S-06) using Natural Gas, Jet Fuel, Kerosene, or other Petroleum Distillate	OAC rule 3745-17-11(B)(4)	Particulate emissions shall not exceed 0.040 pound per MMBtu of actual heat input
	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from any stack shall not exceed twenty per cent opacity, as a six-minute average, except as otherwise specified by rule
	OAC rule 3745-18-06(F)	Sulfur dioxide (SO <sub>2</sub> ) emissions shall not exceed 0.5 pound per MMBtu of actual heat input, when using jet fuel, kerosene or other petroleum distillate, and see A.2.c
	OAC rule 3745-18-06(A)	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, and see A.2.c
	OAC rule 3745-31-05	Hourly emissions from the combustion of natural gas in this emissions unit shall not exceed the following limits:  287.06 lbs NO <sub>x</sub> /hr with RB211 turbine; 29.24 lbs NO <sub>x</sub> /hr with RB211 turbine with DLE; 122.27 lbs NO <sub>x</sub> /hr with Avon or Allison turbine; 50.50 lbs CO/hr; 7.97 lbs VOC/hr;

	<p>5.32 lbs PM/hr; and 0.19 lb SO<sub>2</sub>/hr</p> <p>Hourly emissions from the combustion of jet fuel/kerosene/petroleum distillate in this emission unit shall not exceed the following limits:</p> <p>568.81 lbs NO<sub>x</sub>/hr; 18.61 lbs CO/hr; 7.97 lbs VOC/hr; 10.63 lbs PM/hr; and 132.90 lbs SO<sub>2</sub>/hr</p> <p>Annual emissions from the combustion of natural gas in emissions units P001, P004, P019, P020, and P023 shall not exceed the following limits:</p> <p>23.71 tons NO<sub>x</sub> per rolling 12 months; 8.12 tons CO per rolling 12 months; 1.28 tons VOC per rolling 12 months; 0.86 ton PM per rolling 12 months; and 0.03 ton SO<sub>2</sub> per rolling 12 months</p> <p>Annual emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in emissions units P001, P019, and P020 shall not exceed the following limits:</p> <p>4.17 tons NO<sub>x</sub> per rolling 12 months; 0.14 ton CO per rolling 12 months; 0.06 ton VOC per rolling 12 months; 0.08 ton PM per rolling 12 months; and 0.98 ton SO<sub>2</sub> per rolling 12 months</p> <p>See Section B1 through B4, and A.2.d</p> <p>See Section A.2.a through A.2.c below</p>
OAC rule 3745-31-05(D)	40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines

**2. Additional Terms and Conditions**

- 2.a** Any stationary gas turbine used at this test stand with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hr) but less than or equal to 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F=NOx emission allowance for fuel-bound nitrogen.

N (below)=the nitrogen content of the fuel (percent by weight)

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NOx percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NOx percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NOx percent by volume (F) will equal 0.004 + 0.0067(N-0.1).

If fuel bound N is greater than 0.25% (percent by wt.), NOx percent by volume (F) will equal to 0.005.

- 2.b** Any stationary gas turbine used at this test stand with a heat input at peak load greater than 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions 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.

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NO<sub>x</sub> percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NO<sub>x</sub> percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NO<sub>x</sub> percent by volume (F) will equal 0.004 + 0.0067(N-0.1).

If fuel bound N is greater than 0.25% (percent by wt.), NO<sub>x</sub> percent by volume (F) will equal to 0.005.

- 2.c** 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 meet the following limits within this 60 days and not later than 180 days after initial startup of the unit:
  - i. emissions from this emissions unit shall not contain SO<sub>2</sub> in excess of 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. fuel shall not contain sulfur in excess of 0.8 percent by weight
- 2.d** If any turbine other than the RB211, the RB211 with the dry-low-emission controls (DLE), the Avon turbine, or the Allison turbine are tested or operated at this test stand, emission testing shall be conducted to provide emission factors and show compliance with the limits contained in this permit as per Section E.10. Test data shows that NO<sub>x</sub> emissions from natural gas vary with the size and type turbine used; emission factors used to calculate NO<sub>x</sub>, CO, VOC, PM, and SO<sub>2</sub> emissions shall be maintained along with the record of fuel usage.
- 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.

## B. Operational Restrictions

- 1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene, or other petroleum

distillate oil.

- 2. Annual natural gas usage in emissions units P001, P004, P019, P020, and P023, shall not exceed 90,000,000 cubic feet per rolling 12-months; and

Annual jet fuel, kerosene, and other petroleum distillate usage in emissions units P001, P019, and P020, shall not exceed 30,000 gallons per rolling 12-months.

- 3. The quality of the 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 pound sulfur dioxide/MMBtu actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and,
  - b. greater than 130,000 Btu/gallon of oil.

Compliance with the above-mentioned specifications shall be determined by using monitoring and testing methods described in Sections C and E of this permit.

- 4. To ensure enforceability during the first 12 calendar months of operation, the fuel usage in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, and all turbines burning distillate fuels, including emissions units P001, P019, and P020 shall not exceed the following natural gas and distillate fuel (including jet fuel and kerosene) usage limits, as specified in the following table:

Month	Natural Gas (ft3)	Distillate fuels (gal)
1	7,500,000	2,500
2	15,000,000	5,000
3	22,500,000	7,500
4	30,000,000	10,000
5	37,500,000	12,500
6	45,000,000	15,000
7	52,500,000	17,500
8	60,000,000	20,000
9	67,500,000	22,500

10	75,000,000	25,000
11	82,500,000	27,500
12	90,000,000	30,000

After the first twelve months, compliance shall be demonstrated by maintaining 12-month rolling records of fuel usage.

### C. Monitoring and/or Recordkeeping Requirements

1. The facility shall install, maintain, and operate, in accordance with the manufacturers specifications, instrumentation sufficient to track all natural gas and jet fuel/kerosene/petroleum distillate usage for each turbine/compressor unit tested at this test stand during periods of operation. Records of fuel usage shall be maintained for each turbine/compressor unit installed at the test stand, per Section C.3 below.
2. The facility shall maintain a record of the company identification of each turbine installed at this test stand, which would reference the turbine size based on the heat input needed at peak load in MMBtu per hour and/or gigajoules per hour, the type of turbine and the manufacturer, and the date each turbine was installed and removed from the test stand.
3. The permittee shall maintain monthly records for emission units P001, P004, P019, P020, and P023 which include the following:
  - a. the total fuel burned, natural gas (ft<sup>3</sup>) and jet fuel/kerosene/petroleum distillate (gallons), summed for each turbine/compressor unit tested at each test stand during the month; and,
  - b. the rolling, 12-month summation of each type fuel used.
4. The permittee shall collect or require the oil supplier to collect a representative grab sample for each shipment of petroleum distillates received for burning in this emissions unit. The permittee shall perform or require the supplier to perform the analysis for sulfur content and heat content in accordance with the following ASTM methods: ASTM method D4294, ASTM method D240, or ASTM method 6010 for sulfur content; and ASTM method D240 for heat content. Alternative, equivalent methods may be used upon written approval by the Ohio EPA Central District Office. For each shipment of oil received for burning in this emissions unit, the permittee shall maintain records of the type of distillate, the total quantity received, and the permittee's or oil supplier's analysis for sulfur content and heat content.
5. With each shipment of petroleum distillate oil received (jet fuel, kerosene, and any other petroleum distillate), or with any change in the quality of natural gas received at the facility, the representative sulfur dioxide emission rate from turbine fuels shall be calculated as specified in OAC rule 3745-18-04(F):
  - a. each shipment of petroleum distillate oil received shall be tested for the sulfur content and heat content or the oil supplier's analysis shall be provided, and the records of testing results maintained, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO<sub>2</sub> per MMBtu emissions shall be determined per OAC rule 3745-18-04(F)(2);

- b. 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,
  - c. 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).
6. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, 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 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 shall be determined and recorded daily, or if substantiated with the appropriate data and if approved by the Administrator, fuel vendors may develop custom schedules for determination of maximum sulfur and nitrogen content based on the design and operation of the source and the characteristics of the fuel supply; and,
  - c. results of the fuel analysis, taken after each new shipment of oil is received, shall be used as the daily value when calculating the 30-day rolling average until the next shipment is received.

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

1. If a petroleum distillate oil 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 permittee's or oil supplier's analysis shall document the sulfur content (percent) and heat content (Btu/gallon) for each shipment of oil. The following information shall also be included with the copies of the permittee's or oil supplier's analysis:
  - a. the total quantity of jet fuel, kerosene, and/or other petroleum distillate received in each shipment (gallons);
  - b. the weighted\* average sulfur dioxide emission rate (pounds/MMBtu) for the jet fuel, kerosene, and/or other petroleum distillate received during the calendar month; and,
  - c. the weighted\* average heat content (Btu/gallon) of the jet fuel, kerosene, and/or petroleum distillate received during the calendar month.

These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each

year and shall cover the oil shipments received and fuel used during the previous calendar quarters. If petroleum distillate oils are not used during the quarter, no report shall be required.

- \* In proportion to the quantity of jet fuel/kerosene/petroleum distillate received in each shipment during the month
- 2. The permittee shall submit deviation (excursion) reports that identify all exceedances of the rolling 12-month fuel usage limitations and/or limits established for the first 12 calendar months of operation following issuance of this permit, as per Section B.4. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under Section A.
- 3. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, the facility 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 testing date) 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.

- 4. The permittee shall also submit annual reports which specify the total emissions and fuel usage from this emissions unit for the previous calendar year. The annual fuel usage report shall be submitted by January 31<sup>st</sup> of each year. The emissions report may be satisfied by including this source in the submission of the annual Fee Emission Report or may be submitted with the fuel usage report.
- 5. Pursuant to the NSPS, the source owner/operator is hereby advised of the requirement to report the following 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 are to be sent to:

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

and

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

**E. Testing Requirements**

Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:

1. Emission Limitation

0.040 pound PM per million Btu of actual heat input

Applicable Compliance Method

Compliance shall be demonstrated by using the appropriate emission factors from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1, or if required, testing of the exhaust stack, using Methods 1 through 5, found in 40 CFR Part 60, Appendix A:

Pollutant	Emission Factor	Source of Factor
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
PM w/ oil distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1

2. Emission limitation

0.5 lb SO2/MM Btu actual heat input

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 or the oil supplier's analysis, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO2 per MMBtu emissions shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$ER = (1 \times 10E6 )/H \times D \times S \times 1.974$ , where:

- ER = emission rate in pounds of SO2 per MM Btu
- 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

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

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 calculated per OAC rule 3745-18-04(F)(3) as follows:

$ER = (1 \times 10E6) / H \times D \times S \times 1.998$ , where:

ER = emission rate in pounds of SO<sub>2</sub> per MM Btu

H = the heat content of the gaseous fuel in Btu per standard cubic foot

D = the density of the gaseous fuel in Btu per standard cubic foot; and

S = the decimal fraction of sulfur in the gaseous fuel

3. SO<sub>2</sub> limitations contained in 40 CFR 60, Subpart GG
  - a. fuel shall not contain sulfur in excess of 0.8 percent by weight; or,
  - b. gases discharged from this emissions unit shall not contain SO<sub>2</sub> in excess of 0.015 percent by volume at 15 percent oxygen on a dry basis.

#### Applicable Compliance Method

Compliance with the fuel bound sulfur concentration and/or sulfur emissions limitation contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand.

- a. Fuel testing shall be conducted to demonstrate compliance with the allowable sulfur content and shall be determined as follows:

ASTM D2880 shall be used to determine the sulfur content of liquid fuels.

ASTM D1072, D3031, D4084, or D3246 shall be used to determine the sulfur content of gaseous fuels, as referenced in 40 CFR Part 60.335(d).

The fuel analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency. The method and date of testing must be recorded along with the results.

- b. Emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 6 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the sulfur dioxide concentration limits contained in Subpart GG.

4. NOx limitations contained in 40 CFR 60, Subpart GG
  - a.  $\text{NOx \{STD\}} = 0.0150 * (14.4)/Y + F$  if peak load greater than 10 MM Btu/hr., and less than 100 MM Btu/hr, and
  - b.  $\text{NOx \{STD\}} = 0.0075 * (14.4)/Y + F$  if peak load greater than 100 MM Btu/hr

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour

F=NOx emission allowance for fuel-bound nitrogen

#### Applicable Compliance Method

Compliance with the nitrogen oxide emission limitations contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand. The emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 7 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the nitrogen oxide emissions and oxygen concentration limits contained in Subpart GG. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NOx emissions shall be determined at each of 4 load conditions of 30, 50, 75, and 100 percent of peak load or at 4 points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. The nitrogen oxides emission rate shall be computed for each run using the equation found in 40 CFR 60.335(c)(1).

5. Emission limitation

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

#### Compliance Method

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 3745-17-03(B)(1).

- 6. Rolling 12-month emission limitations when burning natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023

23.71 tons NOx per rolling 12 months;  
 8.12 tons CO per rolling 12 months;  
 1.28 tons VOC per rolling 12 months;  
 0.86 ton PM per rolling 12 months; and  
 0.03 ton SO2 per rolling 12 months

**Applicable Compliance Method**

Compliance with the annual 12-month rolling emissions from the combustion of natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall be demonstrated through the monthly recordkeeping of the natural gas consumed in all turbines using natural gas, and adding the rolling 12-month total natural gas usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using RB211 turbine with *DLE	0.11 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using Avon or Allison turbine	0.46 lb/MM Btu	Facility Testing Results
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results
VOC w/ natural gas	0.03 lb/MM Bt	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Bt	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\*DLE= "Dry Low Emission"-new control technology

- 7. Rolling 12-month emission limitations when burning jet fuel, kerosene, and/or other petroleum distillate oils in all turbines using this fuel (P001, P019, and P020)

4.17 tons NOx per rolling 12 months;  
 0.14 ton CO per rolling 12 months;  
 0.06 ton VOC per rolling 12 months;  
 0.08 ton PM per rolling 12 months; and  
 0.98 ton SO2 per rolling 12 months

Applicable Compliance Method

Compliance with the annual 12-month rolling emissions from the combustion of jet fuel, kerosene, and/or other petroleum distillate in turbine/compressor test stand emissions units P001, P019, and P020 shall be demonstrated through the monthly recordkeeping of the fuels consumed in these emissions units and adding the rolling 12-month total jet fuel, kerosene, and/or other petroleum distillate usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/distillates	2.14 lb/MM Btu	Facility Testing Results
CO w/distillates	0.07 lb/MM Btu	Facility Testing Results
VOC w/distillates	0.03 lb/MM Btu	Facility Testing Results
PM w/distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/distillates	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

8. Hourly emission limits when using natural gas

- 287.06 lbs NOx/hr with RB211 turbine;
- 29.24 lbs NOx/hr with RB211 with DLE turbine;
- 122.27 lbs NOx/hr with Avon or Allison turbine;
- 50.50 lbs CO/hr;
- 7.97 lbs VOC/hr;
- 5.32 lbs PM/hr; and
- 0.19 lb SO2/hr

Applicable Compliance Method

Until testing is completed, compliance with the hourly emission limits from the combustion of natural gas in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results (see Section E.10)

NOx w/ natural gas	0.11 lb/MM Btu	Facility Testing Results (see Section E.10)
using RB211 turbine with *DLE		
NOx w/ natural gas	0.46 lb/MM Btu	Facility Testing Results (see Section E.10)
using Avon or Allison turbine		
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results (see Section E.10)
VOC w/ natural gas	0.03 lb/MM Btu	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\* DLE="Dry Low Emission"-new control technology

9. Hourly emission limits when using jet fuel, kerosene, or other petroleum distillate

- 568.81 lbs NOx/hr;
- 18.61 lbs CO/hr;
- 7.97 lbs VOC/hr;
- 10.63 lbs PM/hr; and
- 132.90 lbs SO2/hr

Applicable Compliance Method

Until testing has been conducted, compliance with the hourly emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ fuel oil	2.14 lb/MM Btu	Facility Testing Results (see Section E.10)
CO w/ fuel oil	0.07 lb/MM Btu	Facility Testing Results (see Section E.10)
VOC w/ fuel oil	0.03 lb/MM Btu	Facility Testing Results
PM w/ fuel oil	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ fuel oil	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing (see Section C.4 and Section E.10)

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

10. Emission limits

- 287.06 lbs NOx/hr with RB211 turbine when using natural gas;
- 29.24 lbs NOx/hr with RB211 turbine with DLE when using natural gas;
- 122.27 lbs NOx/hr with Avon or Allison turbine when using natural gas;
- 50.50 lbs CO/hr when using natural gas;
- 568.81 lbs NOx/hr when using jet fuel/kerosene/petroleum distillate;
- 18.61 lbs CO/hr when using jet fuel/kerosene/petroleum distillate; and
- 132.90 lbs SO2/hr when using jet fuel/kerosene/petroleum distillate

Applicable Compliance Method

The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. emission testing for the combustion of natural gas shall be conducted one time during the term of this permit on one of each type of turbine and within 6 months after issuance of the permit, or when installed if any one of the turbine types are not installed within this time frame; and if at any time, jet fuel, kerosene, and/ or other petroleum distillate is to be used in P001, P019, or P020, the permittee shall conduct, or have conducted, at the time of use or within 2 months of the use of this fuel, emission testing for one test turbine, to represent emissions of all test turbines burning jet fuel, kerosene, and/or other petroleum distillate;
- b. emission testing shall be conducted to demonstrate compliance with the hourly allowable mass emission rate of nitrogen oxides and carbon monoxide when using either fuel type and, in addition, sulfur oxides when using jet fuel, kerosene, or other petroleum distillate;
- c. the following test methods shall be employed to demonstrate compliance with the allowable mass emission rates:  
  
40 CFR Part 60, Appendix A, Methods 1 through 4, Method 20, Method 10, and Method 9  
  
Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- d. the tests shall be conducted for each turbine type using natural gas (RB211, RB211 with DLE, and a Avon or Allison) installed at any one of the emissions units represented in the rolling 12-month limits of this permit (P001, P004, P019, P020, and P023), and as per Section E.10.a for distillates;
- e. testing shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Ohio EPA Central District Office;
- f. not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Central District Office. The "Intent to Test"

notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Central District Office's refusal to accept the results of the emission tests;

- g. personnel from the Ohio EPA Central District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment; and,
- h. a comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Central District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Central District Office.

**F. Miscellaneous Requirements**

This Permit to Install (01-7991) replaces Permit to Install 01-4996

**PART II: SPECIAL TERMS AND CONDITIONS [Continued]**

**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>	<u>Applicable Emissions Limitations/Control Measures</u>
Turbine/Compressor Test Stand (stack 87-S-07) using Natural Gas, Jet Fuel, Kerosene, or other Petroleum Distillate	OAC rule 3745-17-11(B)(4)	Particulate emissions shall not exceed 0.040 pound per MMBtu of actual heat input
	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from any stack shall not exceed twenty per cent opacity, as a six-minute average, except as otherwise specified by rule
	OAC rule 3745-18-06(F)	Sulfur dioxide (SO <sub>2</sub> ) emissions shall not exceed 0.5 pound per MMBtu of actual heat input, when using jet fuel, kerosene or other petroleum distillate, and see A.2.c
	OAC rule 3745-18-06(A)	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, and see A.2.c
	OAC rule 3745-31-05	Hourly emissions from the combustion of natural gas in this emissions unit shall not exceed the following limits:  287.06 lbs NO <sub>x</sub> /hr with RB211 turbine; 29.24 lbs NO <sub>x</sub> /hr with RB211 turbine with DLE; 122.27 lbs NO <sub>x</sub> /hr with Avon or Allison turbine; 50.50 lbs CO/hr; 7.97 lbs VOC/hr;

OAC rule 3745-31-05(D)

5.32 lbs PM/hr; and  
0.19 lb SO<sub>2</sub>/hr

Hourly emissions from the combustion of jet fuel/kerosene/petroleum distillate in this emission unit shall not exceed the following limits:

568.81 lbs NO<sub>x</sub>/hr;  
18.61 lbs CO/hr;  
7.97 lbs VOC/hr;  
10.63 lbs PM/hr; and  
132.90 lbs SO<sub>2</sub>/hr

Annual emissions from the combustion of natural gas in emissions units P001, P004, P019, P020, and P023 shall not exceed the following limits:

23.71 tons NO<sub>x</sub> per rolling 12 months;  
8.12 tons CO per rolling 12 months;  
1.28 tons VOC per rolling 12 months;  
0.86 ton PM per rolling 12 months; and  
0.03 ton SO<sub>2</sub> per rolling 12 months

Annual emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in emissions units P001, P019, and P020 shall not exceed the following limits:

4.17 tons NO<sub>x</sub> per rolling 12 months;  
0.14 ton CO per rolling 12 months;  
0.06 ton VOC per rolling 12 months;  
0.08 ton PM per rolling 12 months; and  
0.98 ton SO<sub>2</sub> per rolling 12 months

See Section B1 through B4, and A.2.d

See Section A.2.a through A.2.c below

40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas

| Turbines |

**2. Additional Terms and Conditions**

**2.a** Any stationary gas turbine used at this test stand with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hr) but less than or equal to 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F=NOx emission allowance for fuel-bound nitrogen.

N (below)=the nitrogen content of the fuel (percent by weight)

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NOx percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NOx percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NOx percent by volume (F) will equal 0.004 + 0.0067(N-0.1).

If fuel bound N is greater than 0.25% (percent by wt.), NOx percent by volume (F) will equal to 0.005.

**2.b** Any stationary gas turbine used at this test stand with a heat input at peak load greater than 107.2 gigajoules per hour (100 million Btu/hr), 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 limits within this 60 days and not later than 180 days after initial startup of the unit:

Nitrogen Oxides shall not exceed this amount:

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

where:

STD=allowable NOx emissions (percent by volume at 15 percent oxygen and on 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 emissions unit. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F=NOx emission allowance for fuel-bound nitrogen.

F shall be defined according to the nitrogen (N) content of the fuel as follows:

If fuel bound N is less than or equal to 0.015% (percent by wt.), NOx percent by volume (F) will equal zero.

If fuel bound N is greater than 0.015% and less than or equal to 0.1% (percent by wt.), NOx percent by volume (F) will equal 0.04(N).

If fuel bound N is greater than 0.1% and less than or equal to 0.25% (percent by wt.), NOx percent by volume (F) will equal 0.004 + 0.0067(N-0.1).

If fuel bound N is greater than 0.25% (percent by wt.), NOx percent by volume (F) will equal to 0.005.

- 2.c** 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 meet the following limits within this 60 days and not later than 180 days after initial startup of the unit:
  - i. emissions from this emissions unit shall not contain SO2 in excess of 0.015 percent by volume at 15 percent oxygen on a dry basis; or
  - ii. fuel shall not contain sulfur in excess of 0.8 percent by weight
- 2.d** If any turbine other than the RB211, the RB211 with the dry-low-emission controls (DLE), the Avon turbine, or the Allison turbine are tested or operated at this test stand, emission testing shall be conducted to provide emission factors and show compliance with the limits contained in this permit as per Section E.10. Test data shows that NOx emissions from natural gas vary with the size and type turbine used; emission factors used to calculate NOx, CO, VOC, PM, and SO2 emissions shall be maintained along with the record of fuel usage.
- 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.

**B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas, jet fuel, kerosene, or other petroleum distillate oil.
2. Annual natural gas usage in emissions units P001, P004, P019, P020, and P023, shall not exceed 90,000,000 cubic feet per rolling 12-months; and

Annual jet fuel, kerosene, and other petroleum distillate usage in emissions units P001, P019, and P020, shall not exceed 30,000 gallons per rolling 12-months.

3. The quality of the 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 pound sulfur dioxide/MMBtu actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and,
  - b. greater than 130,000 Btu/gallon of oil.

Compliance with the above-mentioned specifications shall be determined by using monitoring and testing methods described in Sections C and E of this permit.

4. To ensure enforceability during the first 12 calendar months of operation, the fuel usage in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, and all turbines burning distillate fuels, including emissions units P001, P019, and P020 shall not exceed the following natural gas and distillate fuel (including jet fuel and kerosene) usage limits, as specified in the following table:

Month	Natural Gas (ft3)	Distillate fuels (gal)
1	7,500,000	2,500
2	15,000,000	5,000
3	22,500,000	7,500
4	30,000,000	10,000
5	37,500,000	12,500
6	45,000,000	15,000
7	52,500,000	17,500
8	60,000,000	20,000
9	67,500,000	22,500
10	75,000,000	25,000
11	82,500,000	27,500
12	90,000,000	30,000

After the first twelve months, compliance shall be demonstrated by maintaining 12-month rolling records of fuel usage.

**C. Monitoring and/or Recordkeeping Requirements**

1. The facility shall install, maintain, and operate, in accordance with the manufacturers specifications, instrumentation sufficient to track all natural gas and jet fuel/kerosene/petroleum distillate usage for each turbine/compressor unit tested at this test stand during periods of operation. Records of fuel usage shall be maintained for each turbine/compressor unit installed at the test stand, per Section C.3 below.
2. The facility shall maintain a record of the company identification of each turbine installed at this test stand, which would reference the turbine size based on the heat input needed at peak load in MMBtu per hour and/or gigajoules per hour, the type of turbine and the manufacturer, and the date each turbine was installed and removed from the test stand.
3. The permittee shall maintain monthly records for emission units P001, P004, P019, P020, and P023 which include the following:
  - a. the total fuel burned, natural gas (ft<sup>3</sup>) and jet fuel/kerosene/petroleum distillate (gallons), summed for each turbine/compressor unit tested at each test stand during the month; and,
  - b. the rolling, 12-month summation of each type fuel used.
4. The permittee shall collect or require the oil supplier to collect a representative grab sample for each shipment of petroleum distillates received for burning in this emissions unit. The permittee shall perform or require the supplier to perform the analysis for sulfur content and heat content in accordance with the following ASTM methods: ASTM method D4294, ASTM method D240, or ASTM method 6010 for sulfur content; and ASTM method D240 for heat content. Alternative, equivalent methods may be used upon written approval by the Ohio EPA Central District Office. For each shipment of oil received for burning in this emissions unit, the permittee shall maintain records of the type of distillate, the total quantity received, and the permittee's or oil supplier's analysis for sulfur content and heat content.
5. With each shipment of petroleum distillate oil received (jet fuel, kerosene, and any other petroleum distillate), or with any change in the quality of natural gas received at the facility, the representative sulfur dioxide emission rate from turbine fuels shall be calculated as specified in OAC rule 3745-18-04(F):
  - a. each shipment of petroleum distillate oil received shall be tested for the sulfur content and heat content or the oil supplier's analysis shall be provided, and the records of testing results maintained, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO<sub>2</sub> per MMBtu emissions shall be determined per OAC rule 3745-18-04(F)(2);
  - b. 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,
  - c. 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).

6. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, 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 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 shall be determined and recorded daily, or if substantiated with the appropriate data and if approved by the Administrator, fuel vendors may develop custom schedules for determination of maximum sulfur and nitrogen content based on the design and operation of the source and the characteristics of the fuel supply; and,
  - c. results of the fuel analysis, taken after each new shipment of oil is received, shall be used as the daily value when calculating the 30-day rolling average until the next shipment is received.

#### D. Reporting Requirements

1. If a petroleum distillate oil 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 permittee's or oil supplier's analysis shall document the sulfur content (percent) and heat content (Btu/gallon) for each shipment of oil. The following information shall also be included with the copies of the permittee's or oil supplier's analysis:
  - a. the total quantity of jet fuel, kerosene, and/or other petroleum distillate received in each shipment (gallons);
  - b. the weighted\* average sulfur dioxide emission rate (pounds/MMBtu) for the jet fuel, kerosene, and/or other petroleum distillate received during the calendar month; and,
  - c. the weighted\* average heat content (Btu/gallon) of the jet fuel, kerosene, and/or petroleum distillate received during the calendar month.

These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall cover the oil shipments received and fuel used during the previous calendar quarters. If petroleum distillate oils are not used during the quarter, no report shall be required.

- In proportion to the quantity of jet fuel/kerosene/petroleum distillate received in each shipment during the month

2. The permittee shall submit deviation (excursion) reports that identify all exceedances of the rolling

12-month fuel usage limitations and/or limits established for the first 12 calendar months of operation following issuance of this permit, as per Section B.4. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under Section A.

3. Within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine installed at this test stand, the facility 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 testing date) 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.

4. The permittee shall also submit annual reports which specify the total emissions and fuel usage from this emissions unit for the previous calendar year. The annual fuel usage report shall be submitted by January 31<sup>st</sup> of each year. The emissions report may be satisfied by including this source in the submission of the annual Fee Emission Report or may be submitted with the fuel usage report.
5. Pursuant to the NSPS, the source owner/operator is hereby advised of the requirement to report the following 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 are to be sent to:

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

and

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

**E. Testing Requirements**

Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:

1. Emission Limitation

0.040 pound PM per million Btu of actual heat input

Applicable Compliance Method

Compliance shall be demonstrated by using the appropriate emission factors from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1, or if required, testing of the exhaust stack, using Methods 1 through 5, found in 40 CFR Part 60, Appendix A:

Pollutant	Emission Factor	Source of Factor
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
PM w/ oil distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1

2. Emission limitation

0.5 lb SO2/MM Btu actual heat input

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 or the oil supplier's analysis, per Section C.4. Until stack testing is conducted, as per Section E.10, the SO2 per MMBtu emissions shall be calculated per OAC rule 3745-18-04(F)(2) as follows:

$ER = (1 \times 10E6 )/H \times D \times S \times 1.974$ , where:

- ER = emission rate in pounds of SO2 per MM Btu
- 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

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

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 calculated per OAC rule 3745-18-04(F)(3) as follows:

$ER = (1 \times 10E6) / H \times D \times S \times 1.998$ , where:

ER = emission rate in pounds of SO<sub>2</sub> per MM Btu

H = the heat content of the gaseous fuel in Btu per standard cubic foot

D = the density of the gaseous fuel in Btu per standard cubic foot; and

S = the decimal fraction of sulfur in the gaseous fuel

3. SO<sub>2</sub> limitations contained in 40 CFR 60, Subpart GG
  - a. fuel shall not contain sulfur in excess of 0.8 percent by weight; or,
  - b. gases discharged from this emissions unit shall not contain SO<sub>2</sub> in excess of 0.015 percent by volume at 15 percent oxygen on a dry basis.

#### Applicable Compliance Method

Compliance with the fuel bound sulfur concentration and/or sulfur emissions limitation contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand.

- a. Fuel testing shall be conducted to demonstrate compliance with the allowable sulfur content and shall be determined as follows:

ASTM D2880 shall be used to determine the sulfur content of liquid fuels.

ASTM D1072, D3031, D4084, or D3246 shall be used to determine the sulfur content of gaseous fuels, as referenced in 40 CFR Part 60.335(d).

The fuel analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency. The method and date of testing must be recorded along with the results.

- b. Emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 6 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the sulfur dioxide concentration limits contained in Subpart GG.

4. NO<sub>x</sub> limitations contained in 40 CFR 60, Subpart GG

- a.  $\text{NO}_x \{\text{STD}\} = 0.0150 * (14.4)/Y + F$  if peak load greater than 10 MM Btu/hr., and less than 100 MM Btu/hr, and
- b.  $\text{NO}_x \{\text{STD}\} = 0.0075 * (14.4)/Y + F$  if peak load greater than 100 MM Btu/hr

where:

STD=allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen and on 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 emissions 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

#### Applicable Compliance Method

Compliance with the nitrogen oxide emission limitations contained in 40 CFR 60, Subpart GG, shall be determined through testing, which shall be required within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of any turbine/compressor unit installed at this test stand. The emissions testing shall be conducted to demonstrate compliance with the allowable mass emission rates and shall be determined as follows:

40 CFR Part 60, Appendix A, Method 20 (when using natural gas) or Methods 7 (when using jet fuel/kerosene/petroleum distillate) shall be used to determine compliance with the nitrogen oxide emissions and oxygen concentration limits contained in Subpart GG. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NO<sub>x</sub> emissions shall be determined at each of 4 load conditions of 30, 50, 75, and 100 percent of peak load or at 4 points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. The nitrogen oxides emission rate shall be computed for each run using the equation found in 40 CFR 60.335(c)(1).

#### 5. Emission limitation

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

#### Compliance Method

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 3745-17-03(B)(1).

#### 6. Rolling 12-month emission limitations when burning natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023

23.71 tons NOx per rolling 12 months;  
 8.12 tons CO per rolling 12 months;  
 1.28 tons VOC per rolling 12 months;  
 0.86 ton PM per rolling 12 months; and  
 0.03 ton SO2 per rolling 12 months

**Applicable Compliance Method**

Compliance with the annual 12-month rolling emissions from the combustion of natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall be demonstrated through the monthly recordkeeping of the natural gas consumed in all turbines using natural gas, and adding the rolling 12-month total natural gas usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using RB211 turbine with *DLE	0.11 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using Avon or Allison turbine	0.46 lb/MM Btu	Facility Testing Results
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results
VOC w/ natural gas	0.03 lb/MM Bt	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Bt	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\*DLE= "Dry Low Emission"-new control technology

- 7. Rolling 12-month emission limitations when burning jet fuel, kerosene, and/or other petroleum distillate oils in all turbines using this fuel (P001, P019, and P020)

4.17 tons NOx per rolling 12 months;  
 0.14 ton CO per rolling 12 months;  
 0.06 ton VOC per rolling 12 months;  
 0.08 ton PM per rolling 12 months; and  
 0.98 ton SO2 per rolling 12 months

**Applicable Compliance Method**

Compliance with the annual 12-month rolling emissions from the combustion of jet fuel, kerosene, and/or other petroleum distillate in turbine/compressor test stand emissions units P001, P019, and P020 shall be demonstrated through the monthly recordkeeping of the fuels consumed in these

emissions units and adding the rolling 12-month total jet fuel, kerosene, and/or other petroleum distillate usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/distillates	2.14 lb/MM Btu	Facility Testing Results
CO w/distillates	0.07 lb/MM Btu	Facility Testing Results
VOC w/distillates	0.03 lb/MM Btu	Facility Testing Results
PM w/distillates	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/distillates	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

8. Hourly emission limits when using natural gas

287.06 lbs NOx/hr with RB211 turbine;  
 29.24 lbs NOx/hr with RB211 with DLE turbine;  
 122.27 lbs NOx/hr with Avon or Allison turbine;  
 50.50 lbs CO/hr;  
 7.97 lbs VOC/hr;  
 5.32 lbs PM/hr; and  
 0.19 lb SO2/hr

Applicable Compliance Method

Until testing is completed, compliance with the hourly emission limits from the combustion of natural gas in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas	1.08 lb/MM Btu	Facility Testing Results (see Section E.10)
using RB211 turbine		
NOx w/ natural gas	0.11 lb/MM Btu	Facility Testing Results (see Section E.10)
using RB211 turbine with *DLE		
NOx w/ natural gas	0.46 lb/MM Btu	Facility Testing Results (see Section E.10)

using Avon or Allison turbine

CO w/ natural gas 0.19 lb/MM Btu

Facility Testing Results (see Section E.10)

VOC w/ natural gas 0.03 lb/MM Btu

Facility Testing Results

PM w/ natural gas 0.02 lb/MM Btu

AP-42 Table 3.1-1

SOX w/ natural gas 0.0007 lb/MM Btu AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\* DLE="Dry Low Emission"-new control technology

9. Hourly emission limits when using jet fuel, kerosene, or other petroleum distillate

568.81 lbs NOx/hr;

18.61 lbs CO/hr;

7.97 lbs VOC/hr;

10.63 lbs PM/hr; and

132.90 lbs SO2/hr

## Applicable Compliance Method

Until testing has been conducted, compliance with the hourly emissions from the combustion of jet fuel, kerosene, or other petroleum distillate in the testing of any turbine installed at this test stand shall be demonstrated through the calculation of emissions from the combustion of natural gas in each turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96 or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ fuel oil	2.14 lb/MM Btu	Facility Testing Results (see Section E.10)
CO w/ fuel oil	0.07 lb/MM Btu	Facility Testing Results (see Section E.10)
VOC w/ fuel oil	0.03 lb/MM Btu	Facility Testing Results
PM w/ fuel oil	0.04 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ fuel oil	0.50 lb/MM Btu	Limit from 3745-18-06(F) until testing (see Section C.4 and Section E.10)

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

## 10. Emission limits

287.06 lbs NOx/hr with RB211 turbine when using natural gas;  
 29.24 lbs NOx/hr with RB211 turbine with DLE when using natural gas;  
 122.27 lbs NOx/hr with Avon or Allison turbine when using natural gas;  
 50.50 lbs CO/hr when using natural gas;  
 568.81 lbs NOx/hr when using jet fuel/kerosene/petroleum distillate;  
 18.61 lbs CO/hr when using jet fuel/kerosene/petroleum distillate; and  
 132.90 lbs SO<sub>2</sub>/hr when using jet fuel/kerosene/petroleum distillate

## Applicable Compliance Method

The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. emission testing for the combustion of natural gas shall be conducted one time during the term of this permit on one of each type of turbine and within 6 months after issuance of the permit, or when installed if any one of the turbine types are not installed within this time frame; and if at any time, jet fuel, kerosene, and/ or other petroleum distillate is to be used in P001, P019, or P020, the permittee shall conduct, or have conducted, at the time of use or within 2 months of the use of this fuel, emission testing for one test turbine, to represent emissions of all test turbines burning jet fuel, kerosene, and/or other petroleum distillate;

- b. emission testing shall be conducted to demonstrate compliance with the hourly allowable mass emission rate of nitrogen oxides and carbon monoxide when using either fuel type and, in addition, sulfur oxides when using jet fuel, kerosene, or other petroleum distillate;
- c. the following test methods shall be employed to demonstrate compliance with the allowable mass emission rates:  
  
40 CFR Part 60, Appendix A, Methods 1 through 4, Method 20, Method 10, and Method 9  
  
Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- d. the tests shall be conducted for each turbine type using natural gas (RB211, RB211 with DLE, and a Avon or Allison) installed at any one of the emissions units represented in the rolling 12-month limits of this permit (P001, P004, P019, P020, and P023), and as per Section E.10.a for distillates;
- e. testing shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Ohio EPA Central District Office;
- f. not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Central District Office's refusal to accept the results of the emission tests;
- g. personnel from the Ohio EPA Central District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment; and,
- h. a comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Central District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Central District Office.

**Cooper Energy Services**

PTI Application: **01-7991**

**Date: To be entered upon final issuance**

Facility ID: **0142010112**

Emissions Unit ID: **P020**

**F. Miscellaneous Requirements**

This Permit to Install (01-7991) replaces Permit to Install 01-4996

**PART II: SPECIAL TERMS AND CONDITIONS [Continued]**

**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>	<u>Applicable Emissions Limitations/Control Measures</u>
Compressor Test Stand (stack 87-S-09) using Natural Gas	OAC rule 3745-17-11(B)(4)	Particulate emissions shall not exceed 0.040 pound per MMBtu of actual heat input
	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from any stack shall not exceed twenty per cent opacity, as a six-minute average, except as otherwise specified by rule
	OAC rule 3745-18-06(F)	Sulfur dioxide emissions shall not exceed 0.5 pound per MMBtu of actual heat input
	OAC rule 3745-18-06(A)	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
	OAC rule 3745-31-05	Hourly emissions from the combustion of natural gas in this emissions unit shall not exceed the following limits:  122.27 lbs NO <sub>x</sub> /hr; 50.50 lbs CO/hr; 7.97 lbs VOC/hr; 5.32 lbs PM/hr; and 0.19 lb SO <sub>2</sub> /hr
	OAC rule 3745-31-05(D)	Annual emissions from the combustion of natural gas in emissions units P001, P004, P019, P020, and P023 shall not exceed the following limits:

	<p>23.71 tons NOx per rolling 12 months;                  8.12 tons CO per rolling 12 months;                  1.28 tons VOC per rolling 12 months;                  0.86 ton PM per rolling 12 months; and                  0.03 ton SO2 per rolling 12 months</p> <p>See Section B 1 through B3, and A.2</p> <p>This turbine was manufactured prior to 10/3/77 and is exempt from this subpart</p>
40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines	

**2. Additional Terms and Conditions**

**2.a** If the Avon turbine is replaced at this test stand a new Permit to Install shall be required prior to installation.

**B. Operational Restrictions**

1. This emissions unit shall only be fired with natural gas. The turbine installed at this test stand was manufactured in the 1960's and is exempt from 40 CFR 60 Subpart GG; this turbine cannot be changed-out and/or replaced with another without applying for a Permit to Install for the inclusion of these requirements.
2. Annual natural gas usage in emissions units P001, P004, P019, P020, and P023, shall not exceed 90,000,000 cubic feet per rolling 12-months.
3. To ensure enforceability during the first 12 calendar months of operation, the fuel usage from all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall not exceed the following natural gas usage limits, as specified in the following table:

Month	Natural Gas (ft3)
1	7,500,000
2	15,000,000
3	22,500,000
4	30,000,000
5	37,500,000
6	45,000,000
7	52,500,000
8	60,000,000
9	67,500,000

10	75,000,000
11	82,500,000
12	90,000,000

After the first twelve months, compliance shall be demonstrated by maintaining 12-month rolling records of fuel usage.

**C. Monitoring and/or Recordkeeping Requirements**

1. The facility shall install, maintain, and operate, in accordance with the manufacturers specifications, instrumentation sufficient to track all natural gas usage for each compressor unit tested at this test stand during periods of operation. Records of fuel usage shall be maintained for each compressor unit installed at the test stand, per Section C.3 below.
2. The facility shall maintain a record of the date each compressor was installed and removed from the test stand.
3. The permittee shall maintain monthly records for emission units P001, P004, P019, P020, and P023 which include the following:
  - a. the total fuel burned, natural gas (ft<sup>3</sup>), summed for each turbine and/or compressor unit tested at each test stand during the month; and,
  - b. the rolling, 12-month summation of natural gas used.
4. The representative sulfur dioxide emission rate from the natural gas used in this emissions unit shall be calculated as specified in OAC rule 3745-18-04(F):
  - a. 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 pounds of sulfur dioxide per MM Btu, per 3745-18-04(F)(4); and,
  - b. 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).

**D. Reporting Requirements**

1. The permittee shall submit deviation (excursion) reports that identify all exceedances of the rolling 12-month fuel usage limitations and/or limits established for the first 12 calendar months of operation following issuance of this permit, as per Section B.3. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under Section A.
2. The permittee shall also submit annual reports which specify the total emissions and fuel usage from this emissions unit for the previous calendar year. The annual fuel usage report shall be submitted by January 31<sup>st</sup> of each year. The emissions report may be satisfied by including this source in the submission of the annual Fee Emission Report or may be submitted with the fuel usage report.

**E. Testing Requirements**

Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:

1. Emission Limitation

0.040 pound PM per million Btu of actual heat input

Applicable Compliance Method

Compliance shall be demonstrated by using the appropriate emission factors from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1, or if required, testing of the exhaust stack, using Methods 1 through 5, found in 40 CFR Part 60, Appendix A:

Pollutant	Emission Factor	Source of Factor
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1

2. Emission limitation

0.5 lb SO<sub>2</sub>/mm Btu actual heat input

Applicable Compliance Method

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

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 calculated per OAC rule 3745-18-04(F)(3) as follows:

$ER = (1 \times 10E6) / H \times D \times S \times 1.998$ , where:

ER = emission rate in pounds of SO<sub>2</sub> per MM Btu

H = the heat content of the gaseous fuel in Btu per standard cubic foot

D = the density of the gaseous fuel in Btu per standard cubic foot; and

S = the decimal fraction of sulfur in the gaseous fuel

3. Emission limitation

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

Compliance Method

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 3745-17-03(B)(1).

4. Rolling 12-month emission limitations when burning natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023

23.71 tons NO<sub>x</sub> per rolling 12 months;

8.12 tons CO per rolling 12 months;

1.28 tons VOC per rolling 12 months;

0.86 ton PM per rolling 12 months; and

0.03 ton SO<sub>2</sub> per rolling 12 months

Applicable Compliance Method

Compliance with the annual 12-month rolling emissions from the combustion of natural gas in all turbines burning natural gas, including emissions units P001, P004, P019, P020, and P023, shall be demonstrated through the monthly recordkeeping of the natural gas consumed in all turbines using natural gas, and adding the rolling 12-month total natural gas usage each month. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or other factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas using RB211 turbine	1.08 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using RB211 turbine w/DLE*	0.11 lb/MM Btu	Facility Testing Results
NOx w/ natural gas using Avon or Allison turbine	0.46 lb/MM Btu	Facility Testing Results
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results
VOC w/ natural gas	0.03 lb/MM Btu	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOX w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

\*DLE="Dry Low Emission"-new control technology

5. Hourly emission limits when using natural gas in the Avon turbine

122.27 lbs NOx/hr;  
 50.50 lbs CO/hr;  
 7.97 lbs VOC/hr;  
 5.32 lbs PM/hr; and  
 0.19 lb SO2/hr

Applicable Compliance Method

Until testing is completed, compliance with the hourly emission limits from the combustion of natural gas from the turbine, in the testing of any compressor installed at this test stand, shall be demonstrated through the calculation of emissions from the combustion of natural gas in the turbine installed at this test stand and recordkeeping of the maximum fuel that could be consumed per hour. Emissions shall be calculated using the following worst case emission factors from facility test data and from "Compilation of Air Pollutant Emission Factors", Fifth Edition (AP-42) Table 3.1-1 dated 10/96, or factors derived from future testing and approved by the Ohio EPA Central District Office:

Pollutant	Emission Factor	Source of Factor
NOx w/ natural gas w/Avon turbine	0.46 lb/MM Btu	Facility Testing Results (see Section E.6)
CO w/ natural gas	0.19 lb/MM Btu	Facility Testing Results (see Section E.6)
VOC w/ natural gas	0.03 lb/MM Btu	Facility Testing Results
PM w/ natural gas	0.02 lb/MM Btu	AP-42 Table 3.1-1
SOx w/ natural gas	0.0007 lb/MM Btu	AP-42 Table 3.1-1

These emission factors shall be multiplied by the heat input (MM Btu) to obtain the emission rate.

6. Emission limits

122.27 lbs NO<sub>x</sub>/hr using natural gas with Avon turbine;  
50.50 lbs CO/hr using natural gas;

Applicable Compliance Method

The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. the emission testing shall be conducted one time during the term of this permit and within 6 months after issuance of the permit;
- b. emission testing shall be conducted to demonstrate compliance with the hourly allowable mass emission rate of nitrogen oxides and carbon monoxide;
- c. the following test methods shall be employed to demonstrate compliance with the allowable mass emission rates:

40 CFR Part 60, Appendix A, Methods 1 through 4, Method 20, Method 10, and Method 9

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

- d. the tests shall be conducted at this test stand or by testing any turbine of equal size (an Avon or Allison turbine), that is installed and operating at the time testing is scheduled, and at any one of the emissions units represented in the rolling 12-month limits of this permit (P001, P004, P019, P020, and P023);
- e. testing shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Ohio EPA Central District Office;
- f. not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Central District Office's refusal to accept the results of the emission tests;
- g. personnel from the Ohio EPA Central District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment; and,
- h. a comprehensive written report on the results of the emissions tests shall be signed by the

**Cooper Energy Services**

PTI Application: **01-7991**

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Facility ID: **0142010112**

Emissions Unit ID: **P023**

person or persons responsible for the tests and submitted to the Ohio EPA Central District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Central District Office.

**F. Miscellaneous Requirements**

This Permit to Install (01-7991) replaces Permit to Install 01-4996.