



John R. Kasich, Governor
 Mary Taylor, Lt. Governor
 Scott J. Nally, Director

9/10/2013

Certified Mail

Rob Flowers
 Rolls Royce Energy Systems Inc
 105 N. SANDUSKY STREET
 MT. VERNON, OH 43050

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL AND OPERATE

Facility ID: 0142010079
 Permit Number: P0114978
 Permit Type: Initial Installation
 County: Knox

No	TOXIC REVIEW
Yes	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
Yes	NSPS
No	NESHAPS
No	NETTING
No	MODELING SUBMITTED
Yes	SYNTHETIC MINOR TO AVOID TITLE V
Yes	FEDERALLY ENFORCABLE PTIO (FEPTIO)
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install and Operate (PTIO) which will allow you to install, modify, and/or operate the described emissions unit(s) in the manner indicated in the permit. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**

How to appeal this permit

The issuance of this PTIO is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
 77 South High Street, 17th Floor
 Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging 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 Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

If you have any questions, please contact Ohio EPA DAPC, Central District Office at (614)728-3778 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,



Michael W. Ahern, Manager

Permit Issuance and Data Management Section, DAPC

Cc: Ohio EPA-CDO



Response to Comments

Facility ID:	0142010079
Facility Name:	Rolls Royce Energy Systems Inc
Facility Description:	Turbines and Turbine Generator Sets
Facility Address:	105 N. SANDUSKY STREET MT. VERNON, OH 43050 Knox County
Permit:	P0114978, Permit-To-Install and Operate - Initial Installation
A public notice for the draft permit issuance was published in the Ohio EPA Weekly Review and appeared in the Mt. Vernon News on 08/09/2013. The comment period ended on 09/08/2013.	
Hearing date (if held)	None.
Hearing Public Notice Date (if different from draft public notice)	None.

The following comments were received during the comment period specified. Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format. PDF copies of the original comments in the format submitted are available upon request.

1. Topic: None

- a. Comment: *"From: Flowers, Robert (RR Energy Systems)*

Sent: Tuesday, August 27, 2013 8:22 AM

To: Mountjoy, Luke

Subject: permit comment period

Luke,

I am working on our comment letter and should have it shortly. Before sending, I wanted to let you know which items I plan to include and then also take a moment to ask a question.

1. On the top of page 20 I will ask that "after 3 hours of continuous operation" be added to section (6) as it was in the previous permit.

2. On page 26 I show a different emissions factor for PM (0.0139 vs. 0.0066) and will request this change.



Finally I have a quick question regarding some of the factors. A few of these appear to be either rounded up or rounded down slightly to the nearest hundredths. I assume this is standard but want to ask, is this anything I should worry about?

Please let me know if there is anything we need to discuss before I submit these 2 items.

Thanks,

Rob Flowers

HS&E Specialist

Rolls-Royce Energy Systems, Inc.”

- b. Response: Comment No. 1 – The comment as requested will be made. This term is consistent with P0104293 as issued final on January 27, 2009 for all current engine test stands.
- Comment No. 2 – The changes requested are not necessary due to operational conditions as permitted in P0104293 as issued final on January 27, 2009. The two emissions factors are representative of operational conditions that result in different emissions.



FINAL

**Division of Air Pollution Control
Permit-to-Install and Operate
for
Rolls Royce Energy Systems Inc**

Facility ID:	0142010079
Permit Number:	P0114978
Permit Type:	Initial Installation
Issued:	9/10/2013
Effective:	9/10/2013
Expiration:	1/27/2014



Division of Air Pollution Control
Permit-to-Install and Operate
for
Rolls Royce Energy Systems Inc

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Final Permit-to-Install and Operate
Rolls Royce Energy Systems Inc
Permit Number: P0114978
Facility ID: 0142010079
Effective Date: 9/10/2013

Authorization

Facility ID: 0142010079
Application Number(s): A0047870
Permit Number: P0114978
Permit Description: Two outside test tands for the purpose of testing finished product which includes turbine/compressor engines and associated equipment.
Permit Type: Initial Installation
Permit Fee: \$4,500.00
Issue Date: 9/10/2013
Effective Date: 9/10/2013
Expiration Date: 1/27/2014
Permit Evaluation Report (PER) Annual Date: Apr 1 - Mar 31, Due May 15

This document constitutes issuance to:

Rolls Royce Energy Systems Inc
105 N. SANDUSKY STREET
MT. VERNON, OH 43050

of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page.

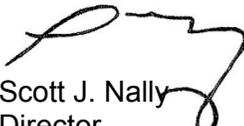
Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Central District Office
50 West Town Street, 6th Floor
P.O. Box 1049
Columbus, OH 43216-1049
(614)728-3778

The above named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s)) listed in this section 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 described emissions unit(s) will operate in compliance with applicable State and federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency


Scott J. Nally
Director



Authorization (continued)

Permit Number: P0114978
 Permit Description: Two outside test tands for the purpose of testing finished product which includes turbine/compressor engines and associated equipment.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Group Name: Outside Test Stands

Emissions Unit ID:	P033
Company Equipment ID:	Outside Test Stand #1
Superseded Permit Number:	
General Permit Category andType:	Not Applicable
Emissions Unit ID:	P034
Company Equipment ID:	Outside Test Stand #2
Superseded Permit Number:	
General Permit Category andType:	Not Applicable



Final Permit-to-Install and Operate
Rolls Royce Energy Systems Inc
Permit Number: P0114978
Facility ID: 0142010079
Effective Date: 9/10/2013

A. Standard Terms and Conditions



1. What does this permit-to-install and operate ("PTIO") allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above, is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

- PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11, or based on a time and materials charge for permit application review and permit processing if required by the Director.

You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

- Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. Unless otherwise specified, facilities subject to one or more synthetic minor restrictions must use Ohio EPA's "Air Services" to submit annual emissions associated with this permit requirement. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is



very important that you submit a complete renewal permit application (postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the "Authorization" page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended by up to 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective, and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.



10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the Ohio EPA DAPC, Central District Office in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction, but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting¹ a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emissions unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as being permanently shut down without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

¹ Permittees that use Ohio EPA's "Air Services" can mark the affected emissions unit(s) as "permanently shutdown" in the facility profile along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).



13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must assume the responsibilities of the transferor permit holder.

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.



Final Permit-to-Install and Operate
Rolls Royce Energy Systems Inc
Permit Number: P0114978
Facility ID: 0142010079
Effective Date: 9/10/2013

B. Facility-Wide Terms and Conditions



Final Permit-to-Install and Operate

Rolls Royce Energy Systems Inc

Permit Number: P0114978

Facility ID: 0142010079

Effective Date: 9/10/2013

1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
 - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
 - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (1) None.



Final Permit-to-Install and Operate
Rolls Royce Energy Systems Inc
Permit Number: P0114978
Facility ID: 0142010079
Effective Date: 9/10/2013

C. Emissions Unit Terms and Conditions



1. Emissions Unit Group -Outside Test Stands: P033,P034,

EU ID	Operations, Property and/or Equipment Description
P033	Turbine/Compressor Test Stand firing natural gas or petroleum distillate (Outside 1)
P034	Turbine/Compressor Test Stand firing natural gas or petroleum distillate (Outside 2)

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. b)(1)d, b)(2)d, d(3), e)(2), and f)(1)f through f)(1)q.

b) Applicable Emissions Limitations and/or Control Requirements

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	Emissions from P033 and P034 shall not exceed: Emissions of nitrogen oxides (NO _x) shall not exceed 582 lbs/hr when firing natural gas and 730.50 lbs/hr when firing petroleum distillate. Emissions of carbon monoxide (CO) shall not exceed 255 lbs/hr when firing natural gas and 78.2 lbs/hr when firing petroleum distillate. Emissions of particulate matter (PM) shall not exceed 6.3 lbs/hr when firing natural gas and 13.2 lbs/hr when firing petroleum distillate.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		Emissions of sulfur dioxide (SO ₂) shall not exceed 0.3 lb/hr when firing natural gas and 107 lbs/hr when firing petroleum distillate. See b)(2)a.
b.	OAC rule 3745-31-05(A)(3) (as effective 11/30/2001)	Emissions of volatile organic compounds (VOC) shall not exceed: 1.0 lb/hr when firing natural gas and 0.2 lb/hr when firing petroleum distillate. See b)(2)(b).
c.	OAC rule 3745-31-05 (A)(3) (as effective 12/01/2006)	See b)(2)(c).
d.	OAC rule 3745-31-05(D) (Synthetic minor to avoid Title V and Nonattainment New Source Review)	<u>Annual Natural Gas Limits</u> Emissions of NO _x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 89.5 tons as a rolling, 12-month summation when firing natural gas. Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 66.1 tons as a rolling, 12-month summation when firing natural gas. Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 1.6 tons as a rolling, 12-month summation when firing natural gas. Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing natural gas. Emissions of SO ₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>month summation when firing natural gas.</p> <p>See b)(2)d.i. and b)(2)d.ii.</p> <p><u>Annual Petroleum Distillate Limits</u></p> <p>Emissions of NO_x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 6.1 tons as a rolling, 12-month summation when firing petroleum distillate.</p> <p>Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.7 tons per year when firing petroleum distillate.</p> <p>Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing petroleum distillate.</p> <p>Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.001 tons as a rolling, 12-month summation when firing petroleum distillate.</p> <p>Emissions of SO₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.9 tons as a rolling, 12-month summation when firing petroleum distillate.</p> <p>See b)(2)d.iii.</p> <p><u>Annual Limits for both fuels.</u></p> <p>Emissions of any single hazardous air pollutant (HAP) from emissions units P004, P020, P023, P024, P025, P026,</p>



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing any fuel. Emissions of total combined hazardous air pollutant (HAPs) from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing any fuel. See b)(2)d.
e.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a six-minute average, except as provided by rule.
f.	OAC rule 3745-18-06(F)	SO ₂ emissions shall not exceed 0.5 lb/MMBtu when firing petroleum distillate. See b)(2)e.
g.	40 CFR Part 60, Subpart GG	See b)(2)f, b)(2)g, b)(2)h, b)(2)i, d)(4), e)(4), f)(1)(t), f)(1)(u), and f)(1)(v).

(2) Additional Terms and Conditions

- a. The hourly emissions limitations in term b)(1)a. were established to reflect the potential to emit for this emissions unit. It is not necessary to develop record keeping and/or reporting requirements to ensure compliance with this short term emissions limitation.
- b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.



- c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

BAT requirements listed under OAC rule 3745-31-05(A)(3) do not apply to the VOC emissions from these air contaminant sources (P033 and P034) since the uncontrolled potential to emit is less than 10 tons per year for each when firing either natural gas or petroleum distillate .

- d. The maximum annual natural gas and petroleum distillate usage is limited as follows:

i. Natural gas usage for testing of turbine/compressors, other than Trent WLE units, using P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 220,000,000 cubic feet as a rolling, 12-month summation;

ii. Natural gas usage for testing Trent WLE units in emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 5,000,000 cubic feet as a rolling, 12-month summation; and

iii. Petroleum distillate usage in emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 50,000 gallons as a rolling, 12-month summation.

These emissions units have been in operation for more than 12 months and, as such, the permittee has existing records to generate the rolling, 12-month summation of the natural gas and petroleum distillate usage, upon issuance of this permit. The maximum annual natural gas and petroleum distillate usage for these emissions units shall not exceed those limits noted above, based upon a rolling, 12-month summation of the fuel usage rates.

- e. The quality of petroleum distillate burned in this emissions unit shall meet the following specifications on an "as received" basis:

i. a sulfur content which is sufficient to comply with the allowable sulfur dioxide emission limitation of 0.5 pounds of sulfur dioxide per MMBtu of actual heat input, unless a lower limit is required per 40 CFR 60, Subpart GG; and

ii. greater than 130,000 Btu per gallon of petroleum distillate.

Compliance with the above-mentioned specifications shall be determined by using the fuel analyses in term d)(5) below. Per OAC rule 3745-18-06(A), stationary gas turbines are exempt from the requirements of OAC rule 3745-16-08(F) SO₂ limitation when firing natural gas.

- f. Any stationary gas turbine used at each test stand with a heat input of at peak load greater than 100 MMBTU per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after



achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit:

NOx emissions shall not exceed the value calculated as follows:

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

where

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

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

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

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

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

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

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

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

NO_x emissions shall not exceed the value calculated as follows:

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



where

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

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

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

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

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

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

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

- h. Any stationary gas turbine used at this test stand which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall comply with one or the other of the following requirements within this 60 days and not later than 180 days after initial startup of the unit:
 - i. SO₂ emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
 - ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.
- i. 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.



- c) Operational Restrictions
 - (1) This emissions unit shall only be fired using natural gas or petroleum distillate.
 - (2) The quality of petroleum distillate used in these emissions units shall meet a sulfur content that is sufficient to comply with the allowable sulfur dioxide emission limitation specified in this permit.

- d) Monitoring and/or Recordkeeping Requirements
 - (1) The permittee shall install, maintain and operate, in accordance with manufacturer's specifications, instrumentation sufficient to monitor, track and record all fuel usage for each turbine unit tested at this emissions unit during all periods of operation.
 - (2) The permittee shall maintain a record of each turbine tested at this emissions unit. This record shall include the following information:
 - a. the company name and identification of each turbine;
 - b. the turbine size based on the heat input needed at maximum load, in MMBtu per hour or gigajoules per hour;
 - c. the type and manufacturer of the turbine; and
 - d. the date each turbine was installed and removed from this emissions unit.
 - (3) The permittee shall maintain records for emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 which include the following:
 - a. the total monthly amount of each fuel burned (natural gas and/or petroleum distillate) in all turbines at each emissions unit during the month, in cubic feet per month (for natural gas) or gallons per month (for petroleum distillate);
 - b. the rolling 12-month summation of the amount of each fuel type used (natural gas, and/or petroleum distillate), in cubic feet per rolling 12-month period (for natural gas) or gallons per rolling 12-month period (for petroleum distillate);
 - c. the total monthly emissions of each pollutant (NO_x, CO, VOC, SO₂ and particulate matter) emitted from each emissions unit during the month, in pounds of pollutant per month; and
 - d. the rolling 12-month summation of emissions of each pollutant (NO_x, CO, VOC, SO₂ and particulate matter) emitted from each emissions unit, in tons of pollutant per rolling 12-month period.
 - (4) Within 60 days after achieving the maximum production rate at which any stationary gas turbine installed at this emissions unit will be operated, but not later than 180 days after the initial startup of any stationary gas turbine installed at this emissions unit, the facility shall monitor the sulfur content and nitrogen content of the fuel being fired, as required by 40 CFR 60, Subpart GG, as follows:



- a. if the turbine is supplied its fuel from a bulk storage tank, the values (sulfur and nitrogen content) shall be determined on each occasion that fuel is transferred to the storage tank from any other source; or
 - b. if the turbine is supplied its fuel without intermediate bulk storage the values (sulfur and nitrogen content) shall be determined and recorded daily, or on a custom schedule approved by the Administrator of the US EPA.
- (5) The permittee shall maintain records of the petroleum distillate burned in these emissions units in accordance with either Alternative 1 or Alternative 2 described below.

a. Alternative 1:

For each shipment of petroleum distillate received for burning in this emissions unit, the permittee shall collect or require the petroleum distillate supplier to collect a representative grab sample of petroleum distillate and maintain records of the total quantity of petroleum distillate received, the permittee's or petroleum distillate supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/MMBtu). The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F). A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the petroleum distillate for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

b. Alternative 2:

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

The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods, such as ASTM methods D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter and D4294, Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry, or equivalent methods as approved by the Director of Ohio EPA.



- (6) The permittee shall perform daily checks, when the emissions units are in operation and when the weather conditions allow, for any visible particulate emissions from the stacks serving these emissions units after three (3) hours of continuous operation. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
- a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

e) Reporting Requirements

- (1) The reports contained in this permit shall be submitted in accordance with the reporting requirements specified in Part 1 - General Terms and Conditions, Section A of this permit.
- (2) The permittee shall submit quarterly deviation (excursion) reports that identify:
 - a. all deviations (excursions) of the following emission limitations, operational restrictions and/or control device operating parameter limitations that restrict the potential to emit (PTE) of any regulated air pollutant and have been detected by the monitoring, record keeping and/or testing requirements in this permit:
 - i. Emissions of NO_x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 89.5 tons as a rolling, 12-month summation when firing natural gas;
 - ii. Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 66.1 tons as a rolling, 12-month summation when firing natural gas;



Final Permit-to-Install and Operate

Rolls Royce Energy Systems Inc

Permit Number: P0114978

Facility ID: 0142010079

Effective Date: 9/10/2013

- iii. Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 1.6 tons as a rolling, 12-month summation when firing natural gas;
- iv. Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing natural gas;
- v. Emissions of SO₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing natural gas;
- vi. Emissions of NO_x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 6.1 tons as a rolling, 12-month summation when firing petroleum distillate;
- vii. Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.7 tons per year when firing petroleum distillate;
- viii. Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing petroleum distillate;
- ix. Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.001 tons as a rolling, 12-month summation when firing petroleum distillate;
- x. Emissions of SO₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.9 tons as a rolling, 12-month summation when firing petroleum distillate;
- xi. Emissions of any single hazardous air pollutant (HAP) from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing any fuel;
- xii. Emissions of total combined hazardous air pollutant (HAPs) from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing any fuel;
- xiii. The maximum annual natural gas usage for emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 220,000,000 cubic feet, based upon a rolling, 12-month summation of natural gas usage;
- xiv. The maximum annual natural gas usage for testing Trent WLE units in emissions units P004, P020, P023, P024, P025, P026, P027, P030,



P031, P032, P033 and P034 shall not exceed 5,000,000 cubic feet based upon a rolling, 12-month summation of natural gas usage; and

- xv. The maximum annual petroleum distillate usage in emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 50,000 gallons based upon a rolling, 12-month summation of petroleum distillate usage.
- b. the probable cause of each deviation (excursion);
- c. any corrective actions that were taken to remedy the deviations (excursions) or prevent future deviations (excursions); and
- d. the magnitude and duration of each deviation (excursion).

If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (Ohio EPA, Central District Office).

- (3) The permittee shall identify the following information in the annual Permit Evaluation Report (PER):
 - a. visible emissions monitoring requirements as required under d)(6) above:
 - i. all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
 - ii. any corrective actions taken to minimize or eliminate the visible particulate emissions.
 - b. the quality of petroleum distillate burned in this emissions unit:
 - i. any exceedance of the allowable sulfur dioxide emission limitation, pounds sulfur dioxide/MMBtu actual heat input; and
 - ii. any deviation from the minimum heat content limitation on the oil, Btu/gallon.

The permittee shall submit the annual PER to Ohio EPA. The PER must be completed electronically and submitted via Ohio EPA's e-Business Center: Air Services by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve months for each air contaminant source identified in this permit.



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

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

Ohio Environmental Protection Agency
Central District Office
P.O. Box 1049
Columbus, Ohio 43216-1049

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitation

Emissions of nitrogen oxides (NO_x) shall not exceed 582 lbs/hr when firing natural gas and 730.50 lbs/hr when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with this hourly limitation by multiplying the emissions factor provided by the facility for natural gas combustion for testing wet low-emissions (WLE) operations (1.2763 lbNO_x/MMBtu) or petroleum distillate combustion (1.83359 lbNO_x/MMBtu) by the maximum hourly fuel usage rate (456 MMBtu/hr).

If required, the facility shall demonstrate compliance with these hourly emissions limitations through emissions test performed in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 7 or 7E.

b. Emissions Limitation

Emissions of carbon monoxide (CO) shall not exceed 255 lbs/hr when firing natural gas and 78.2 lbs/hr when firing petroleum distillate.



Applicable Compliance Method:

The permittee shall demonstrate compliance with this hourly limitation by multiplying the emissions factor provided by the facility for natural gas combustion for testing wet low-emissions (WLE) operations (0.55946 lb CO/MMBtu) or petroleum distillate combustion (0.1962 lb CO/MMBtu) by the maximum hourly fuel usage rate (456 MMBtu/hr).

If required, the facility shall demonstrate compliance with these hourly emissions limitations through emissions test performed in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 10.

c. Emissions Limitation

Emissions of particulate matter (PM) shall not exceed 6.3 lbs/hr when firing natural gas and 13.2 lbs/hr when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with this hourly limitation by multiplying the emissions factor provided by the facility for natural gas combustion for testing wet low-emissions (WLE) operations (0.0139 lb PM/MMBtu) or petroleum distillate combustion (0.0332 lb pm/MMBtu) by the maximum hourly fuel usage rate (456 MMBtu/hr).

If required, the facility shall demonstrate compliance with these hourly emissions limitations through emissions test performed in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 5 or 5I (as appropriate).

d. Emissions Limitation

Emissions of volatile organic compounds (VOC) shall not exceed 1.0 lb/hr when firing natural gas and 0.2 lb/hr when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with this hourly limitation by multiplying the emissions factor provided by the facility for natural gas combustion for testing wet low-emissions (WLE) operations (0.0021 lb VOC/MMBtu, AP-42 Table 3.1-2a (April 2000)) or petroleum distillate combustion (0.00041 lb VOC/MMBtu, AP-42 Table 3.1-2a (April 2000)) by the maximum hourly fuel usage rate (456 MMBtu/hr).

If required, the facility shall demonstrate compliance with these hourly emissions limitations through emissions test performed in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 25 or 25A (as appropriate).

e. Emissions Limitation

Emissions of sulfur dioxide (SO₂) shall not exceed 0.3 lb/hr when firing natural gas and 107 lbs/hr when firing petroleum distillate.



Applicable Compliance Method:

The permittee shall demonstrate compliance with this hourly limitation by multiplying the emissions factor provided by the facility for natural gas combustion for testing wet low-emissions (WLE) operations (0.0007 lb SO₂/MMBtu) or petroleum distillate combustion (0.2679 lb SO₂/MMBtu) by the maximum hourly fuel usage rate (456 MMBtu/hr).

If required, the facility shall demonstrate compliance with these hourly emissions limitations through emissions test performed in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 6 or 6C.

f. Emissions Limitation

Emissions of NO_x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 89.5 tons as a rolling, 12-month summation when firing natural gas.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by the sum of the two following calculations:

- i. multiply the emissions factor of 0.7538 lbNO_x/MMBtu by the total 12-month natural gas usage in cubic feet (excepting natural gas utilized for WLE testing) and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.
- ii. multiply the emissions factor of 1.2763 lbNO_x/MMBtu by the total 12-month natural gas usage in cubic feet utilized for WLE testing, and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

g. Emissions Limitation

Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 66.1 tons as a rolling, 12-month summation when firing natural gas.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.55946 lb CO/MMBtu by the total 12-month natural gas usage in cubic feet and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

h. Emissions Limitation

Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 1.6 tons as a rolling, 12-month summation when firing natural gas.



Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by the sum of the two following calculations:

- i. multiply the emissions factor of 0.0066 lb PM/MMBtu by the total 12-month natural gas usage in cubic feet (excepting natural gas utilized for WLE testing) and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.
- ii. multiply the emissions factor of 0.0139 lb PM/MMBtu by the total 12-month natural gas usage in cubic feet utilized for WLE testing, and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

i. Emissions Limitation

Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing natural gas.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.0021 lb VOC/MMBtu by the total 12-month natural gas usage in cubic feet and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

j. Emissions Limitation

Emissions of SO₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing natural gas.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.0007 lb SO₂/MMBtu by the total 12-month natural gas usage in cubic feet and the heat content of the fuel (1040 Btu/scf), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

k. Emissions Limitation

Emissions of NO_x from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 6.1 tons as a rolling, 12-month summation when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 1.8336 lbNO_x/MMBtu by the total 12-



month petroleum distillate usage in gallons and the heat content of the fuel (134,000 Btu/gallon), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

i. Emissions Limitation

Emissions of CO from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.7 tons per year when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.1962 lb CO/MMBtu by the total 12-month petroleum distillate usage in gallons and the heat content of the fuel (134,000 Btu/gallon), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

m. Emissions Limitation

Emissions of PM from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.0332 lb PM/MMBtu by the total 12-month petroleum distillate usage in gallons and the heat content of the fuel (134,000 Btu/gallon), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

n. Emissions Limitation

Emissions of VOC from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.001 tons as a rolling, 12-month summation when firing petroleum distillate.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.00041 lb VOC/MMBtu by the total 12-month petroleum distillate usage in gallons and the heat content of the fuel (134,000 Btu/gallon), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

o. Emissions Limitation

Emissions of SO₂ from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.9 tons as a rolling, 12-month summation when firing petroleum distillate.



Applicable Compliance Method:

the permittee shall demonstrate compliance with the rolling 12-month emission limit by multiplying the emissions factor of 0.2679 lb SO₂/MMBtu by the total 12-month petroleum distillate usage in gallons and the heat content of the fuel (134,000 Btu/gallon), and then dividing by 1,000,000 Btu/MMBtu and 2000 lb/ton.

p. Emissions Limitation

Emissions of any single hazardous air pollutant (HAP) from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.1 tons as a rolling, 12-month summation when firing any fuel.

Applicable Compliance Method:

Compliance with the rolling 12-month emission limit shall be demonstrated using the following calculations:

- i. for natural gas, multiply the emission factor of 0.00071 pound single HAP per MMBtu (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound;
- ii. for petroleum distillate, multiply the emission factor of 0.00079 pound single HAP per MMBtu (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound; and
- iii. the sum of f)(1)p.i. and f)(1)p.ii. is the total HAP emissions as a rolling, 12-month summation.

q. Emissions Limitation

Emissions of total combined hazardous air pollutant (HAPs) from emissions units P004, P020, P023, P024, P025, P026, P027, P030, P031, P032, P033 and P034 shall not exceed 0.2 tons as a rolling, 12-month summation when firing any fuel.

Applicable Compliance Method:

Compliance with the rolling 12-month emission limit shall be demonstrated using the following calculations:

- i. for natural gas, multiply the emission factor of 0.00103 pound total combined HAPs per MMBtu (AP-42, Table 3.1-3, April 2000) by the heat content of the fuel (1040 Btu per cubic foot) and by the total 12-month fuel usage in cubic feet per 12-months and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound;



- ii. for petroleum distillate, multiply the emission factor of 0.0013 pound total combined HAPs per MMBTU (AP-42, Tables 3.1-4 and 3.1-5, April 2000) by the total 12-month fuel usage in gallons per 12-months and by the maximum heat content of the fuel (134,000 Btu per gallon) and dividing by 1,000,000 MMBTU per Btu and by 2000 tons per pound; and
- iii. the sum of f)(1)q.i. and f)(1)q.ii. is the total HAP emissions as a rolling, 12-month summation.

r. Emission Limitation:

Visible particulate emissions from the stack shall not exceed 20 percent opacity as a six-minute average, except as specified by rule.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Method 9.

s. Emission Limitation:

SO₂ emissions shall not exceed 0.5 lb/MMBtu when firing petroleum distillate.

Applicable Compliance Method:

Continuous compliance shall be demonstrated by testing the sulfur content and heat content of each shipment of petroleum distillates received and maintaining records of these testing results of the oil supplier's analysis, as required per d)(5)a. or d)(5)b. above.

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 6.

t. Emission Limitation:

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

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand.



Emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing petroleum distillate).

u. Emission Limitation:

For any stationary gas turbine used at this test stand with a heat input of at peak load equal to or greater than 10 MMBtu per hour (10.7 gigajoules per hour) but less than or equal to 100 MMBtu per hour (107.2 gigajoules per hour) based on the lower heating value of the fuel fired and which remains on site 60 days after achieving the maximum production rate at which the unit will be operated shall meet the following emissions limit within this 60 days and not later than 180 days after initial startup of the unit, NO_x emissions shall not exceed the value as calculated in b)(2)g. of this permit.

Applicable Compliance Method:

Compliance shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand.

Emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 7 (when firing petroleum distillate).

v. Emission Limitation:

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

- i. SO₂ emissions shall not exceed 0.015 percent by volume at 15 percent oxygen on a dry basis; or
- ii. this emissions unit shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight.

Applicable Compliance Method:

Compliance with the SO₂ emissions limit shall be demonstrated through emissions testing, which shall be required within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of the unit installed at this test stand.

Emissions testing shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 20 (when firing natural gas) or Method 6 (when firing petroleum distillate).



Final Permit-to-Install and Operate

Rolls Royce Energy Systems Inc

Permit Number: P0114978

Facility ID: 0142010079

Effective Date: 9/10/2013

Compliance with the sulfur fuel content limit shall be demonstrated with the monitoring and record keeping requirements in d)(5) of these terms and conditions.

g) Miscellaneous Requirements

(1) None.