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

9/24/2013

Certified Mail

Kelli Cox
PDC Energy - Neill Pad
1775 Sherman Street
Suite 3000
Denver, CO 80203

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

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL AND OPERATE
Facility ID: 0684005006
Permit Number: P0115457
Permit Type: Initial Installation
County: Washington

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, Southeast District Office at (740)385-8501or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: Ohio EPA-SEDO

# FINAL

# Division of Air Pollution Control
# Permit-to-Install and Operate
for
PDC Energy - Neill Pad

| | |
|---|---|
| Facility ID: | 0684005006 |
| Permit Number: | P0115457 |
| Permit Type: | Initial Installation |
| Issued: | 9/24/2013 |
| Effective: | 9/24/2013 |
| Expiration: | 9/24/2023 |

**Division of Air Pollution Control**
**Permit-to-Install and Operate**
for
PDC Energy - Neill Pad

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# Authorization

| | |
|---|---|
| Facility ID: | 0684005006 |
| Application Number(s): | A0048770 |
| Permit Number: | P0115457 |
| Permit Description: | This is a general permit for the Oil and Gas Well-Site Production Operations (GP 12) located in Washington County, Ohio for PDC Energy - Neill Pad. |
| Permit Type: | Initial Installation |
| Permit Fee: | $2,200.00 |
| Issue Date: | 9/24/2013 |
| Effective Date: | 9/24/2013 |
| Expiration Date: | 9/24/2023 |

Permit Evaluation Report (PER) Annual Date: Jan 1 - Dec 31, Due Feb 15

This document constitutes issuance to:

PDC Energy - Neill Pad
Righteous Ridge Rd
Waterford, OH 45786

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, Southeast District Office
2195 Front Street
Logan, OH 43138
(740)385-8501

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: P0115457
Permit Description: This is a general permit for the Oil and Gas Well-Site Production Operations (GP 12) located in Washington County, Ohio for PDC Energy - Neill Pad.

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

| | |
|---|---|
| **Emissions Unit ID:** | **F001** |
| Company Equipment ID: | F001 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |
| **Emissions Unit ID:** | **P001** |
| Company Equipment ID: | P001 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |
| **Emissions Unit ID:** | **P002** |
| Company Equipment ID: | P002 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |
| **Emissions Unit ID:** | **P003** |
| Company Equipment ID: | P003 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |
| **Emissions Unit ID:** | **P004** |
| Company Equipment ID: | P004 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |
| **Emissions Unit ID:** | **T001** |
| Company Equipment ID: | T001 |
| Superseded Permit Number: | |
| General Permit Category and Type: | Oil & Gas Well-Site Production Operations - Oil & Gas Well-Site Production Operations (GP 12.1) |

# 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 takenby 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, Southeast 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 submitting[1] 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.

# B. Facility-Wide Terms and Conditions

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.

2. The Ohio EPA has determined that this facility is subject to the requirements of 40 CFR Part 63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines. Although Ohio EPA has determined that this Generally Available Control Technology NESHAP (GACT) applies, at this time Ohio EPA does not have the authority to enforce this standard. Instead, U.S. EPA has the authority to enforce this standard. Please be advised, that all requirements associated with this rule are in effect and shall be enforced by U.S. EPA. For more information on the area source rules, please refer to the following U.S. EPA website: http://www.epa.gov/ttn/atw/area/arearules.html**.**

3. Multiple emissions units contained in this permit must comply with various federal New Source Performance Standards (NSPS) or various Maximum Achievable Control Technology (MACT)/Generally Available Control Technologies (GACT) standards. The complete NSPS/MACT/GACT requirements may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the appropriate Ohio EPA District Office or local air agency. The permittee shall comply with any applicable requirements of 40 CFR Part 60 Subpart OOOO once it becomes rule.

4. Air contaminant sources that qualify as de minimis under OAC rule 3745-15-05, or are exempt under OAC rule 3745-31-03(A)(1) or (4) are not subject to emission standards established within this permit. Although this permit does not apply to de minimis or exempt sources, emissions from de minimis or exempt sources must be included in the total potential to emit (PTE) calculations for this permit. PTE calculations should include sources such as:

   a) qualifying non-road engines (exempt per 3745-31-03(A)(1)(pp)),

   b) emergency diesel generator(s) (exempt per 3745-31-03(A)(1)(nn)),

   c) micro turbines less than 200 kW (de mimimis per OAC rule 3745-15-05), and

   d) natural gas-fired heaters/boilers of various types that are less than 10 MMBtu/hr heat input (exempt per 3745-31-03(A)(1)(a)).

5. Emissions units permitted under a previously issued PTI/PTIO as portable sources, provided that the qualifying criteria for this General permit are met, shall be subject to the requirements of this permit during the time located at this well site.

6. The requirements of this permit are not intended to supersede any Ohio Department of Natural Resources requirements.

7. It is the permittee's responsibility to determine if any air pollution emitting equipment not covered by this permit needs a separate air permit.

8. Modeling to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), is not necessary if/when the maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, is less than 1.0 ton per year (or are subject to a standard under 40 CFR Part 63). OAC Chapter 3745-31 requires permittees to apply for and obtain a new or modified PTIO prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials or use of new materials that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTIO.

9. The permittee remains subject to all applicable federal law and regulations and all applicable provisions of the Ohio State Implementation Plan as approved by the Administrator of the U.S. EPA. The provisions of the Ohio State Implementation Plan are independently enforceable by the U.S. EPA.

# C. Emissions Unit Terms and Conditions

## 1. Emissions Unit: Dehydration System, P001

**Operations, Property and/or Equipment Description:**

| | |
|---|---|
| P001 | Up to two glycol dehydration unit(s) (includes contact tower or absorption column and glycol dehydration unit reboiler) and gas-condensate-glycol (GCG) separator (flash separator), which may be vented to a BTEX Elimination System with condenser and/or a dehydrator system flare (less than 10 MMBtu/hr), or an facility wide flare (see P004). |

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. None.

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. | OAC rule 3745-31-05(A)(3), as effective 11/30/01 | Emissions of Volatile Organic Compounds (VOC) (excludes methane and ethane) shall not exceed 5.0 tons/year.<br><br>Use of a dehydration system flash separator that captures flash vapors.<br><br>Use of a flare[2] and/or BTEX elimination system with condenser controlling the dehydration still vent as needed to comply |

[2] The flare can either be a single flare on the dehydrator still vent or a separate flare that controls multiple emissions units in addition to the dehydration still vent.

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| | | with the 5.0 tons VOC/year emission limit.<br><br>Emissions from any flare emissions shall not exceed:<br>3.0 tons Nitrogen Oxides (NOx)/year;<br>2.8 tons VOC/year; and<br>1.8 tons Sulfur dioxide (SO2)/year.<br><br>The requirements of this rule include compliance with any applicable requirements of 40 CFR Part 63 Subpart HH.<br><br>See b)(2)a. |
| b. | OAC rule 3745-31-05(A)(3)(a)(ii) | See b)(2)b. |
| c. | ORC 3704.03(T) | From any flare, Carbon Monoxide (CO) emissions shall not exceed 16.2 tons per rolling 12-month period. |
| d. | OAC rule 3745-31-05(E) | See b)(2)b. |
| e. | Part 63, Subpart HH, National Emission Standards for hazardous air pollutants (NESHAP) from Oil and Natural Gas Production Facilities | Compliance with the applicable portions of 40 CFR Part 63, Subpart HH. Any final amendments to this rule will supersede any previous Subpart HH requirement(s) in this permit. |
| f. | 40 CFR 60.18(c)(1)<br>40 CFR 63.11(b)(4) | No visible emissions except for 5 minutes during any 2 consecutive hours. |

(2) Additional Terms and Conditions

a. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to 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 ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant 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 revision 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 3745-31-05, then BAT no longer applies.

b. These rules apply once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan:

i. This permit takes into account the following voluntary restrictions (including the use of any applicable air pollution control equipment) for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3):

(a) Emissions of Volatile Organic Compounds (VOC) (excludes methane and ethane) shall not exceed 5.0 tons/year;

(b) Use of a dehydration system flash separator that captures flash vapors; and

(c) Use of a flare and/or a BTEX Elimination System with condenser on the dehydration still vent as needed to comply with the 5.0 ton VOC/year emission limit.

ii. The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the NOx and $SO_2$ emissions from this air contaminant source since the potential to emit for NOx and $SO_2$ are less than ten tons per year.

c) Operational Restrictions

(1) If this facility does not qualify for the dehydrator exemption found in 40 CFR Part 63.764(e), then this facility must comply with all applicable operational restrictions found in 40 CFR Part 63, Subpart HH.

(2) If this facility does qualify for the dehydrator exemption found in 40 CFR Part 63.764(e), then;

a. If this facility chooses to use a flare to control dehydrator emissions, then;

i. The flare shall be operated with a flame present at all times when gases are vented to it.

ii. An automatic flame ignition system shall be installed.

iii. If the facility is using a pilot flame ignition system, the presence of a pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame. A pilot flame shall be maintained at all times in the flare's pilot light burner. If the pilot flame goes out and does not relight, then an alarm shall sound.

iv. If the facility is using an electric arc ignition system, the arcing of the electric arc ignition system shall pulse continually and a device shall be installed and used to continuously monitor the electric arc ignition system.

v. Any flare, auto ignition system, and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

b. If this facility chooses to use a condenser (BTEX elimination system) to control dehydrator emissions, then;

i. The condenser shall be operated at all times when gases are vented to it.

ii. The condenser must be equipped with a continuous temperature monitoring device that continuously monitors and records the dehydration still vent temperature.

iii. The condenser, temperature monitoring device and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

d) Monitoring and/or Recordkeeping Requirements

(1) This facility shall maintain records of the annual facility natural gas or hydrocarbon liquid throughput for each year as per 40 CFR 63.760(a).

(2) Where a flare is used to control the dehydration still vent, the permittee must:

a. Continuously monitor and record the presents of the flame;

b. Record all periods during which the automatic flare ignition system (pilot flame or electronic arc ignition system) was not working; and

c. Record all periods during which there was gas being vented to the flare but the flare was not lit.

(3) Where a condenser (BTEX Eliminator) is used to control the dehydration still vent, the permittee must;

a. Continuously monitor and record the temperature of the exit of the condenser; and

b. Record all periods of time when the condenser is not operating correctly to control the emissions from the dehydration still vent.

(4) If this facility is using the exemption for the annual average flow rate of natural gas to the TEG dehydration unit, this facility must either install and operate a monitoring instrument to directly measure and record the natural gas flow rate to the glycol dehydration unit or demonstrate to the Director's satisfaction that the actual annual average natural gas flow rate to the dehydration unit is less than 85,000 scm/day.

(5) If this facility is using the exemption for the actual average benzene emissions from the TEG dehydration unit, this facility must keep the record of the determination using either the GRI-GLYCalc™ model or directly measuring benzene using the appropriate methods identified in 40 CFR 63.772(a)(1).

e) Reporting Requirements.

(1) The annual facility natural gas or hydrocarbon liquid throughput for each year as per 40 CFR 63.760(a).

(2) The actual annual average flow rate of natural gas to the glycol dehydration unit; the actual annual average emissions of benzene; and shall identify the method used to demonstrate compliance.

(3) Where a flare is used to control the dehydration still vent, all periods of time during which the automatic flare ignition system was not functioning properly or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

(4) When a condenser (BTEX elimination system) is used to control the dehydration still vent, a report describing all periods of time when the continuous temperature monitoring device that continuously monitors and records the condenser vapor outlet temperature is not working and process gas is being vented to the condenser.

(5) If this facility is using the annual average flow rate of natural gas to the TEG dehydration unit exemption, a report describing the calculation/measurement of the actual annual average natural gas flow rate.

(6) If this facility is using the actual average benzene emissions from the TEG dehydration unit exemption, a report describing the results of either the GRI-GLYCalcTM model or directly measuring benzene using the appropriate methods identified in 40 CFR 63.772(a)(1).

(7) This facility shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is recommended that the PER be submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

[OAC 3745-15-03(B)(2) and (D)]

f) Testing Requirements

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

(1) <u>Emissions Limitation</u>:

Emissions from the glycol dehydration unit shall not exceed 5.0 tons of VOC (excludes methane and ethane) per year.

Applicable Compliance Method:

The permittee may determine the annual VOC (excludes methane and ethane) using the GRI-GLYCalc™ model, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc™ Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit(s) and may be determined using the procedures documented in the Gas Research Institute (GRI) report entitled ''Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions'' (GRI–95/0368.1);

Potential VOC and/or benzene emissions estimates shall be based on the maximum glycol circulation rate(s), in gallons per minute (gpm); the worst case pollutant concentrations from representative extended gas analyses of the inlet wet gas; and the maximum natural gas flow rate, as determined by 40 CFR 63.772(b)(1)(i); or for a new unit, potential emissions shall be estimated in accordance with 40 CFR 63.760(a) and increased by a factor of 1.2.

[40 CFR 63.765(b)(1) and/or (c)(3)], [40 CFR 63.771(c) and (d)], [40 CFR 63.772], [40 CFR 63.773(d)], and [OAC rule 3745-31-05(E)]

(2) Emissions Limitations:

16.2 tons of CO per rolling 12-month period

Applicable Compliance Method:

The emissions limitation for CO is based on using the AP-42 emission factor of 0.37 lb CO/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1, "Emission Factors for Flare Operations" and using the estimated burner rating of 10.0 MMBtu/hr. Estimated CO emissions shall be determined by the following calculations:

0.37 lb CO/MMBtu x 10.0 MMBtu/hr = 3.7 lbs CO/hr

3.7 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 16.2 tons CO/year.

(3) Emission Limitation:

2.8 tons of VOC/year

Applicable Compliance Method:

The emissions limitation for VOC is based on using the AP-42 emissions factor of 0.14 lb of hydrocarbon/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1 "Emission Factors for Flare Operations" excluding emissions of methane (55% per Table 13.5-2 "Hydrocarbon Composition of Flare Emissions") and using the estimated burner rating of 10 MMBtu/hr. Estimated VOC emissions shall be determined by the following calculation:

0.14 lb VOC/MMBtu x 45% x 10.0 MMBtu/hr = 0.63 lb VOC/hr

0.63 lb VOC/hr x 8760 hr/yr x 1 ton/2000 lbs = 2.8 tons VOC/year.

(4) Emissions Limitations:

3.0 tons of NOx/year

Applicable Compliance Method:

The emissions limitation for NOx is based on using the AP-42 emission factor of 0.068 lbNOx/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1, "Emission Factors for Flare Operations" and using the estimated burner rating of 10 MMBtu/hr. Estimated NOx emissions shall be determined by the following calculation:

0.068 lbNOx/MMBtu x 10.0 MMBtu/hr = 0.68 lbNOx /hr

0.68 lbNOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 3.0 tons NOx/year.

(5) Emission Limitations:

1.8 tons of $SO_2$/year

Applicable Compliance Method:

The $SO_2$ emissions limitation is based on a fuel gas with a maximum $H_2S$ content of 250 ppmv for sour gas.

Compliance with the ton per year $SO_2$ emissions limitation shall be determined by the following calculations:

10 MMBtu/hr x 1 scf/1020 Btu x 1 lb-mole/379.5 scf x 250 ppm $H_2S$ x 64 lb $SO_2$/lb-mole = 0.41 lb SO2/hr

0.41 lb $SO_2$/hr x 8760 hrs/year x 1 ton/2000 lbs = 1.8 tons $SO_2$/year.

(6) Emission Limitation

There shall be no visible emissions from the flare, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

Applicable Compliance Method

Compliance with the visible emissions limitation shall be determined in accordance with U.S. EPA Method 22 in Appendix A of 40 CFR Part 60.

[40 CFR 60.18(c)(1)] or [40 CFR 63.11(b)(4)]

g) Miscellaneous Requirements

(1) None.

**2. Emissions Units: Spark Ignition Internal Combustion Engines, P002**

**Operations, Property and/or Equipment Description:**

| | |
|---|---|
| P002 | One or multiple stationary natural gas-fired spark ignition (SI) internal combustion engines (ICE) with a combined total horsepower (HP) of no more than 1,800 HP for the site.*<br><br>Includes 2007 and later model year engines manufactured after the applicable effective date identified in 40 CFR 60.4230(a)(3) and engines manufactured before the NSPS effective date where compliance with the Part 60 Subpart JJJJ emissions standards for the same size engine can be demonstrated through stack testing. |

* In order to maintain the carbon monoxide (CO) emissions below major source thresholds, where the sum of the total HP of the SI ICE exceeds 1,300 HP, the engines shall have a manufacturing date of no earlier than January 1, 2011 for engines less than 500 HP or no earlier than July 1, 2010 for engines 500 HP or greater.

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) None.

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. | 40 CFR Part 60, Subpart JJJJ<br><br>In accordance with 40 CFR | Engines shall either be certified to the applicable Part 60 Subpart JJJJ emission standards and/or the exhaust emissions shall not exceed: |

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| | 60.4230, the engines in this emissions group are subject to the New Source Performance Standards (NSPS) for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE).<br><br>40 CFR 60.4233(e)<br><br>40 CFR 60.4231(a), (d), and (e)-mfg.<br><br>Table 1 to Part 60, Subpart JJJJ | the applicable emission standards for nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) as identified in Table 1 to Part 60, Subpart JJJJ; or<br><br>for engines less than or equal to 25 HP, the applicable standards from 40 CFR Part 90 or Part 1054; or<br><br>for engines greater than 25 HP and less than 100 HP, the applicable standards from Part 1048.<br><br>Where the total summation of the SI ICE HP is equal to or less than 1,300 HP, the natural gas engine emissions shall not exceed the worst-case emission standards for engines of 100 HP or greater from Table 1 to the subpart[3]:<br><br>2.0 grams of NOx per horsepower hour (2.0 g NOx/HP-hr) or 160 ppmvd at 15% $O_2$.;<br><br>4.0 grams of CO per horsepower hour (4.0 g CO/HP-hr) or 540 ppmvd at 15% $O_2$.; and<br><br>1.0 gram of VOC per horsepower hour (1.0 g VOC/HP-hr) or 86 ppmvd at 15% $O_2$;<br><br>Where the total summation of the SI ICE HP is greater than 1,300 HP, the natural gas engine emissions shall not exceed the 2nd level emission standards from Table 1 to the subpart:<br><br>1.0 grams of NOx per horsepower hour (2.0 g NOx/HP-hr) or 82 ppmvd at 15% $O_2$.;<br><br>2.0 grams of CO per horsepower hour (4.0 g CO/HP-hr) or 270 ppmvd at 15% $O_2$.; and<br><br>0.7 gram of VOC per horsepower hour (1.0 g VOC/HP-hr) or 60 ppmvd at 15% $O_2$.<br><br>See b)(2)c., d. and e. |
| b. | OAC rule 3745-17-11(B)(5) | Particulate Emissions (PE) shall not exceed 0.310 lb/MMBtu for stationary small internal combustion engines rated less than or equal to |

[3] Note: The worst case emission standards for natural gas-fired engines between 100 and less than 500 HP were used to establish the emissions limitation. However, each engine shall be required to meet the applicable emission standards under 40 CFR Part 60, Subpart JJJJ, based on the manufacture date and size engine, or based on the size engine in Table 1 to the subpart for pre-NSPS engines retrofitted with a control device.

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| | | 600 HP and 0.062 lb/MMBtu for stationary large internal combustion engines rated over 600 HP. |
| c. | OAC rule 3745-18-04 | The $SO_2$ emission rate from well site natural gas exceeds the limit for sweetened pipe-line quality fuel gas; therefore the $SO_2$ emissions limit shall be based on sour gas with a maximum $H_2S$ content of 250 ppmv. |
| d. | ORC 3704.03(T) | Combined exhaust emissions from all SI engines on site shall not exceed:<br>19.6 tons PE per rolling 12-month period;<br>25.1 tons NOx per rolling 12-month period;<br>50.2 tons CO per rolling 12-month period; and<br>12.5 tons VOC per rolling 12-month period. |
| e. | OAC rule 3745-17-07(A)(1) | Visible particulate emissions from the exhaust stack serving this emissions unit shall not exceed 20 percent opacity, as a six-minute average, except as specified by rule. |
| f. | OAC rule 3745-31-05(A)(3), as effective 11/30/01 | Compliance with any applicable limit found in 40 CFR Part 60, Subpart JJJJ, for pollutants less than ten tons per year, taking into account any controls.<br>Emissions of sulfur dioxide ($SO_2$) shall not exceed 2.6 tons/year based on a maximum $H_2S$ content of 250 ppmv for sour gas.<br>See b)(2)a. |
| g. | OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/06 | See b)(2)b. |
| h. | 40 CFR Part 60 Subpart JJJJ<br>40 CFR 60.4233 and<br>OAC 3745-31-05(F) | All SI ICE shall meet all applicable NSPS requirements where the model year is subject to these emission standards and all older model year engines shall be fitted with a control device (where required) and shall be demonstrated to meet the NSPS emission standards as applicable to 2007 and later model year engines of the same size/power. |

(2) Additional Terms and Conditions

a. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to OAC rule 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 Standard (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 these emission limitations/control measures no longer apply.

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

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the $SO_2$ emissions from this air contaminant source since the potential to emit for $SO_2$ are less than ten tons per year.

c. The stationary spark ignition (SI) internal combustion engine(s) (ICE) are subject to and shall be operated in compliance with the requirements of 40 CFR Part 60, Subpart JJJJ, standards of performance for stationary SI ICE.

[40 CFR 60.4230(a)]

d. The owner/operator of all SI ICE shall demonstrate compliance with the emissions standards identified in 40 CFR 60.4233 of Part 60, Subpart JJJJ in accordance with 40 CFR 60.4243(b).

[40 CFR 60.4233] and [40 CFR 60.4243(b)]

e. The gram per horsepower-hour emissions limitations are based on the emission standards from Table 1 of NSPS JJJJ for natural gas-fired engines. In order to maintain the carbon monoxide (CO) emissions below major source thresholds, where the sum of the total HP of the SI ICE exceeds 1300 HP, the facility SI engines shall have a manufacturing date of no earlier than January 1, 2011 for engines less than 500 HP or no earlier than July 1, 2010 for engines equal to or greater than 500 HP. However, each engine installed at the natural gas production site and subject to a more stringent standard, based on the model year and engine's size, must be demonstrated to comply with the applicable emissions standard established in 40 CFR 60.4233.

c) Operational Restrictions

(1) The stationary SI ICE shall be installed, operated, and maintained according to the manufacturer's recommendations or in accordance with the operator's Operation and

Maintenance (O&M) Plan and, to the extent practicable, in a manner consistent with good air pollution control practice for minimizing emissions. The permittee shall operate and maintain the stationary SI ICE to achieve the emission standards identified in 40 CFR 60.4233 over the entire life of the engine(s). The air-to-fuel ratio controllers shall be set by the operator according to the manufacturer's operations manual, to ensure proper operation of the engines and their control device (catalytic converter) and to minimize emissions.

[40 CFR 60.4234], [40 CFR 60.4243(b)], and [40 CFR 60.4243(g)]

(2) The summation of engine power from all the natural gas engines installed at the production facility site (following well completion) shall not exceed 1,300 HP; except where all of the engines have a manufacturing date of no earlier than January 1, 2011 for ICE less than 500 HP or no earlier than July 1, 2010 for ICE 500 HP or greater, the total engine power shall not exceed 1,800 HP if all of the engines can meet the 2$^{nd}$ level (more stringent) standards in Table 1 to Part 60, Subpart JJJJ.

d) Monitoring and/or Recordkeeping Requirements

(1) The following records shall be maintained for each spark ignition engine operating at the well site:

a. all notifications submitted to comply with and all documentation supporting compliance with Part 60 Subpart JJJJ;

b. all notifications submitted to comply with and all documentation supporting compliance with Part 60 Subpart ZZZZ;

c. records of all maintenance conducted on the engines;

d. for certified engines less than or equal to 100 HP, the certification from the manufacturer, documenting that the engine(s) meet(s) the emission standards identified in 40 CFR 60.4231 or for uncertified engines, the testing results from the initial and subsequent performance tests, as applicable, conducted to meet the requirements of 40 CFR 60.4243(b)(2)(i) or (ii); and

e. the information identified in 40 CFR Parts 90, 1048, 1054, and/or 1060 that is required to be provided by the manufacturer to the operator/owner, as applicable to the model year and horsepower of the engines.

The permittee or owner/operator (if leased) of the engines shall keep the above records and a maintenance plan for the engines, and shall maintain documentation that the engine is maintained and operated according the manufacturer's emission-related instructions.

[40 CFR 60.4245(a)] and [40 CFR 60.4243(a) and (b)]

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

[OAC 3745-15-03(B)(2) and (D)]

(2) The permittee shall identify in the PER:

a. each SI engine located (and operated) at the production site during the year;

b. the model year and horse power of each SI engine and the date of manufacturer if the total engine power exceeds 1,300 HP;

c. the date each uncertified SI engine was stack tested for compliance;

d. identification of each engine that did not meet the applicable emission standards identified in Part 60, Subpart JJJJ; and

e. for each engine not meeting the applicable emission standards, the number of hours of operation and information on the resolution to compliance.

(3) For each natural gas SI ICE not certified to the applicable emission standards identified in 40 CFR Part 60 Subpart JJJJ, and subject to the performance testing requirements of 40 CFR 60.4243(b)(2), the permittee shall submit a copy of the results of each performance test conducted to demonstrate compliance within 60 days after the test has been completed.

[40 CFR 60.4245(d)]

f) Testing Requirements

Compliance with the Emission Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods.

(4) The SI engines shall meet the applicable emissions standards identified in 40 CFR 60.4233. Engines greater than 100 HP shall not exceed the emission standards identified in Table 1 to Subpart JJJJ and engines less than 100 HP shall not exceed the applicable standards identified in 40 CFR 60.4231, all as applicable to the engine size and model year. In order to pass State modeling requirements, older engines that were manufactured before the effective date of the NSPS shall meet the emissions standards for the first model year engine subject to the NSPS standard, as applicable to the same size/power engine.

(5) For each natural gas engine purchased without an EPA certificate of conformity (most engines >25 HP), the permittee shall conduct or have conducted an initial performance test to demonstrate compliance with the NSPS standards for NOx, CO, and VOC; and for each engine greater than 500 HP, subsequent performance tests shall be conducted every 8,760 hours or 3 years, whichever comes first.

[40 CFR 60.4243(b)(2)]

(6) Emission Limitation:

Visible particulate emissions from the exhaust stack serving this emissions unit shall not exceed 20% opacity, as a six-minute average, except as specified by rule.

Applicable Compliance Method:

If required, compliance shall be determined through visible emission observations performed in accordance with U.S. EPA Reference Method 9 in 40 CFR, Part 60, Appendix A.

(7) Emissions Limitations:

Particulate Emissions (PE) shall not exceed 0.310 lb/MMBtu for small engines ≤ 600 HP; and 0.062 lb/MMBtu for large engines > 600 HP

19.6 tons PE/rolling 12-months

Applicable Compliance Method:

The maximum PE emissions limitation was established based on the worst-case limitation from OAC rule 3745-17-11(B)(5) and the maximum allowed total horsepower, calculated as follows:

0.310 lb PE/MMBtu x 8,000 Btu/HP-hr x 1800 HP = 4.46 lbs PE/hr

4.46 lb PE/hr x 8760 hrs/yr x 1 ton/2000 lbs = 19.6 tons PE/rolling 12-months.

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

[OAC 3745-17-11(B)(5)]

(8) Emissions Limitations:

2.0 grams NOx /HP-hr or 160 ppmvd at 15% $O_2$ for engines ≥ 100 HP or

1.0 grams NOx /HP-hr or 82 ppmvd at 15% $O_2$ for engines ≥ 100 HP where the total engine power is greater than 1,300 HP

25.1 tons NOx/rolling 12-months

Applicable Compliance Method:

The emission limitations are based on the exhaust emission standards identified in 40 CFR 60.4231(e). Compliance with the applicable g/HP-hrNOx standard shall be demonstrated through performance/stack testing, if not certified to the standard. The g/HP-hr limitations above are based on the emission standards from Table 1 to Part 60 Subpart JJJJ for engines 100 HP or larger. Compliance with the ton per year

NOxemissions limitation shall be determined by calculating the emissions from each non-emergency spark ignition engine located on the site using the applicable emission standards from Part 60 Subpart JJJJ.

Where the sum of the total HP of the facility SI ICE is no greater than 1,300 HP, the following calculations establish the pound per hour and ton per rolling 12-month emissions of NOx from the spark ignition engines covered in this permit:

2.0 g NOx/HP-hr x 1,300 HP x 1lb/454 g = 5.73 lbsNOx/hr

5.73 lbsNOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 25.1 tons NOx/rolling 12-months.

Where the sum of the total HP of the SI ICE exceeds 1,300 HP, the facility SI engines, having a manufacturing date of no earlier than January 1, 2011 for engines less than 500 HP or no earlier than July 1, 2010 for engines 500 HP or greater, the NOx emissions shall not exceed the following:

1.0 g NOx/HP-hr x 1,800 HP x 1lb/454 g = 3.96 lbsNOx/hr

3.96 lbsNOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 17.4 tons NOx/rolling 12-months.

When required, the permittee shall demonstrate compliance with the NOx limitation according to the requirements of 40 CFR 60.4244, using the applicable test methods in Table 2 to Part 60 Subpart JJJJ.

[40 CFR 60.4233(e)], [40 CFR 60.4243(b)(2)]. [40 CFR 60.4244], and [Table 1 to Part 60 Subpart JJJJ]

(9) Emissions Limitations:

4.0 grams CO/HP-hr or 540 ppmvd at 15% $O_2$ for engines ≥ 100 HP or

2.0 grams CO/HP-hr or 270 ppmvd at 15% $O_2$ for engines ≥ 100 HP where the total engine power is greater than 1,300 HP

50.2 tons CO/rolling 12-months

Applicable Compliance Method:

The emission limitations are based on the exhaust emission standards identified in 40 CFR 60.4231(e). Compliance with the applicable g/HP-hr CO standard shall be demonstrated through performance/stack testing, if not certified to the standard. The g/HP-hr limitations above are based on the emission standards from Table 1 to Part 60 Subpart JJJJ for engines 100 HP or larger. Compliance with the ton per year CO emissions limitation shall be determined by calculating the emissions from each non-emergency spark ignition engine located on the site using the applicable emission standards from Part 60 Subpart JJJJ.

Where the sum of the total HP of the facility SI ICE is no greater than 1,300 HP, the following calculations establish the pound per hour and ton per rolling 12-month emissions of CO from the spark ignition engines covered in this permit:

4.0 g CO/HP-hr x 1,300 HP x 1lb/454 g = 11.5 lbs CO/hr

11.5 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 50.2 tons CO/rolling 12-months.

Where the sum of the total HP of the SI ICE exceeds 1,300 HP, the facility SI engines, having a manufacturing date of no earlier than January 1, 2011 for engines less than 500 HP or no earlier than July 1, 2010 for engines 500 HP or greater, the CO emissions shall not exceed the following:

2.0 g CO/HP-hr x 1,800 HP x 1lb/454 g = 7.9 lbs CO/hr

7.9 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 34.7 tons CO/rolling 12-months.

When required, the permittee shall demonstrate compliance with the CO limitation according to the requirements of 40 CFR 60.4244, using the applicable test methods in Table 2 to Part 60 Subpart JJJJ.

[40 CFR 60.4233(e)], [40 CFR 60.4243(b)(2)]. [40 CFR 60.4244], and [Table 1 to Part 60 Subpart JJJJ]

(10) Emissions Limitations:

1.0 gram VOC/HP-hr or 86 ppmvd at 15% $O_2$ for engines ≥ 100 HP or

0.7 gram VOC/HP-hr or 60 ppmvd at 15% $O_2$ for engines ≥ 100 HP where the total engine power is greater than 1,300 HP

12.5 tons VOC/rolling 12-months

Applicable Compliance Method:

The emission limitations are based on the exhaust emission standards identified in 40 CFR 60.4231(e). Compliance with the applicable g/HP-hr VOC standard shall be demonstrated through performance/stack testing, if not certified to the standard. The g/HP-hr limitations above are based on the emission standards from Table 1 to Part 60 Subpart JJJJ for engines 100 HP or larger. Compliance with the ton per year VOC emissions limitation shall be determined by calculating the emissions from each non-emergency spark ignition engine located on the site using the applicable emission standards from Part 60 Subpart JJJJ.

Where the sum of the total HP of the facility SI ICE is no greater than 1,300 HP, the following calculations establish the pound per hour and ton per rolling 12-month emissions of VOC from the spark ignition engines covered in this permit:

1.0 g VOC/HP-hr x 1,300 HP x 1lb/454 g = 2.9 lbs VOC/hr

2.9 lbs VOC/hr x 8760 hrs/yr x 1 ton/2000 lbs = 12.5 tons VOC/rolling 12-months.

Where the sum of the total HP of the SI ICE exceeds 1,300 HP, the facility SI engines, having a manufacturing date of no earlier than January 1, 2011 for engines less than

500 HP or no earlier than July 1, 2010 for engines 500 HP or greater, the VOC emissions shall not exceed the following:

0.7 g VOC/HP-hr x 1,800 HP x 1lb/454 g = 2.8 lbs VOC/hr

2.8 lbs VOC/hr x 8760 hrs/yr x 1 ton/2000 lbs = 12.2 tons VOC/rolling 12-months.

When required, the permittee shall demonstrate compliance with the VOC limitation according to the requirements of 40 CFR 60.4244, using the applicable test methods in Table 2 to Part 60 Subpart JJJJ.

[40 CFR 60.4233(e)], [40 CFR 60.4243(b)(2)]. [40 CFR 60.4244], and [Table 1 to Part 60 Subpart JJJJ]

(11) Emission Limitation:

2.6 tons of $SO_2$/year

Applicable Compliance Method:

The $SO_2$ emissions limitation is based on a fuel gas with a maximum $H_2S$ content of 250 ppmv for sour gas.

Compliance with the ton per year $SO_2$ emissions limitation shall be determined by the following calculations:

1,800 HP x 8000 Btu/HP-hr x 1 scf/1020 Btu x 1 lb-mole/379.5 scf x 250 ppm $H_2S$ x 64 lb $SO_2$/lb-mole = 0.60 lb SO2/hr

0.60 lb $SO_2$/hr x 8760 hrs/year x 1 ton/2000 lbs = 2.6 tons $SO_2$/year.

g) Miscellaneous Requirements

(1) Replacement of or Installation of Additional Engines

The permittee may install additional stationary engines or replace existing engines at any time during the life of this permit as long as the following are met:

a. at any given time, the total horsepower of all natural gas engines in service at the site is no more than 1,800 HP;

b. all natural gas engines in service at the site meet the applicable NSPS emission standards as identified in the NSPS and this permit, and all applicable State or Federal rules;

c. the permittee maintains a list of all stationary natural gas engines used at the site; and

d. thepermittee continues to meet the qualifying criteria associated with the natural gas engines for this general permit.

(2) Stack Height of Stationary Natural Gas Engines

a. Any engine with greater or equal to 250 HP shall be equipped with an exhaust stack that is at least 20' above ground level.

b. Any engine with less than 250 HP shall be equipped with an exhaust stack that is at least 12' above ground level.

**3. Emissions Unit: Compression Ignition Engines, P003**

**Operations, Property and/or Equipment Description:**

| | |
|---|---|
| P003 | One or multiple stationary diesel-fired compression ignition (CI) (diesel) internal combustion engines (ICE), certified to meet the Tier 3 emission standards for diesel engines, with a combined total horsepower (HP) of no more than 250 HP for the site[4]. |

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) None.

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. | 40 CFR Part 60, Subpart IIII<br>40 CFR 60.4204(b)<br>40 CFR 60.4201(a)<br>Table 1 to 40 CFR 89.112, Tier 3 | The exhaust emissions from any compression ignition (CI) internal combustion engine (ICE) shall not exceed the appropriate Tier 3 emission standards identified in Table 1 to 40 CFR 89.112. The emission limitations are based on the following worst-case Tier 3 emission standards for engines greater than or equal to 50 HP:<br>0.40 gram PM/kW-hr; |

[4] This emissions unit includes stationary diesel engines used for production. It does not include various portable engines that are temporarily used on the site nor does it include engines that are exempt from permitting. For instance, any engines qualifying for the non-road exemption found in Ohio Administrative Code (OAC) paragraph 3745-31-03(A)(1)(pp) would not be covered by this permit.

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| | | 4.7 grams NOx + NMHC/kW-hr; and<br>5.0 grams CO/kW-hr.<br>See b)(2)c. |
| b. | 40 CFR 60.4207(b)<br>40 CFR 80.510(b) | The sulfur content of the diesel fuel burned in this engine shall not exceed 15 ppm or 0.0015% sulfur by weight.<br>See b)(2)c., c)(2), d)(1), and e)(2). |
| c. | 40 CFR 89.113 | Engine(s) subject to Part 60, Subpart IIII shall be certified by the manufacturer to the following opacity standards:<br>20% opacity during the acceleration mode;<br>15% opacity during the lugging mode; and<br>50% opacity during the peaks in either the acceleration or lugging modes. |
| d. | OAC rule 3745-18-06 | The $SO_2$ limitation established per this rule is less stringent than the limitation established in 40 CFR 80.510(b). |
| e. | OAC rule 3745-17-07(A)(1) | Visible particulate emissions from the exhaust stack serving this engine shall not exceed 20% opacity, as a six-minute average, except as specified by rule. |
| f. | OAC rule 3745-31-05(A)(3), as effective 11/30/01 | Emissions from all CI ICE combined shall not exceed:<br>0.72 ton particulate matter (PM) per year;<br>6.3 tons nitrogen oxides (NOx) per year;<br>9.0 tons carbon monoxide (CO) per year; and<br>2.15 tons volatile organic compounds (VOC) per year.<br>The requirements of this rule include compliance with the requirements of 40 CFR Part 60, Subpart IIII, for PM, NOx and CO.<br>See b)(2)a. |

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| g. | OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/06 | See b)(2)b. |
| h. | OAC rule 3745-17-11(B)(5) | The emission limitation specified by this rule is less stringent than the emission limitation established for PM pursuant to 40 CFR Part 60, Subpart IIII. |
| i. | 40 CFR Part 60 Subpart IIII<br>40 CFR 60.4202 | All CI ICE shall meet all applicable NSPS requirements where the model year is subject to these standards and older engines shall be fitted with a control device that demonstrates the Tier 3 standards are met. |

(2) Additional Terms and Conditions

a. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to OAC rule 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 Standard (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 these emission limitations/control measures no longer apply.

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

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the PM, NOx, CO, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for PM, NOx, CO, and VOC are less than ten tons per year.

c. The stationary compression ignition (CI) internal combustion engine (ICE) is subject to and shall be operated in compliance with the requirements of 40 CFR Part 60, Subpart IIII, the standards of performance for stationary CI ICE.

[40 CFR 60.4200(a)]

d. The stationary CI ICE has been or shall be purchased certified by the manufacturer to emission standards as stringent as those identified in 40 CFR 60.4201(a) and found in Tier 3 of 40 CFR 89.112, Table 1, for engines greater than or equal to 50 horsepower (37 kilowatt) and less than or equal to 250 horsepower (186 kilowatt), and to the opacity standards found in 40 CFR 89.113.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], [40 CFR 60.4203], and [40 CFR 60.4211(c)]

e. The quality of the diesel fuel burned in this engine 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 0.0015 pound sulfur dioxide/MMBtu actual heat input; and 15 ppm sulfur or 0.0015% sulfur by weight;

ii. a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent; and

iii. a heating value greater than 135,000 Btu/gallon.

Compliance with the above-mentioned specifications shall be determined by using the analytical results provided by the permittee or oil supplier for each shipment of oil.

[40 CFR 60.4207(b)] and [40 CFR 80.510(b)]

c) Operational Restrictions

(1) The stationary CI ICE shall be installed, operated, and maintained according to the manufacturer's emission-related written instructions over the entire life of the engine; and the permittee shall only change those emission–related settings that are allowed by the manufacturer. The CI ICE must also be installed and operated to meet the applicable requirements from 40 CFR Part 89, Control of Emissions from New and In-use Non-road CI ICE and Part 1068, the General Compliance Provisions for Engine Programs. The permittee shall operate and maintain the stationary CI ICE to achieve the Tier 3 emission standards in Table 1 to 40 CFR 89.112, as required per 40 CFR 60.4204.

[40 CFR 60.4206] and [40 CFR 60.4211(a)]

(2) Diesel fuel burned in the CI, ICE shall not exceed the standards for sulfur as specified by 40 CFR 80.510(b), i.e., the maximum sulfur content of diesel fuel shall not exceed 15 ppm or 0.0015% sulfur by weight.

[40 CFR 60.4207(b)] and [40 CFR 80.510(b)]

(3) If the stationary CI internal combustion engine is equipped with a diesel particulate filter to comply with the emission standards in 40 CFR 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the permittee when the high backpressure limit of the engine is approached.

[40 CFR 60.4209(b)]

(4) The summation of engine power from all the diesel engines installed at the production facility site (following well completion) shall not exceed 250 HP.

d) Monitoring and/or Recordkeeping Requirements

(1) For each shipment of oil received for burning in this engine, the permittee shall maintain records of the total quantity of the diesel oil received and the oil supplier's (or permittee's) analyses for sulfur content, in parts per million (40 CFR 80.510) or percent by weight. The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR 80.580, using the appropriate ASTM methods. These records shall be retained for a minimum of 5 years and shall be available for inspection by the Director or his/her representative.

[for 40 CFR 60.4207(b)]

(2) The permittee shall maintain the manufacturer's certification or compliant test data for non-certified engines, to the applicable Tier 3 emission standards in Table 1 of 40 CFR 89.112 at a central location for all facility ICE and it shall be made available for review upon request. If the manufacturer's certification is not kept on site, the permittee shall maintain a log for the location of each ICE and it shall identify the agency-assigned emissions unit number, the manufacturer's identification number, and the identification number of the certificate. The permittee or owner/operator (if leased) of the engines shall keep a maintenance plan and records of the maintenance conducted on each engine, to include documentation that the engine is maintained and operated according the manufacturer's emission-related instructions.

[40 CFR 60.4211]

(3) The permittee shall maintain a record of the diesel fuel burned in this ICE during each calendar year. The fuel oil usage can be calculated at the end of each year using the best method available to estimate the annual throughput which might include, but shall not be limited to: any flow meter installed on the engine, records of the volume of diesel fuel oil received with each delivery, the fuel oil levels recorded from the diesel storage tank, and/or the recorded or estimated hours of operation along with the manufacture's documentation of the estimated fuel flow rate.

(4) If the stationary CI internal combustion engine is equipped with a diesel particulate filter to comply with the emission standards in 40 CFR 60.4204, the permittee shall keep records of the date, time, and any corrective action(s) taken in response to the notification from the backpressure monitor, that the high backpressure limit of the engine has been approached or exceeded.

[40 CFR 60.4214(c)]

(5) The permittee shall maintain a record of visible emission checks for the stack of diesel engines. The record shall be documented during maintenance operations.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

[OAC 3745-15-03(B)(2) and (D)]

(2) The permittee shall identify in the PER each CI engine located (and operated) at the production site during the year, the horse power of each, the date each uncertified SI engine was stack tested for compliance, and any uncertified engine that did not meet the applicable emission limits identified in Part 60, Subpart IIII.

(3) The permittee shall identify in the annual permit evaluation report any period of time (date and number of hours) that the quality of oil burned in this engine did not meet the requirements established in 40 CFR 80.510(b), based upon the required fuel records. If non-compliant fuel oil is burned in the engine, a record of the amount, date, and reason for the deviation shall be maintained and reported in the PER identified above.

For [40 CFR 60.4207(b)] and [40 CFR 80.510(b)]

(4) If the stationary CI internal combustion engine is equipped with a diesel particulate filter to comply with the emission standards in 40 CFR 60.4204, the permittee shall include in the PER any records of the date, time, and any corrective action(s) taken in response to the notification from the monitor that the backpressure has been approached or exceeded.

[for 40 CFR 60.4214(c)]

f) Testing Requirements

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

(1) <u>Emission Limitation:</u>

Manufacturer's certification requirements related to opacity include:

20% opacity during the acceleration mode;

15% opacity during the lugging mode; and

50% opacity during the peaks in either the acceleration or lugging modes.

Applicable Compliance Method:

The CI ICE subject to the standards in 40 CFR Part 60, Subpart IIII shall be purchased certified by the manufacturer to the opacity standards of 40 CFR 89.113.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], and [40 CFR 89.113]

(2) Emission Limitation:

Visible particulate emissions from the exhaust stack serving this engine shall not exceed 20 %opacity, as a six-minute average, except as specified by rule.

Applicable Compliance Method:

If required, compliance shall be determined through visible emission observations performed in accordance with U.S. EPA Reference Method 9 in 40 CFR, Part 60, Appendix A.

[OAC rule 3745-17-07(A)(1)]

(3) Emission Limitation:

0.40 gram PM/kW-hr

0.72 ton PM/year

Applicable Compliance Method:

Compliance with the applicable g/kW-hr emissions standard shall be based on the manufacturer's certification to the standards applicable to each engine and by maintaining the engine according to the manufacturer's specifications. The g/kW-hr standard above is the worst-case Tier 3 exhaust emission standards from Table 1 of 40 CFR 89.112 for diesel engines between 50 and 300 horsepower (37 and 225 kilowatts). An uncertified engine shall either be stack tested following installation or test data shall be submitted to demonstrate compliance with the limit.

Compliance with the ton per year PM emissions limitation shall be determined by the following calculations:

0.40 g PM/kw-hr x kw/1.341 HP x 1 lb/454g x 250 HP = 0.164 lb PM/hr

0.164 lb PM/hr x 8760 hrs/yr x 1 ton/2000 lbs = 0.72 ton PM/year.

If required, the permittee shall demonstrate compliance with the emission limitations through performance tests conducted in accordance with the provisions in f)(8)below.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], [40 CFR 60.4211(c)], and [40 CFR 60.4212(a) and (c)]

(4) Emissions Limitations:

4.7 grams NOx + NMHC/kW-hr

6.3 tons NOx/year

Applicable Compliance Method:

Compliance with the applicable g/kW-hr emissions standard shall be based on the manufacturer's certification to the standards applicable to each engine and by maintaining the engine according to the manufacturer's specifications. The g/kW-hr standard above is the worst-case Tier 3 exhaust emission standards from Table 1 of 40 CFR 89.112 for diesel engines between 50 and 300 horsepower (37 and 225 kilowatts). An uncertified engine shall either be stack tested following installation or test data shall be submitted to demonstrate compliance with the limit.

For the purpose of reporting emissions, where the limitation is for NOx + NMHC, the NOx and VOC limitations shall be calculated using a ratio of 74.6% NOx to 25.4% VOC:*

4.7 g NOx+NMHC/kW-hr x 74.6% NOx* = 3.5 grams NOx/kW-hr.

Compliance with the ton per year NOx emissions limitation shall be determined by the following calculations:

3.5 g NOx/kw-hr x kw/1.341 HP x 1 lb/454g x 250 HP = 1.44 lbsNOx/hr

1.44 lbsNOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 6.3 tons NOx/year.

If required, the permittee shall demonstrate compliance with the emission limitations through performance tests conducted in accordance with the provisions in f)(8)below.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], [40 CFR 60.4211(c)], and [40 CFR 60.4212(a) and (c)]

(5) Emissions Limitations:

5.0 grams CO/kW-hr

9.0 tons CO/year

Applicable Compliance Method:

Compliance with the applicable g/kW-hr emissions standard shall be based on the manufacturer's certification to the standards applicable to each engine and by maintaining the engine according to the manufacturer's specifications. The g/kW-hr standard above is the worst-case Tier 3 exhaust emission standards from Table 1 of 40 CFR 89.112 for diesel engines between 50 and 300 horsepower (37 and 225 kilowatts). An uncertified engine shall either be stack tested following installation or test data shall be submitted to demonstrate compliance with the limit.

Compliance with the ton per year CO emissions limitation shall be determined by the following calculations:

5.0 g CO/kw-hr x kw/1.341 HP x 1 lb/454g x 250 HP = 2.05 lbs CO/hr

2.05 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 9.0 tons CO/year.

If required, the permittee shall demonstrate compliance with the emission limitations through performance tests conducted in accordance with the provisions in f)(8)below.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], [40 CFR 60.4211(c)] and [40 CFR 60.4212(a) and (c)]

(6) Emissions Limitations:

4.7 grams NOx + NMHC/kW-hr

2.15 tons VOC/year

Applicable Compliance Method:

Compliance with the emission limitations shall be based on the manufacturer's certification and by maintaining the engine according to the manufacturer's specifications. The g/kW-hr limitation is the worst-case Tier 3 exhaust emission standards from Table 1 of 40 CFR 89.112 for diesel engines between 50 and 300 horsepower (37 and 225 kilowatts). An uncertified engine shall either be stack tested following installation or test data shall be submitted to demonstrate compliance with the limit.

For the purpose of reporting emissions, where the limitation is for NOx + NMHC, the NOx and VOC limitations shall be calculated using a ratio of 74.6% NOx to 25.4% VOC*:

4.7 g NOx+NMHC/kW-hr x 25.4% NMHC* = 1.19 gram VOC/kW-hr.

Compliance with the ton per year VOC emissions limitation shall be determined by the following calculations:

1.19 g VOC/kw-hr x kw/1.341 HP x 1 lb/454g x 250 HP = 0.49 lb VOC/hr

0.49 lb VOC/hr x 8760 hrs/yr x 1 ton/2000 lbs = 2.15 tons VOC/year.

If required, the permittee shall demonstrate compliance with the emission limitations through performance tests conducted in accordance with the provisions in f)(8)below.

[40 CFR 60.4204(b)], [40 CFR 60.4201(a)], [40 CFR 60.4211(c)], and [40 CFR 60.4212(a) and (c)]

*This ratio is based upon the linear relationship of NOx to NMHC from Table 1 of Subpart IIII, Table 1 from 40 CFR 89.112, to Tables 4, 5, and 6 from 40 CFR 1039.102.

(7) Emissions Limitation:

Sulfur content 15 ppm or ≤ 0.0015% by weight sulfur

Applicable Compliance Method:

Compliance shall be demonstrated through the record keeping requirements for the sulfur content of each shipment of diesel oil received. If meeting the standards in 40 CFR 80.510(b), this calculates to approximately 0.0015lb $SO_2$/MMBtu.

[40 CFR 60.4207(b)] and [40 CFR 80.510(b)]

(8) If it is determined by Ohio EPA that a compliance demonstration is required through performance testing, i.e., the engine is not certified or not operated in accordance with the manufacturer's emission-related instructions, it shall be conducted using one of the following test methods or procedures:

a. in accordance with 40 CFR 60.4212, conduct the exhaust emissions testing using the in-use testing procedures found in 40 CFR Part 1039, Subpart F, measuring the emissions of the regulated pollutants as specified in 40 CFR Part 1065; or

b. in accordance with 40 CFR 60.4213, conduct exhaust emissions testing using the test methods identified in Table 7 to Subpart IIII of Part 60.

If demonstrating compliance through the in-use testing procedures in 40 CFR Part 1039, Subpart F, exhaust emissions from the stationary CI ICE shall not exceed the "not to exceed" (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112, determined from the following equation:

NTE requirement for each pollutant = 1.25 x STD

Where:

STD = The standard specified for the pollutant in 40 CFR 89.112.

[40 CFR 60.4212(a) and (c)]

g) Miscellaneous Requirements

(1) Replacement of or Installation of Additional Engines

a. The permittee may install additional stationary compression ignition engines or replace existing stationary compression ignition engines at any time during the life of this permit as long as the following are met:

i. at any given time, the total horsepower of all stationary compression ignition engines in service at the site is no more than 250 HP;

ii. all stationary compression ignition engines in service at the site meet all applicable NSPS emission standards identified in the NSPS and this permit, and all applicable State or Federal rules;

iii. the permittee maintains a list of all stationary compression ignition engines used at the site; and

iv. thepermittee continues to meet the qualifying criteria associated with the stationary compression ignition engines for this general permit.

(2) Stack Height of Stationary Compression Ignition Engines

a. Each stationary compression ignition engine shall be equipped with an exhaust stack that is at least 12' above ground level.

**4. Emissions Unit: Flare/Combustor, P004**

**Operations, Property and/or Equipment Description:**

| | |
|---|---|
| P004 | Flare/Combustor with a maximum capacity heat input of no more than 250 MMBtu/hr and operated at no more than 10 MMBtu per hour except during an emergency[5] |

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. None.

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) | Volatile Organic Compound (VOC) emissions shall not exceed 51.3[6] tons per rolling 12-month period.<br><br>Carbon monoxide (CO) emissions shall not exceed 16.2 tons per rolling 12-month period. |

[5] This emissions unit applies when a facility chooses to use a flare (combustor) to control VOCs emitted from the entire facility (including, but not limited to, flash vessel/storage tanks, truck loading for water and/or petroleum liquids, and the dehydrator, not just the dehydrator). If a separate flare is used to control dehydrator emissions, then the flare requirements found in the dehydrator emissions unit terms govern the dehydrator flare.

[6] The 51.3 tons/year emissions are the same emissions as listed in the flash vessel/storage tank(s) emissions unit (T001).

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| b. | OAC rule 3745-31-05(A)(3), as effective 11/30/01 | Nitrogen Oxide (NOx) emissions shall not exceed 3.0 tons/year.<br>Sulfur Dioxide ($SO_2$) emissions shall not exceed 1.8 tons/year<br>See b)(2)a. |
| c. | OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/06 | See b)(2)b. |
| d. | Part 63, Subpart HH, National Emission Standards for hazardous air pollutants (NESHAP) from Oil and Natural Gas Production Facilities | Compliance with the applicable portions of 40 CFR Part 63, Subpart HH. Any final amendments to this rule will supersede any previous Subpart HH requirement(s) in this permit. |

(2) Additional Terms and Conditions

a. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to OAC rule 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 Standard (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 these emissions limitations/control measures no longer apply.

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

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the PE, NOx, and $SO_2$ emissions from this air contaminant source since the uncontrolled potential to emit for PE, NOx, and $SO_2$ are less than ten tons per year.

c) Operational Restrictions

(1) If this facility does not qualify for the dehydrator exemption found in 40 CFR Part 63.764(e), then this facility must comply with all applicable operational restrictions found in 40 CFR Part 63, Subpart HH.

(2) The flare shall be operated with a flame present at all times when gases are vented to it.

(3) An automatic flame ignition system shall be installed.

(4) If using a pilot flame ignition system, the presence of a pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame. A pilot flame shall be maintained at all times in the flare's pilot light burner. If the pilot flame goes out and does not relight, then an alarm shall sound.

(5) If using an electric arc ignition system, the arcing of the electric arc ignition system shall pulse continually and a device shall be installed and used to continuously monitor the electric arc ignition system.

(6) Any flare, auto ignition system, and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

(7) This flare/combustor shall operate at no more than 10 MMBtu/hr heat input at all times except:

a. For times when a malfunction occurs such that excess gas must be safely disposed of through the flare/combustor, or

b. For times when an alternative well is being drilled or fractured and the gas must be safely disposed of through the flare/combustor.

d) Monitoring and/or Recordkeeping Requirements

(1) If this facility does not qualify for the dehydrator exemption found in 40 CFR Part 63.764(e), then this facility must comply with all applicable monitoring and/or recordkeeping requirements found in 40 CFR Part 63, Subpart HH.

(2) The permittee shall:

a. Continuously monitor and record the presents of the flame;

b. Record all periods during which the automatic flare ignition system (pilot flame or electronic arc ignition system) was not working; and

c. Record all periods during which there was gas being vented to the flare but the flare was not lit.

(3) The permittee shall maintain a record of all periods of time (date and number of hours) during which the combustor is burning collected gases at a heat input greater than 10 MMBtu per hour, along with a description of the emergency and/or the reason that the flare/combustor was used at greater than 10 MMBtu/hr.

e) Reporting Requirements

(1) If this facility does not qualify for the dehydrator exemption found in 40 CFR Part 63.764(e), then this facility must comply with all applicable reporting requirements found in 40 CFR Part 63, Subpart HH.

(2) As part of the annual Permit Evaluation Report (PER), this facility shall submit a report describing all periods of time when the pilot flame or electronic arc ignition system is not working and process gas is being vented to it. The reports shall include the date, time, and duration of each such period.

(3) As part of the annual Permit Evaluation Report (PER), this permittee shall submit a report identifing all periods of time during which the combustor/flare was operated at greater than 10 MMBtu per hour heat input rate. The reports shall include the date, time, and duration of each such period and a description of the reason the flare was used at more than 10 MMBtu per hour heat input rate.

(4) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

[OAC 3745-15-03(B)(2) and (D)]

f) Testing Requirements

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

(1) <u>Emission Limitation</u>:

16.2 tons of CO per rolling 12-month period

<u>Applicable Compliance Method</u>:

The emissions limitation for CO is based on using the AP-42 emission factor of 0.37 lb CO/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1, "Emission Factors for Flare Operations" and using the normal operation rate of 10 MMBtu/hr. Estimated CO emissions shall be determined by the following calculations:

0.37 lb CO/MMBtu x 10 MMBtu/hr = 3.7 lbs CO /hr

3.7 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 16.2 tons CO/rolling 12-month period.

(2) <u>Emission Limitation:</u>

51.3 tons of VOC/rolling 12-month period

Applicable Compliance Method:

See the compliance method described in the flash vessel/storage tank(s) emissions unit (T001).

(3) Emission Limitation:

3.0 tons of NOx/year

Applicable Compliance Method:

The emissions limitation for NOx is based on using the AP-42 emission factor of 0.068 lbNOx/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1, "Emission Factors for Flare Operations" and using the normal operation rate of 10 MMBtu/hr. Estimated NOx emissions shall be determined by the following calculation:

0.068 lbNOx/MMBtu x 10 MMBtu/hr = 0.68 lbNOx /hr

0.68 lbNOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 3.0 tons NOx/year.

(4) Emission Limitations:

1.8 tons of $SO_2$/year

Applicable Compliance Method:

The $SO_2$ emissions limitation is based on a fuel gas with a maximum $H_2S$ content of 250 ppmv for sour gas.

Compliance with the ton per year $SO_2$ emissions limitation shall be determined by the following calculations:

10 MMBtu/hr x 1 scf/1020 Btu x 1 lb-mole/379.5 scf x 250 ppm $H_2S$ x 64 lb $SO_2$/lb-mole = 0.41 lb SO2/hr

0.41 lb $SO_2$/hr x 8760 hrs/year x 1 ton/2000 lbs = 1.8 tons $SO_2$/year.

g) Miscellaneous Requirements

(1) None.

## 5. Emissions Unit Group: Equipment/Pipeline Leaks, F001

| | |
|---|---|
| F001 | Ancillary equipment[7] and Associated equipment: compressors, pumps, piping, pneumatic controllers, gas-water/condensate/oil separators, etc.<br><br>Equipment/pipeline leaks from valves, flanges, pressure relief devices, open end valves or lines, and pump and compressor seals in VOC or wet gas service. |

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 in this permit 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 in this permit are enforceable under state law only, with the exception of those listed below, which are federally enforceable.

a. None.

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 of Volatile Organic Compounds (VOC) shall not exceed 10.6 tons per rolling 12-month period total from fugitive equipment leaks, which shall be repaired as soon as possible following detection. |

(2) Additional Terms and Conditions

a. None.

[7] "Ancillary Equipment" means the same as defined in 40 CFR Part 63, Subpart HH. The Subpart HH definition is being used for this permit but note that the equipment leak standards found in Subpart HH do not apply for this permit because this permit is for an "area source" and the equipment leak standards do not apply to area sources.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Leak Detection and Repair Program

a. The permittee shall develop and implement a leak detection and repair program designed to monitor and repair leaks from ancillary equipment and compressors covered by this permit. This leak detection and repair program shall include the following elements:

i. An initial and then annual inspection of the ancillary and associated equipment and compressors shall be conducted to determine if a leak exists. Leaks shall be determined through the use of an analyzer meeting U.S. EPA Method 21, 40 CFR Part 60, Appendix A.

ii. The analyzer shall be operated and maintained following the instrument manufacturer's operation and maintenance instructions.

iii. A leak shall be determined if the instrument reading is equal to or greater than 10,000 ppm total VOC or the "leak detected" instrument reading required per any applicable rule.

iv. Documentation that includes the following:

(a) The date the inspection was conducted;

(b) The name of the employee conducting the leak check;

(c) The identification of any component that was determined to be leaking; and

(d) The date the component was repaired and determined to no longer be leaking.

b. The records associated with the leak detection and repair program shall be maintained for at least 5 years and shall be made available to the Director or his representative upon verbal or written request.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

[OAC 3745-15-03(B)(2) and (D)]

f) Testing Requirements

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

(1) Emissions Limitation:

Emissions of VOC shall not exceed 10.6 tons per rolling 12-month period total from fugitive equipment leaks.

Applicable Compliance Method:

The annual VOC limitation is the estimated potential-to-emit based upon the maximum number of components and type of service (gas/vapor and light liquid) expected at the natural gas production site. The appropriate emissions factors from U.S. EPA's "Protocol for Equipment Leak Emission Estimates", Table 2-4, for Oil and Gas production Operations (a conservative estimate), shall be used to demonstrate compliance with the 12 month rolling limit. The facility's potential emissions from ancillary and associated equipment shall be documented from the summation of the following calculations:

Component Type # of components x emission factor x % VOC* = lb VOC/hr

In Gas/Vapor Service

Number of connectors x 0.000441 lb/hr x 50% VOC = lb VOC/hr

Number of valves x 0.00992 lb/hr x 50% VOC = lb VOC/hr

Number of flanges x 0.00086 lb/hr x 50% VOC = lb VOC/hr

Number of compressor seals x 0.01940 lb/hr x 50% VOC = lb VOC/hr

Number of relief valves x 0.01940 lb/hr x 50% VOC = lb VOC/hr

Number of high bleed pneumatic controllers x 0.0194 lb/hr x 50% VOC = lb VOC/hr

In Light Liquid Service

Number of connectors x 0.000463 lb/hr x 100% VOC = lb VOC/hr

Number ofvalves x 0.00551 lb/hr x 100% VOC = lb VOC/hr

Number offlanges x 0.00024 lb/hr x 100% VOC = lb VOC/hr

Number ofpump seals x 0.0287 lb/hr x 100% VOC = lb VOC/hr

Number of relief valves x 0.01653 lb/hr x 100% VOC = lb VOC/hr

Number of high bleed pneumatic controllers x 0.01653 lb/hr x 100% VOC = lb VOC/hr

The total summation of VOC emissions per hour shall be multiplied by 8760 hours per year and divided by 2000 pounds to calculate the estimated rolling ton per year fugitive VOC emissions for the demonstration of compliance.

As an alternative to using the above emission factors to calculate VOC emissions, the facility may use facility specific VOC information for site specific emission factors.

* The % VOC for Gas/Vapor service was based on the highest percent VOC in gas analyses submitted by representative facilities.

g) Miscellaneous Requirements

(1) None.

**6. Emissions Unit: Flash Vessel/Storage Tanks and truck loading for water and/or petroleum liquids: T001**

**Operations, Property and/or Equipment Description:**

| | |
|---|---|
| T001 | One or multiple vertical fixed roof flash vessel/storage tank(s) with a combined capacity of no more than 252,000 gallons (6000 barrels), where each flash vessel/storage tank has an individual capacity of no more than 39,894 gallon (950 barrel). |

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. None.

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) | Total VOC emissions (including breathing losses, tank working losses, flash losses and truck loading losses) from all tanks combined at the site shall not exceed 51.3 tons per rolling 12-month period.<br><br>Use of add-on control (vapor recovery, flare or equivalent) to control tank emissions as needed to comply with the annual VOC emission limitations. If a flare is used, it must meet the requirements detailed in emissions unit P004. |

| | Applicable Rules/Requirements | Applicable Emissions Limitations/Control Measures |
|---|---|---|
| | | Use of vapor balance while loading trucks.<br><br>Use of submerged or bottom fill on all tanks. |
| b. | 40 CFR Part 60 Subpart Kb | See b)(2)a. |
| c. | OAC Rule 3745-21-09(L)(2)(b) | See b)(2)b. |

(2) Additional Terms and Conditions

a. This emission unit is exempt from the control requirements of 40 CFR 60.110(b) because it is a vessel with a design capacity less than or equal to 1,589.874 $m^3$ used for petroleum or condensate stored, processed, or treated prior to custody transfer.

b. The permittee shall not place, store, or hold in this fixed roof tank any petroleum liquid other than crude oil and condensate where there is no custody transfer, unless such tank is designed or equipped in accordance with the requirements of paragraph (L)(1) of OAC rule 3745-21-09 with an internal floating roof or equivalent control approved by the Director, prior to storing such petroleum liquids.

c) Operational Restrictions

Total capacity of all tanks storing condensate and/or condensed water shall not exceed 252,000 gallons (6000 barrels) combined, excluding any exempt or de minimis tanks.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall record the annual throughput, in gallons per year. The permittee shall keep records of U.S. EPA TANKS software program and/or other process simulation program calculations used to demonstrate annual storage tank and process vent emissions based. These records shall be maintained for at least 5 years and shall be made available to the Director or his representative upon verbal or written request.

(2) The permittee shall maintain a record of the data and calculations of the loading loss factors referenced in paragraph f)(1).

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency 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. It is

recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

f) Testing Requirements

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

(2) Emissions limitation:

Total VOC emissions from all tanks (including breathing losses, tank working losses, flash tank losses and truck loading losses) shall not exceed 51.3 tons per rolling 12-month period.

Applicable Compliance Method:

Annual emissions of breathing losses and working losses from all storage tanks shall be calculated using the total petroleum liquid throughput for the 12-month period reported based on the use of a current version of the U.S. EPA's TANKS software program for storage tank working/breathing losses and either the TANKS software program or other process simulation programs such as, but not limited to, HYSYS or ProMax, to calculate VOC flash losses. If the emissions are controlled by a flare or other combustion device, then the potential emissions may be calculated by applying a 95% combustion efficiency.

Truck loading emissions shall be based on multiplying a loading loss factor (L*) by the annual petroleum liquid throughput in gallons per year divided by 1000.

The loading loss factor was derived using AP-42, Section 5.2, "Loading Loss Equation".

*L = 12.46 SPM/T

For uncontrolled emissions, compliance with the emissions limitation above shall be established by multiplying an uncontrolled loading loss factor ($L_{UC}$) by the annual throughput of petroleum liquids in gallons per year divided by 1,000.

$L_{UC}$ = 12.46 SPM/T

For controlled emissions, compliance with the emissions limitation above shall be established by multiplying a controlled loading loss factor ($L_C$) by the annual throughput of petroleum liquids in gallons per year divided by 1,000.

$L_C$ = 12.46 SPM/T [1 – Eff/100], where

Eff = 100% x 95% = 95 %

Where:

L = loading loss, pounds per 1000 gallons loaded (Q)

S = saturation factor, 0.6 for submerged fill

P = vapor pressure of liquid loaded, pounds per square inch absolute

M = molecular weight of vapor

T = temperature of bulk liquid ($^{o}$R)

MW = 66

P @ 61$^{o}$F = 6.02

Submerged Fill Factor = 0.6

Temperature = 520.67 $^{o}$R

g) Miscellaneous Requirements

(1) None