GENERAL PERMIT 12.2 TEMPLATE

High Volume Horizontal Hydraulic Fracturing, OIL AND GAS WELL SITE PRODUCTION OPERATIONS

B. Facility-Wide Terms and Conditions

The following are the terms and conditions for a General PTIO to be issued to a **non-Title V** facility

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) B.6. and B.8.

   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) B.9. and B.10.

2. The Ohio EPA has determined that this facility is subject to the requirements of 40 CFR Part 63 Subpart ZZZZ, the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines; and Part 63 Subpart HH, the National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities . At this time, the Ohio EPA is not accepting delegation for area sources subject to the Maximum Achievable Control Technology NESHAP (MACT) rules. The requirements of these rules, that are applicable to the area source(s) for hazardous air pollutants (HAP) identified in this permit, shall be enforceable by U.S. EPA. The complete requirements of this rule (including the Part 63 General Provisions) may be accessed via the Internet from the Electronic code of Federal Regulations (e-CFR) website http://www.ecfr.gov/ or by contacting the appropriate Ohio EPA District Office or Local Air Agency.

3. Multiple emissions units contained in this permit must comply with various federal New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) standards. The complete NSPS and MACT 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 must comply with the applicable requirements of 40 CFR Part 60 Subparts OOOO, JJJJ, and IIII and 40 CFR Part 63 Subparts HH and ZZZZ as they apply to the emissions source.

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 shall be subject to the requirements of this General Permit during the time they are located at this site, provided that the emission unit(s) meets the qualifying criteria.

6. The requirements of this permit do not 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.

10. If the determination that the facility is not a major source is based on actual emissions of 5 tons per year or more of any single HAP or 12.5 tons per year or more of a combination of HAP, the permittee shall update the facility's major source determination within 1 year of the prior determination and each year thereafter, using gas composition data measured during the preceding 12 months of operation. Only HAP emissions from glycol dehydration units and storage vessels shall be aggregated for major source determination at the production field facility (facility located prior to the point of custody transfer).

[40 CFR 63.760(c)] and [40 CFR 63.761]

11. Emission units and any required control and monitoring equipment shall be operated in a manner consistent with safety and good air pollution control practices for minimizing emissions.

[40 CFR 63.764(j)], [40 CFR 60.4243(b)], and [40 CFR 60.4211(g)]

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 condenser or BTEX (benzene, toluene, ethyl benzene, xylene) elimination system with condenser, and/or flare (less than 10 MMBtu/hr) or a 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. 1.b)(1)d.

(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. 1.b)(1)e. and 1.b)(1)f.

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	For Total Organic Compounds (TOC), total hazardous air pollutants (total HAP), or benzene, compliance with the applicable control requirements of 40 CFR Part 63, Subpart HH. Emissions from a flare used to control emissions from the glycol dehydration unit shall not exceed: 0.25 ton Nitrogen Oxides (NOx) per month averaged over a 12-month rolling period; 0.23 ton VOC per month averaged over a 12-month rolling period; and

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.15 ton Sulfur dioxide (SO_2) per month averaged over a 12-month rolling period. See b)(2)a.
b.	OAC rule 3745-31-05(A)(3)(a)(ii)	See b)(2)b.
c.	ORC 3704.03(T)	Carbon Monoxide (CO) emissions from a flare used as a control device for the dehydrator shall not exceed 1.35 tons CO per month averaged over a 12-month rolling 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 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(s) 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 and control requirements found in 40 CFR Part 63, Subpart HH, including the requirements for a flare.

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

a. If a flare is used to control emissions from the dehydrator:

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 permittee 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 permittee 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 a condenser (or BTEX elimination system) is used to control emissions from the dehydrator:

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) The permittee shall maintain records of the annual facility natural gas or hydrocarbon liquid throughput or a record of the maximum potential annual throughput rate attainable, based on the physical and operational design of the unit, in accordance with 40 CFR 63.760(a).

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

a. continuously monitor the presence of the flame;

b. record all periods during which the automatic flare ignition system (pilot flame or electronic arc ignition system) or thermocouple 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 (or BTEX elimination system) is used to control the dehydration still vent, the permittee must:

a. continuously monitor and record the vapor outlet temperature 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) For each triethylene glycol (TEG) dehydration unit, the permittee shall document the method of compliance as follows:

a. if the permittee is using the exemption for the annual average flow rate of natural gas to the TEG dehydration unit, the permittee shall 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, in accordance with 40 CFR 63.772(b)(1); or

b. if the permittee is using the exemption for the actual average benzene emissions from the TEG dehydration unit, the permittee shall keep the record of the determination (including the test methods and data used to support it) using either the GRI-GLYCalc™ model or by directly measuring benzene using the appropriate methods identified in 40 CFR 63.772(a)(1), in accordance with 40 CFR 63.772(b)(2); or

c. if the permittee does not meet one of the exemptions identified in 40 CFR 63.764(e) and is <u>not</u> located in a Urbanized Area (UA) plus offset and Urban Cluster (UC) boundary (as defined in 40 CFR 63.761), the permittee may (instead of meeting the control requirements) keep the record of the calculation for the optimal circulation rate (or alternate circulation rate as allowed using GRI-GLYCalc™ model) and records documenting this circulation rate is not exceeded in accordance with 40 CFR 63.764(d)(2); or

d. if the permittee does not meet one of the exemptions identified in 40 CFR 63.764(e) and is located in a Urban Area (UA) plus offset and Urban Cluster (UC) boundary (as defined in 40 CFR 63.761), the permittee shall comply with the control requirements specified in 40 CFR 63.765 and the monitoring and recordkeeping requirements identified in 40 CFR 63.764(d)(1) to demonstrate compliance.

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. the annual facility natural gas or hydrocarbon liquid throughput for the year of the report, in accordance with 40 CFR 63.760(a);

b. identification of the kind of liquid glycol used in the dehydrator during the year of the report, e.g., ethylene glycol, diethylene glycol, or triethylene glycol*;

c. if the permittee is using triethylene glycol and meeting the exemption for the flow rate of natural gas to the TEG dehydration unit, the actual annual average natural gas flow rate to the TEG dehydration unit; and either the calculations and/or method of measurement of this flow rate or a statement that this flowrate was based on the maximum design capacity of the unit;

d. if the permittee is using triethylene glycol and meeting the exemption for benzene emissions, the actual annual average emissions of benzene from the TEG dehydration unit; and if these emissions were determined using the GRI-GLYCalc™ model, the method used to determine the benzene concentration entered into the model, and/or identification of the method used for direct measurement;

e. if the permittee is using triethylene glycol and the area source is not located in an UA plus offset and UC boundary and does not meet one of the exemptions identified in 40 CFR 63.764(e), the calculation for the optimal circulation rate and the method of measurement for the gas flowrate (MMscf/day) and inlet/outlet water content (lbs/MMscf), and a statement as to whether or not the optimal circulation rate was exceeded, to include the date, duration, and the non-compliant circulation rate measured;

f. if the permittee is using triethylene glycol and the area source is located in an UA plus offset and UC boundary and does not meet one of the exemptions identified in 40 CFR 63.764(e), the method of control that was used to demonstrate

compliance, the results of the compliance demonstration, and a statement as to whether or not the selected compliance option was met;

g. 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, to include the date, time, and duration of each such period of time;

h. where a condenser (or BTEX elimination system) is used to control the dehydration still vent, all periods of time when the continuous temperature monitoring device for the condenser vapor outlet temperature is not working or is not continuously recording the vapor outlet temperature when process gas is being vented to the condenser; and

i. where the triethylene glycol dehydrator does not meet one of the exemptions in 40 CFR 63.764(e) or is not demonstrating compliance by documenting and maintaining the optimum glycol circulation rate as required in 40 CFR 63.764(d)(2), the flare or condenser used to demonstrate compliance shall meet all of the requirements of Part 63 Subpart HH.

* if not using triethylene glycol, the information in “c” through “i” is not required

[40 CFR 63.764(d) and (e)], [40 CFR 63.765], and [40 CFR 63.772(a) and(b)]

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:

For total TOC, total HAP, or benzene, compliance with the applicable control requirements of 40 CFR Part 63, Subpart HH.

Applicable Compliance Method:

The permittee may determine the annual total TOC (excludes methane and ethane), total HAP, or benzene emissions using the appropriate methods identified in 40 CFR 63.772 and/or GRI-GLYCalc^{TM} model, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc^{TM} 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 TOC, total HAP, 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. The permittee may also determine the estimated annual

VOC emission through direct measurement using Method M25A or Method 18, both from Appendix A of Part 60.

[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) Emission Limitation from a flare used to control the dehydrator:

1.35 tons of CO per month averaged over a 12-month rolling 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

16.2 tons CO ÷ 12 months = 1.35 tons CO/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(3) Emission Limitation from a flare used to control the dehydrator:

0.23 ton of VOC per month averaged over a 12-month rolling period

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

2.8 tons VOC ÷ 12 months = 0.23 ton VOC/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(4) Emission Limitation from a flare used to control the dehydrator:

0.25 ton of NOx per month averaged over a 12-month rolling period

Applicable Compliance Method:

The emissions limitation for NOx is based on using the AP-42 emission factor of 0.068 lb NOx/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 lb NOx/MMBtu x 10.0 MMBtu/hr = 0.68 lb NOx /hr

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

3.0 tons NOx ÷ 12 months = 0.25 ton NOx/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(5) Emission Limitation from a flare used to control the dehydrator:

0.15 ton of SO_2 per month averaged over a 12-month rolling period

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

1.8 tons SO_2 ÷ 12 months = 0.15 ton SO_2/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(6) Emission Limitation:

Where the flare is used to demonstrate compliance with Part 63, Subpart HH, 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 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 1,000 HP for the site.* 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 effective date of the NSPS, where compliance with the Part 60 Subpart JJJJ emissions standards for the same size engine can be met by retrofitting the engine with a control device and demonstrated through stack testing.

* In order to maintain the carbon monoxide (CO) emissions below major source thresholds, where the sum of the total horsepower (HP) of the spark ignition (SI) engines exceeds 500 HP, the SI engines rated at or over 100 HP may be required to meet more stringent standards for CO than is applicable to the engine.

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) 2.b)(1)a.

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 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 the

	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). 40 CFR 60.4233(e) 40 CFR 60.4231(a), (d), and (e)-mfg. Table 1 to Part 60, Subpart JJJJ	following emission limitations: 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 for engines less than or equal to 25 HP, the applicable standards from 40 CFR Part 90 or Part 1054; or for engines greater than 25 HP and less than 100 HP, the applicable standards from Part 1048. Where the total summation of the SI ICE HP is equal to or less than 500 HP, the natural gas engine emissions together shall not exceed the worst-case emission standards for engines of 100 HP or greater from Table 1 to the subpart[1]: 2.0 grams of NOx per horsepower hour (2.0 g NOx/HP-hr); 4.0 grams of CO per horsepower hour (4.0 g CO/HP-hr); and 1.0 gram of VOC per horsepower hour (1.0 g VOC/HP-hr); In order to maintain CO emissions below major source thresholds, where the total summation of the SI ICE HP is greater than 500 HP, the natural gas engine emissions together shall not exceed the following: 2.0 grams of NOx per horsepower hour (2.0 g NOx/HP-hr); 2.0 grams of CO per horsepower hour (2.0 g CO/HP-hr); and 1.0 gram of VOC per horsepower hour (1.0 g VOC/HP-hr). See b)(2)c., d. and e.
b.	OAC rule 3745-17-11(B)(5) ORC 3704.03(T)	Particulate Emissions (PE) shall not exceed 0.310 lb/MMBtu for stationary small internal combustion engines rated less than or equal to

[1] Note: 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 where required, shall meet the Subpart JJJJ Table 1 standards or the limits identified in this permit by retrofitting pre-NSPS engines 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 3745-17-07(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.
d.	OAC rule 3745-18-06(G)	Pursuant to OAC rule 3745-18-06(A), this stationary internal combustion engine is exempt from the sulfur dioxide (SO_2) emission limitation specified by this rule during any calendar day in which natural gas is the only fuel burned.
e.	ORC 3704.03(T)	Compliance with the applicable g/HP-hr limits from 40 CFR Part 60, Subpart JJJJ for NOx and CO.
f.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	Compliance with the applicable g/HP-hr limit found in 40 CFR Part 60, Subpart JJJJ for VOC. 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 40 CFR 60.4233 and 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.
i.	OAC 3745-31-05(F)	4.4 lbs NOx/hr from all SI engines combined.

(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 and VOC emissions from this air contaminant source since the potentials to emit for SO_2 and VOC 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 horsepower (HP) of the spark ignition (SI) engines exceeds 500 HP, the SI engines rated at or over 100 HP shall meet the CO limits identified in the Testing Section of this permit. 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 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)]

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 63 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, identified by the model year, horse power, and the date of manufacturer of each engine;

b. a statement as to whether each engine was purchased certified by the manufacturer, in accordance with the Subpart JJJJ, i.e., the manufacturer has provided a warranty for the emissions when the engine was first sold;

c. a statement as to whether each engine was operated and maintained in accordance with the manufacturers emission-related instructions;

d. the date each uncertified SI engine was tested for compliance with the applicable emission standards identified in Part 60 Subpart JJJJ; and

e. identification of each engine that did not meet the applicable emission standards identified in 40 CFR 60.4233 and/or this permit, the number of hours each such engine was in operation while not in compliance, the pollutant limitation(s) that were exceeded, and information on the date and resolution of 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.

(1) The SI engines shall meet the applicable emissions standards identified in 40 CFR 60.4233 and/or the applicable emission limits required in this permit. 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, as required per 40 CFR 60.4233, all as applicable to each engine's horsepower and model year. In order to maintain the facility below major source thresholds and significant impact levels, older engines that were manufactured before the effective date of the NSPS shall be retrofitted with controls that can demonstrate the emission limits established in this permit are met.

(2) 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)]

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

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.

<u>Applicable Compliance Method</u>:

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)]

(4) <u>Emissions Limitations</u>:

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

Applicable Compliance Method:

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)]

(5) Emissions Limitations:

2.0 grams NOx /HP-hr for engines ≥ 100 HP; and/or

the combination of SI engines shall be calculated to not exceed 4.4 lbs NOx/hour, based on the summation of the emission stack test results and/or the pound per hour NOx emissions calculated from the emission rate certified by the manufacturer.

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 NOx 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 short term and ton per year NOx emissions limitation shall be determined for each non-emergency spark ignition engine located on the site using the applicable compliance methods identified in Part 60 Subpart JJJJ. The combination of SI engines together shall be calculated to not exceed 4.4 lbs NOx/hour, based on the summation of the emission stack test results and/or the pound per hour NOx emissions calculated from the emission rate certified by the manufacturer.

The following calculations establish the pound per hour emissions of NOx from the spark ignition engines covered in this permit:

2.0 g NOx/HP-hr x 1,000 HP x 1lb/454 g = 4.4 lbs NOx/hr

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]

(6) Emissions Limitations:

4.0 grams CO/HP-hr for engines ≥ 100 HP; or

2.0 grams CO/HP-hr for engines ≥ 100 HP where the total engine power is greater than 500 HP; and/or

the combination of SI engines shall be calculated to not exceed 4.4 lbs CO/hour, based on the summation of the emission stack test results and/or the pound per hour CO emissions calculated from the emission rate certified by the manufacturer.

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 short term and ton per year CO emissions limitation shall be determined for each non-emergency spark ignition engine located on the site using the applicable compliance methods identified in Part 60 Subpart JJJJ. The combination of SI engines together shall be calculated to not exceed 4.4 lbs CO/hour, based on the summation of the emission stack test results and/or the pound per hour CO emissions calculated from the emission rate certified by the manufacturer.

Where the sum of the total HP of the facility SI ICE is no greater than 500 HP, the following calculations establish the pound per hour emissions of CO from the spark ignition engines covered in this permit:

4.0 g CO/HP-hr x 500 HP x 1lb/454 g = 4.4 lbs CO/hr

Where the sum of the total HP of the SI ICE exceeds 500 HP, an average CO limit between 4.0 grams/HP-hr and 2.0 grams/HP-hr shall be required in order to meet the 4.4 lbs/hour CO limitation established in this permit. The average emissions of CO (in grams/HP-hr) shall be calculated as follows:

$$\text{Average g CO/HP-hr} = \sum_{n=1}^{n} [\text{g/HP-hr} \times \text{HP}] / \text{total HP}$$

Where:

g/HP-hr = the standard to which each natural gas engine is certified

HP = the horsepower of each individual natural gas engine

total HP = the total horsepower or summation of the horsepower of each natural gas engine

n = number of natural gas engines at the well site

The following calculations establish the maximum pound per hour emissions of CO from the spark ignition engines covered in this permit where the summation of the horsepower exceeds 500 HP, and where the average emissions of CO is maintained at or below 2.0 grams/HP-hr:

2.0 g CO/HP-hr x 1,000 HP x 1lb/454 g = 4.4 lbs CO/hr

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]

(7) Emissions Limitations:

1.0 gram VOC/HP-hr for engines ≥ 100 HP

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 short term and ton per year VOC emissions limitation shall be determined for each non-emergency spark ignition engine located on the site using the applicable compliance methods identified in Part 60 Subpart JJJJ.

The following calculations establish the pound per hour emissions of VOC from the spark ignition engines covered in this permit:

1.0 g VOC/HP-hr x 1,000 HP x 1lb/454 g = 2.20 lbs VOC/hr

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]

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 1,000 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. the permittee 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) with a combined total horsepower (HP) of no more than 250 HP for the site[2], and that are either certified to meet the Tier 3 emission standards (from 40 CFR 60.89.112 Table 1) for diesel engines or retrofitted with a control device that demonstrates each engine meets the Tier 3 standards.

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) 3.b)(1)a.

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 40 CFR 60.4204(b) 40 CFR 60.4201(a) 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:

[2] 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.

[2] Note: The worst case emission standards for diesel-fired engines less than 300 HP were used to establish the emissions limitation. However, each engine shall be required to meet the applicable Tier 3 emission standards (or Tier 2 standards for engines <50 HP) from Table 1 of 40 CFR 89.112.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.40 gram PM/kW-hr; 4.7 grams NOx + NMHC/kW-hr; and 5.0 grams CO/kW-hr. See b)(2)c.
b.	40 CFR 60.4207(b) 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. 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: 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.
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	Compliance with the applicable gram/kW-hr limits found in 40 CFR Part 60, Subpart IIII for PM, NOx + NMHC, and CO. See b)(2)a.
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 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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		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 each ICE during each calendar year. The diesel fuel usage shall be calculated using the best method available to estimate the annual fuel consumption of each engine, which might include, but are not be limited to: a 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:

a. each CI engine located (and operated) at the production site during the year, to include the year of manufacture and/or year rebuilt, the horse power;

b. a statement as to whether each engine was purchased certified by the manufacturer, in accordance with the Subpart IIII, i.e., the manufacturer has provided a warranty for the emissions when the engine was first sold;

c. a statement as to whether each engine was operated and maintained in accordance with the manufacturers emission-related instructions;

d. the date each uncertified SI engine was tested for compliance with the Tier 3 emission standards from 40 CFR 89.112;

e. identification of any uncertified engine that did not meet the applicable Tier 3 emission standards, to include the horse power and year of manufacture and/or year rebuilt; and

f. any period of time that the quality of oil burned in each engine did not meet the requirements established in 40 CFR 80.510(b), based upon the required fuel records, to include the amount burned, the engine combusting it, the date(s), and the date the non-compliant fuel was purchased*.

* if the fuel oil is purchased before 10/1/10, the amendments of 1/30/13 allow the fuel to be used until depleted

[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 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.

<u>Applicable Compliance Method</u>:

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) <u>Emission Limitation:</u>

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:

Visible emission checks shall be conducted following the completion of maintenance operations. 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

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 appropriate limit based on the horsepower.

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

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 appropriate limit based on the horsepower.

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.

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

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 appropriate limit based on the horsepower.

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

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 appropriate limit based on the horsepower.

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.

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 $\leq$ 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 0.0015 lb 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. the permittee 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: Enclosed or Open Flare/Combustion Device, P004

Operations, Property and/or Equipment Description:

P004	Enclosed or Open Flare(s)/Combustion Device(s) with a maximum combined capacity heat input of no more than 250 MMBtu/hr and operated at no more than 32 MMBtu per hour combined heat input from all the sources vented to the combustion device(s), except during an emergency[3]

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. 4.b)(1)d. and 4.b)(1)e.

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)	For VOC and where applicable, compliance with the applicable control requirements of 40 CFR Part 60, Subpart OOOO, by having a designed minimum control efficiency of 95% for an enclosed flare/combustor. Carbon monoxide (CO) emissions shall not exceed 4.32 tons per month averaged over a 12-month rolling period.
b.	OAC rule 3745-31-05(A)(3), as	Nitrogen Oxide (NOx) emissions shall not

[3] This emissions unit applies when a facility chooses to use a flare/combustion device 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). 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.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	effective 11/30/01	exceed 0.79 ton per month averaged over a 12-month rolling period. Sulfur Dioxide (SO_2) emissions shall not exceed 0.48 ton per month averaged over a 12-month rolling period. 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 Control/operational requirements applicable to area source TEG dehydration units not meeting one of the exemptions found in 40 CFR 63.764(e).	For a triethylene glycol dehydration unit subject to the standards, compliance with the applicable portions of 40 CFR Part 63, Subpart HH. Design and operate the enclosed flare/combustion device in accordance with the requirements of 40 CFR 63.771(d)(1), i.e., reduce the mass content of either TOC or total HAP, in the gases vented to it (from the closed vent system), by 95% by weight or greater; or reduce the concentration of TOC or total HAP to less than or equal to 20 ppm by volume on a dry basis corrected to 3% oxygen, in accordance with 40 CFR 63.772(e); or design the open flare in accordance with 40 CFR 63.11(b).
e.	Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution Control requirements applicable to each storage vessel constructed, modified, or reconstructed after 8/23/11 with potential VOC emissions equal to or greater than 6 tons/year.	For a storage vessels subject to the standards, compliance with the applicable portions of 40 CFR Part 60, Subpart OOOO. By the applicable compliance date, design and operate an enclosed combustion device in accordance with the requirements of 40 CFR 60.5412(d)(1) to reduce the mass content of VOC by 95% by weight or greater; or install a combustion control device that's model has been tested by the manufacturer in accordance with 40 CFR 60.5413(d); or install an open flare designed in accordance with 40 CFR 60.18(b).
f.	40 CFR 60.5412(d)(1)(iii)	If required to install controls in accordance with 40 C FR 60.5393, an enclosed combustion device must be operated with no visible emissions except for periods not to exceed a total of 1 minute in any 15 minute period, conducting Method 22 once every calendar month.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	40 CFR 60.5413(e)(3)	If demonstrating compliance using a combustion control device that is performance tested by the manufacturer, in accordance with 40 CFR 60.5413(d), the combustion device must be operated with no visible emissions except for periods not to exceed a total of 2 minutes in any 1 hour of operation, conducting Method 22 once per calendar quarter.

(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. Pit flaring is prohibited.

c) Operational Restrictions

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

(2) An automatic flame ignition system shall be installed to meet one of the following requirements:

a. 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; or

b. 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.

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

(4) If the dehydrator does not qualify for one of the exemptions found in 40 CFR Part 63.764(e) or if it has been determined that any storage vessel emits 6 tons or more of VOC per year, the enclosed flare/combustion device must be designed and operated to reduce VOC, TOC, or total HAP, as applicable, by 95% by weight; or the concentration of TOC or Total HAP, as applicable, to 20 ppm by volume on a dry basis and corrected to 3% oxygen, in accordance with the applicable rule; or the open flare shall be designed and operated in accordance with 40 CFR 63.11(b) or 40 CFR 60.18(b).

(5) This flare/ combustion device shall operate at no more than 32 MMBtu/hr heat input at all times except:

a. when a malfunction occurs, e.g., when excess gas must be safely disposed of by venting it to the flare/combustion device; or

b. for repair pressure blow-downs; or

c. when another well is being drilled or fractured and the gas must be safely disposed of by venting it to the flare/combustion device.

d) Monitoring and/or Recordkeeping Requirements

(1) If the permittee is using the flare/combustion device to demonstrate compliance with 40 CFR 63.771(d) for the TEG dehydrator or to demonstrate compliance with 40 CFR 60.5412(d) for each storage vessel calculated to have VOC emission equal to or exceeding 6 tons per year, the permittee shall maintain the appropriate records to demonstrate that the enclosed flare/combustion device is designed and operated to reduce VOC, TOC, or total HAP by 95% by weight; or the concentration of TOC or Total HAP to 20 ppm by volume on a dry basis and corrected to 3% oxygen, all in accordance with the applicable rules; or shall maintain the records required to demonstrate that the open flare is designed and operated in accordance with 40 CFR 63.11(b) or 40 CFR 60.18(b), as applicable per federal rules.

(2) The permittee shall:

a. continuously monitor the presence of the flame;

b. record all periods during which the automatic flare ignition system (pilot flame or electronic arc ignition system) or thermocouple was not working and gas was being vented to the flare/combustion device; and

c. record all periods of time during which gas was being vented to the flare/combustion device and there was no flame.

(3) The permittee shall maintain a record of all periods of time (date and number of hours) during which the flare/combustion device 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 the heat input was greater than 10 MMBtu/hr.

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) If the permittee is using an enclosed flare/combustion device to demonstrate compliance with 40 CFR 63.771(d) for the TEG dehydrator or to demonstrate compliance with 40 CFR 60.5412(d)(1) for each storage vessel calculated to have VOC emission equal to or exceeding 6 tons per year, the permittee shall submit the results of the compliance demonstration, conducted in accordance with the applicable subpart, in the PER.

(3) If the permittee is using an open flare to demonstrate compliance, the permittee shall submit all visible emission readings, heat content determinations, flowrate measurements, and exit velocity determinations made during the compliance or reporting period, as applicable by rule.

(4) The permittee shall identify in the PER:

a. all periods of time when the pilot flame or electronic arc ignition system is not working when process gas is being vented to it, including the date, time, and duration of each such period; and

b. all periods of time during which the flare/combustion device was operated at greater than 32 MMBtu per hour heat input rate, including the date, time, and duration of each such period, and a description of the reason why the heat input exceeded 32 MMBtu per hour.

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>:

4.32 tons CO/month averaged over a 12-month rolling 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 32 MMBtu/hr. Estimated CO emissions shall be determined by the following calculations:

0.37 lb CO/MMBtu x 32 MMBtu/hr = 11.84 lbs CO /hr

11.84 lbs CO/hr x 8760 hrs/yr x 1 ton/2000 lbs = 51.86 tons CO/year

51.86 tons CO ÷ 12 months = 4.32 tons CO/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(2) Emission Limitation:

For VOC and where applicable, compliance with the applicable control requirements of 40 CFR Part 60, Subpart OOOO, by having a designed minimum control efficiency of 95% for an enclosed flare/combustor.

Applicable Compliance Method:

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

(3) Emission Limitation:

0.79 ton NOx/month averaged over a 12-month rolling period

Applicable Compliance Method:

The emissions limitation for NOx is based on using the AP-42 emission factor of 0.068 lb NOx/MMBtu from Chapter 13.5 for Industrial Flares, Table 13.5-1, "Emission Factors for Flare Operations" and using the normal operation rate of 32 MMBtu/hr. Estimated NOx emissions shall be determined by the following calculation:

0.068 lb NOx/MMBtu x 32 MMBtu/hr = 2.176 lb NOx /hr

2.176 lb NOx/hr x 8760 hrs/yr x 1 ton/2000 lbs = 9.53 tons NOx/year

9.53 tons NOx ÷ 12 months = 0.79 ton NOx/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(4) Emission Limitations:

0.48 ton SO_2/month averaged over a 12-month rolling period

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:

32 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 = 1.32 lbs SO2/hr

1.32 lb SO_2/hr x 8760 hrs/year x 1 ton/2000 lbs = 5.8 tons SO_2/year

5.8 tons SO_2 ÷ 12 months = 0.48 ton SO_2/month averaged over a 12-month rolling period

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

(5) Visible Emissions Limitation for an enclosed combustion control device used to demonstrate compliance with Part 60 Subpart OOOO:

An enclosed combustion device used to demonstrate compliance must be operated with no visible emissions except for periods not to exceed a total of 1 minute in any 15 minute period, conducting Method 22 once every calendar month.

[40 CFR 60.5412(d)(1)(iii)]

OR

If demonstrating compliance using a combustion control device that is performance tested by the manufacturer, in accordance with 40 CFR 60.5413(d), the combustion device must be operated with no visible emissions except for periods not to exceed a total of 2 minutes in any 1 hour of operation, conducting Method 22 once per calendar quarter.

[40 CFR 60.5413(e)(3)]

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 60.5412(d)(1)(iii)] [40 CFR 60.5413(e)(3)] and [40 CFR 60.5413(a)(1)]

g) Miscellaneous Requirements

(1) Any final amendments to Part 63 Subpart HH and/or Part 60 Subpart OOOO will supersede any previous Subpart HH or Subpart OOOO requirement(s) in this permit.

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

EU ID	Operations, Property and/or Equipment Description
F001	Ancillary equipment[4] and Associated equipment: compressors, pumps, piping, pneumatic controllers, inlet separators, gas-water/condensate/oil separators, etc. 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. 5.b)(1)b.

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)	Develop and implement a site-specific leak detection and repair program for ancillary equipment as described in paragraph 5.c)(2).
b.	40 CFR Part 60 Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution. 40 CFR 63.5365(d);	Each natural gas-driven pneumatic controller designed and operated to have a bleed rate less than or equal to 6 standard cubic feet per hour (scf/hr) and maintained in accordance with the manufacturer's instructions, shall not be considered an affected facility, subject to Part 60 Subpart

[4] "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.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	40 CFR 60.5390; and 40 CFR 60.5410(d)	OOOO. Each pneumatic controller constructed, modified, or reconstructed on or after 10/15/13, located between the wellhead and a natural gas processing plant, and designed to have a bleed rate equal to or greater than 6 scf/hr is an affected facility subject to the requirements of Part 60 Subpart OOOO. Each pneumatic controller affected facility that is constructed after 8/23/11 and is subject to these standards shall be tagged with the month and year of installation.
c.	OAC 3745-31-05(F)	Emissions of Volatile Organic Compounds (VOC) shall not exceed 10.56 tons per year from fugitive equipment leaks.

(2) Additional Terms and Conditions

a. None

c) Operational Restrictions

(1) Pneumatic Controller Restrictions

Unless it can be demonstrated that the pneumatic controller needs to have a higher bleed rate based on functional needs in accordance with 40 CFR 60.5390(a), each natural gas-driven pneumatic controller affected facility installed, modified, or reconstructed on or after 10/15/13 and located between the wellhead and the point of custody transfer to an oil pipeline or a natural gas transmission line or storage facility, must be designed and operated with a bleed rate less than or equal to 6 standard cubic feet per hour (6 scf/hr).

[40 CFR 60.5390(c)(1), (d), and (e)], [40 CFR 60.5365(d)], [40 CFR 60.5410(d)], and [40 CFR 60.5415(d)(1)]

(2) Ancillary Equipment Leak Detection and Repair Program

The permittee shall develop and implement a leak detection and repair program designed to monitor and repair leaks from ancillary equipment covered by this permit, including each pump, compressor, pressure relief device, connector, valve, flange, vent, cover, any bypass in the closed vent system, and each storage vessel. This program shall meet the following requirements:

a. Leaks shall be detected by the use of either a “Forward Looking Infra Red” (FLIR) camera or an analyzer meeting U.S. EPA Method 21 of 40 CFR Part 60, Appendix A.

b. An initial monitoring shall be completed within 90 days of startup and quarterly thereafter for a period of four consecutive quarters (1 year).

c. If following the initial four consecutive quarters, less than or equal to 2.0% of the ancillary equipment are determined to be leaking during the most recent quarterly monitoring event, then the frequency of monitoring can be reduced to semi-annual.

d. If following two consecutive semi-annual periods, less than 2.0% of the ancillary equipment are determined to be leaking during the most recent semi-annual monitoring event, then the frequency of the monitoring can be reduced to annual.

e. If more than or equal to 2.0% of the ancillary equipment are determined to be leaking during any one of the semi-annual or annual monitoring events, then the frequency of monitoring shall be returned to quarterly.

f. The program shall require the first attempt at repair within five (5) calendar days of determining a leak.

g. The program shall require that the leaking component is repaired within 30 calendar days after the leak is detected.

h. The program shall allow for the delayed repair of a leaking component following the language found in 40 CFR 60.5416(c)(5).

i. The program shall following the Monitoring and Record Keeping requirements described in paragraph 5.d) of this permit.

(3) In the event that a leak or defect is detected in the cover, closed vent system, process equipment, or control device, the permittee shall make a first attempt at repair no later than 5 calendar days after the leak is detected. Repair shall be completed no later than 30 calendar days after the leak is detected as allowed in 40 CFR 60.5416(c)(4). Any delay of repair of a leak or defect shall meet the requirements of 40 CFR 60.5416(c)(5).

[40 CFR 60.5416(c)(4) and (5)], [40 CFR 60.5415(e)(3)], and [ORC 3704.03(T)]

d) Monitoring and/or Recordkeeping Requirements

(1) Pneumatic Controller Monitoring and Record Keeping

a. Each natural gas-driven pneumatic controller affected facility installed or reconstructed on or after 8/23/11, located between the wellhead and natural gas processing plant shall be tagged with the month and year of installation, reconstruction, or modification and with information that can identify or trace the records for the manufacturer's design specifications.

b. The following records shall be maintained for each natural gas-driven pneumatic controller installed at the facility after 8/23/11:

i. records of the date installed or reconstructed, the location and/or equipment each controller is servicing, and the manufacturer specifications;

ii. if applicable, the records needed to demonstrate why the operations require the use of a pneumatic controller with a bleed rate greater than 6 scf/hr and the functional basis for requiring the higher bleed rate; or

iii. if installed on or after 10/15/13**,** records of the manufacturer's specification indicating that the pneumatic controller is designed to have a natural gas bleed rate less than or equal to 6 scf/hr; or

iv. if the pneumatic controller has been installed on or after 8/23/11 and before 10/15/13, the manufacturer's designed bleed rate; and

v. where a higher bleed rate has not been demonstrated to be needed, the records of any deviations from the 6 scf/hr bleed rate for each pneumatic controller installed on or after 10/15/13.

c. Once a gas-driven pneumatic controlled has been documented to have a bleed rate less than or equal to 6 scf/hr, it is no longer subject to the requirements of Part 60 Subpart OOOO. The manufacturer's specifications for the pneumatic controller and/or other records demonstrating compliance or exemption from the requirements should be maintained until the well site is closed.

[40 CFR 60.5390(c) and (f)], [40 CFR 60.5410(d)], [40 CFR 60.5415(d)(3)], [40 CFR 60.5420(c)(4)], and [40 CFR 60.5365(d)]

(2) Ancillary Equipment Leak Detection and Repair Program Monitoring and Record Keeping for Programs Utilizing FLIR Camera's

a. Leaks shall be determined by visually observing each ancillary component through the FLIR camera to determine if leaks are visible.

b. The following information shall be recorded during each leak inspection:

i. the date the inspection was conducted;

ii. the name of the employee conducting the leak check;

iii. the identification of any component that was determined to be leaking;

iv. the date the first attempt to repair the component was made;

v. the reason the repair was delayed following the language found in 40 CFR 60.5416(c)(5);

vi. the date the component was repaired and determined to no longer be leaking;

vii. the total number of components that are leaking; and

viii. the percentage of components leaking, determined as the sum of the number of components for which a leak was detected, divided by the total number of ancillary components capable of developing a leak, and multiplied by 100.

c. The permittee shall maintain records that demonstrate the FLIR camera is operated and maintained in accordance with the manufacturer's operation and maintenance instructions.

d. The records from each inspection and the dates each leak is detected and repaired shall be maintained for at least 5 years and shall be made available to the Director or his representative upon verbal or written request.

[40 CFR 60.5416(c)] and [ORC 3704.03(T)]

(3) Ancillary Equipment Leak Detection and Repair Program Monitoring and Record Keeping for Programs Utilizing a Method 21 Analyzer

a. Leaks shall be measured by utilizing U.S. EPA Method 21 (40 CFR Part 60, Appendix A). All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm or 10,000 ppm (as applicable) for determining compliance.

b. A component is considered to be leaking if the instrument reading is equal to or greater than:

pressure relief device in gas/vapor service	10,000 ppm
pressure relief device in light liquid service	10,000 ppm
pumps in light liquid service	10,000 ppm
compressor	500 ppm
sampling connection system*	*
open ended valves or lines**	**
valves in gas/vapor and light liquid service	10,000 ppm
closed vent system	500 ppm
connectors	10,000 ppm
all other ancillary and associated equipment in VOC service	10,000 ppm

* must be equipped with a closed-purge, closed-loop, or closed-vent system

** must be equipped with a cap, blind flange, plug, or a second valve

c. The following information shall be recorded during each leak inspection:

i. the date the inspection was conducted;

ii. the name of the employee conducting the leak check;

iii. the identification of any component that was determined to be leaking (company ID and component type (flange, pump, etc.);

iv. the date the first attempt to repair the component was made;

v. the reason the repair was delayed following the language found in 40 CFR 60.5416(c)(5);

vi. the date the component was repaired and determined to no longer be leaking;

vii. the total number of components that are leaking; and

viii. the percentage of components leaking, determined as the sum of the number of components for which a leak was detected, divided by the total number of ancillary components capable of developing a leak, and multiplied by 100.

d. The permittee shall maintain records that demonstrate the Method 21 analyzer is operated and maintained in accordance with the manufacturer's operation and maintenance instructions.

e. In order to calibrate the analyzer, the following calibration gases shall be used:

i. zero air, which consists of less than 10 ppm of hydrocarbon in air; and

ii. a mixture of air and methane or n-hexane at a concentration of approximately, but less than, 10,000 ppm of methane or n-hexane.

f. The records from each inspection and the dates each leak is detected and repaired shall be maintained for at least 5 years and shall be made available to the Director or his representative upon verbal or written request.

[40 CFR 60.5416(c)] and [ORC 3704.03(T)]

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) Supplement to the PER for the Ancillary Equipment Leak Detection and Repair Program

For each inspection that occurred during the year, the permittee shall submit the following information with the annual PER from data collected by the ancillary equipment leak detection and repair program:

a. the date of the inspection;

b. the number of components determined to be leaking;

c. the company ID and component type (flange, pump, etc.) of each leaking component;

d. the total number of components at the site;

e. the percent of components determined to be leaking;

f. a list of all components that have not been repaired due to a delay of repair and the reason for the delay; and

g. a notification indicating if the permittee has changed future inspection frequencies based on the percent of components leaking.

[40 CFR 60.5416(c)] and [ORC 3704.03(T)]

(3) Pneumatic Controller Reporting

The permittee shall submit an initial annual report, for each natural gas-driven pneumatic controller installed at the facility after 8/23/11, within 90 days after the end of the initial compliance period as determined according to 40 CFR 60.5410. Subsequent annual reports are due on the same date each year following the initial report. The annual reports may contain multiple facilities if each pneumatic controller is clearly identified along with its location, and the report includes the following information from 40 CFR 60.5420 for each natural gas-driven pneumatic controller:

a. company name and address of the affected facility;

b. identification of each affected facility included in the annual report*;

c. beginning and ending dates of the reporting period;

d. the identification of each pneumatic controller and the equipment it controls;

e. the month and year each pneumatic controller was installed, reconstructed, or modified;

f. a statement as to whether the manufacturer's specifications indicate the controller is designed to maintain a natural gas bleed rate less than or equal to 6 scf/hour; or the explanation of why the bleed rate needs to be operated to exceed this and the manufacturer's specifications for the bleed rate;

g. records of any deviations from the appropriate natural gas bleed rate; and

h. certification of the responsible official of truth, accuracy, and completeness.

* One report for multiple affected facilities may be submitted provided the report contains all of the information required and is clearly separated and identified for each well site.

[40 CFR 60.5410(d)], [40 CFR 60.5420(b)(1) and (5) and (c)(4)], [40 CFR 60.5390(f)], and [40 CFR 60.5415(d)(2)]

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 10.56 tons per year 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. Unless or until more accurate emission factors have been demonstrated or established for the site (e.g. following initial and subsequent monitoring and inspections), 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 annual 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 of valves x 0.00551 lb/hr x 100% VOC = lb VOC/hr

Number of flanges x 0.00024 lb/hr x 100% VOC = lb VOC/hr

Number of pump 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 annual fugitive VOC emissions.

Compliance with the ton per year limit shall be determined following the first 12 months of operation.

As an alternative to using the above emission factors to calculate VOC emissions, the permittee 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.

(2) Emission Limitation:

Each natural gas-driven pneumatic controller installed after 10/15/13 shall be operated with a bleed rate less than or equal to 6 scf/hr, unless it can be demonstrated that the pneumatic controller needs to have a higher bleed rate based on functional needs.

Applicable Compliance Method:

Natural gas shall be used as a surrogate for VOC. If required, the detection of leaks of natural gas into the ambient air from the pneumatic controller(s) may be determined using Method 21 from 40 CFR 60 Appendix A; however, compliance is demonstrated through maintaining the manufacturer's design specifications, showing that the controller is designed to operate with a bleed rate less than 6 scf/hr. If required, Method 21 may be used during inspections of the facility.

[40 CFR 60.5390(a) or (c)(1)], [40 CFR 60.5410(d)], and [40 CFR 60.5415(d)(1)], with [ORC 3704.03(T)]

g) Miscellaneous Requirements

(1) Any amendment to Part 60, Subpart OOOO shall supersede the Subpart OOOO compliance limitations and/or options contained in this permit.

6. Emissions Unit: Flash Vessel/Storage Vessels and truck loading for produced water, crude oil, condensate, and/or petroleum liquids: T001

Operations, Property and/or Equipment Description:

T001	One or multiple vertical fixed roof flash vessel/storage vessel(s) with a combined capacity of no more than 252,000 gallons (6,000 barrels), where each flash vessel/storage vessel 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) 6.b)(1)c.

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, working losses, and flashing losses) from all storage vessels combined at the site shall not exceed 4.28 tons per month averaged over a 12-month rolling period. In order to comply with the tons per month emission limit, utilize one or more of the following controls: Use of add-on control (vapor recovery, flare or equivalent) to control emissions from storage vessels as needed to comply with the annual VOC emission limitations. If a flare is used, it must meet the requirements

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		detailed in emissions unit P004.
b.	OAC Rule 3745-21-09(L)	See b)(2)a.
c.	Part 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution	The facility must calculate the potential for VOC emissions for each single storage vessel using an accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to 10/15/13 for Group 1 storage vessels*, or determined for a 30-day period of production prior to 4/15/14 or 30 days after startup for Group 2 storage vessels**. Where these potential VOC emissions are calculated to equal or exceed 6 TPY, the permittee must either maintain the uncontrolled actual VOC emissions at less than 4 TPY and maintain monthly emission calculations in accordance with 40 CFR 60.5395(d)(2); or install a control device, closed vent system, and covers designed and operated to reduce VOC emissions by 95.0%, and by 4/15/14 or 60 days after startup for Group 2 storage vessels or by 4/15/15 for Group 1 storage vessels. Conduct monthly inspections of collection and control equipment. Any final amendments to this rule will supersede the requirement(s) in this permit. See b)(2) b. through f.
d.	40 CFR 60.5413(d)	Option to demonstrate compliance with Part 60 Subpart OOOO through the use a control device model tested by the manufacturer.
e.	40 CFR 60.5412(d)(1)(iii) 40 CFR 60.5413(e)(3)	If required to install controls in accordance with 40 CFR 60.5395, an enclosed combustion device must be operated with no visible emissions except for periods not to exceed a total of 1 minute in any 15 minute period, conducting Method 22 once every calendar month. If demonstrating compliance using a combustion control device that is

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		performance tested by the manufacturer, in accordance with 40 CFR 60.5413(d), the combustion device must be operated with no visible emissions except for periods not to exceed a total of 2 minutes in any 1 hour of operation, conducting Method 22 once per calendar quarter.
f.	40 CFR 60.5365(e) OAC 3745-31-05(F)	The permittee accepts a voluntarily limit to restrict the potential VOC emissions from each storage vessel to less than 6 tons per year.

(2) Additional Terms and Conditions

a. The permittee shall not place, store, or hold in these fixed roof tanks 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.

[OAC rule 3745-21-09(L)]

b. Any storage vessel subject to and controlled in accordance with the requirements for storage vessels in 40 CFR Part 60 Subpart Kb, or 40 CFR Part 63 Subparts G, CC, HH, or WW are not subject to Part 60 Subpart OOOO.

[40 CFR 60.5395(h)]

c. If the storage vessel affected facility is installed with a floating roof to reduce VOC emissions, it must meet the requirements of 40 CFR 60.112b(a)(1) or (2) and the relevant monitoring, inspection, recordkeeping, and reporting requirements in Part 60, Subpart Kb.

[40 CFR 60.5395(e)(2)]

d. The permittee shall calculate the potential for VOC emissions for each single storage vessel (defined in 40 CFR 60.5430) using an accepted model or calculation methodology. Emissions of VOC shall be based on the maximum average daily throughput determined for:

i. a 30-day period of production prior to 10/15/13 for storage vessels installed after 8/23/11 and on or before 4/12/13, i.e., Group 1 storage vessels; and/or

ii. a 30-day period of production prior to 4/15/14 or 30 days after startup for storage vessels installed after 4/12/13, i.e., Group 2 storage vessels.

[40 CFR 60.5410(h)] and [40 CFR 60.5365(e)]

e. Unless meeting the requirements of 40 CFR 60.5395(d)(2), where the uncontrolled actual VOC emissions can be demonstrated to be less than 4 tons per year, or where it has been demonstrated that the potential VOC emissions are less than 6 TPY, the VOC emissions from each storage vessel affected facility shall be reduced by 95.0 percent by April 15, 2014, or within 60 days after startup, for Group 2 storage vessels; or by April 15, 2015 for Group 1 storage vessels.

[40 CFR 60.5395] and [40 CFR 60.5415(e)(3)]

f. Any vapors from storage vessels that are recovered and routed to a vapor recovery unit (VRU) system meeting the cover and closed vent system requirements specified in 40 CFR 60.5411(b) and (c) are not required to be included in the determination of VOC potential to emit for purposes of determining affected facility status for NSPS Subpart OOOO. However, if the VRUs are removed or if the system fails to meet the cover and closed vent system requirements of Subpart OOOO, the potential VOC emissions from each such storage vessel shall be calculated within 30 days of the removal or non-compliant operations of the VRU system.

[40 CFR 60.5365(e)]

c) Operational Restrictions

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

(2) Each storage vessel subject to the control requirements of Part 60 Subpart OOOO shall be equipped with a cover that meets the requirements of 40 CFR 60.5411(b); and the storage vessel shall be connected through a closed vent system designed and operated with no detectable emissions, as determined using olfactory, visual and auditory inspections, and in accordance with 40 CFR 60.5411(c) to either: 1. an enclosed combustion control device, designed and operated in accordance with 40 CFR 60.5412(d) or 40 CFR 60.5413(d); 2. an open flare meeting the requirements identified in this permit; or 3. to a process. The collection and control systems shall be operated at all times when gases, vapors, and fumes are vented from the subject storage vessels to a control device; and where routing emissions to a process it must be operational 95% or more of the year.

[40 CFR 60.5365(e)], [40 CFR 60.5395], [40 CFR 60.5410(h)], [40 CFR 60.5411(b) and (c)(1) and (2)], and [40 CFR 60.5412(d)] or [40 CFR 60.5413(d)], and [40 CFR 60.5415(e)(3)]

(3) In the event that a leak or defect is detected in the cover or closed vent system that is used to demonstrate compliance, the permittee shall make a first attempt at repair no later than 5 calendar days after the leak is detected. Repair shall be completed no later than 30 calendar days after the leak is detected in accordance with 40 CFR 60.5416(c)(4) and (5). A record of the leak detected and repairs must be maintained for a period of five years.

[40 CFR 60.5416(c)(4) and (5)] and [40 CFR 60.5415(e)(3)]

(4) Where the closed vent system (used to demonstrate compliance) contains one or more bypass devices that could be used to divert all or a portion of the gases, vapors, or fumes from entering the control device or a process, the requirements identified in 40 CFR 60.5416(c)(3) shall be met.

[40 CFR 60.5416(c)(3)], [40 CFR 60.5411(c)(3)] and [40 CFR 60.5415(e)(3)]

(5) Each enclosed combustion device, used to meet the emission reduction standard in 40 CFR 60.5395(d), shall be installed and operated in accordance with 40 CFR 60.5412(d) and 40 CFR 60.5417(h). As an alternative, a combustion control device may be installed whose model has been tested by the manufacturer in accordance with 40 CFR 60.5413(d), and the facility can instead meet the criteria in 40 CFR 60.5413(d)(11) and 40 CFR 60.5413(e).

[40 CFR 60.5410(h)], [40 CFR 60.5412(d)], [40 CFR 60.5417(d)(1)(iii) and (h)], and [40 CFR 60.5415(e)(3)]

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain the following records documenting the facility's determination of emissions from each storage vessel:

a. the maximum average daily throughput determined for a 30-day period of production prior to 10/15/13 for Group 1 storage vessels and prior to 4/15/14 or 30 days after startup for Group 2 storage vessels;

b. the content of each storage vessel;

c. the lab analyses, calculations, and process simulation model results documenting the annual emissions from breathing, working, and flashing losses; and

d. the records for the content and annual throughput (in gallons per year) for each storage vessel

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.

[40 CFR 60.5365(e)] and [40 CFR 60.5410(h)]

(2) Where using vapor recovery unit(s) (VRU) for compliance, the permittee shall maintain records that document the VRU system is operated in compliance with the cover and closed vent system requirements of 40 CFR 60.5411(b) and 40 CFR 60.5411(c).

[40 CFR 60.5365(e)]

(3) Where required, the permittee shall conduct monthly inspections for each closed vent system, each cover, and the combustion control device used to demonstrate compliance in accordance with 40 CFR 60.5416(c) and 40 CFR 60.5417(h); and shall maintain the records identified in 40 CFR 60.5420(c).

[40 CFR 60.5416(c)], [40 CFR 60.5417(h)], [40 CFR 60.5411(b) and (c)], [40 CFR 60.5415(e)(3)], and [40 CFR 60.5420(c)]

(4) Where the facility is using an enclosed combustion device for compliance, the permittee shall maintain the appropriate records to demonstrate that the control device is designed and operated to reduce VOC by 95.0% by weight and is operated and maintained in accordance with 40 CFR 60.5412(d); or if the model device has been performance tested by the manufacturer in accordance with 40 CFR 5413(d), the device shall be monitored, operated and maintained in accordance with 40 CFR 5413(e).

[40 CFR 60.5410(h)], [40 CFR 60.5412(d)] or [40 CFR 60.5413(d) and (e)]

(5) Where using an open flare for compliance, the permittee shall maintain the records required to demonstrate that the open flare is designed and operated in accordance with Part 60 Subpart OOOO and the requirements of this permit.

(6) Where the permittee has accepted a voluntarily limit to restrict the potential VOC emissions to less than 6 tons per year and less than 0.50 tons per month averaged over a 12-month rolling period, the records documenting the maximum monthly potential VOC emissions (calculated in accordance with 40 CFR 60.5365(e)) shall be maintained and made readily available upon request.

[40 CFR 60.5365(e)] and [OAC 3745-31-05(F)]

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 submit an initial annual report within 90 days after the end of the initial compliance period for each storage vessel determined to have potential VOC emissions equal or greater than 6 tons per year. Subsequent annual reports are due no later than the same date each year following the initial report. The reports shall include the information identified in 40 CFR 60.5420(b).

[40 CFR 60.5420(b)] and [40 CFR 60.5410(h) and (i)]

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>:

Total VOC emissions from all storage vessels (including breathing losses, working losses, and flashing losses) shall not exceed 4.28 tons per month averaged over a 12-month rolling period.

Compliance with the tons/month averaged over a 12-month rolling period shall be determined following the first 12 months of operation.

For each storage vessels not meeting the collection and control requirements of Part 60 Subpart OOOO, the potential annual VOC emissions must be documented to be less than 6 tons/year; or the uncontrolled actual VOC emissions shall be calculated to be less than 4 tons/year in accordance with 40 CFR 60.5395(d)(2) through monthly determinations.

For each storage vessel with potential emissions equal to or greater than 6 tons VOC/year, reduce VOC emissions by 95.0% by installing a closed vent system designed and operated with no detectable emissions, that routes all gases, vapors, and fumes to a process or a combustion control device meeting the requirements of 40 CFR 60.5412(d) or 40 CFR 60.5413(d).

Applicable Compliance Method, documenting emissions:

Annual emissions from breathing, working, and flashing losses from each storage vessel shall be calculated based on the maximum average daily throughput determined for a 30-day period of production prior to 10/15/13 for Group 1 storage vessels and/or prior to 4/15/14 or 30 days after startup for Group 2 storage vessels.

Flashing losses shall be calculated using a generally accepted model or process simulation software program(s) and/or calculation methodology such as, but not limited to, E&P Tank, HYSIM, HYSIS, VMG, or ProMax, to calculate the VOC emissions.

Pressurized samples shall be taken after the separator and at the same time from the flash gas and condensate/oil lines for flash gas analyses; and the data from these lab analyses shall be used in the process simulation software to document emissions from flashing.

Instead of taking pressurized samples from the separator(s) or from the storage vessels, the permittee may utilize pressurized samples acquired from another similar facility operating under similar conditions, or choose to take a representative reservoir sample from a well in another part of the play. If the permittee chooses to use pressurized samples from another facility, the flash gas analyses shall be submitted along with documentation demonstrating that the facility's pressurized condensate/oil and gases would have similar chemical compositions and would be under similar pressures; and provide evidence that if pressurized samples were taken and lab analyses were conducted, the results would provide equivalent or lower emissions. **"**Similar**"**, in this case, means that the chemical composition, pressures, and operating parameters/ conditions of the similar facility are close enough to this facility's condensate/oil and gas composition, pressures, and operations, that the expected emissions would be equivalent to or less than the emissions calculated from the flash gas analyses obtained from the similar facility. If the permittee chooses to use a representative reservoir sample, the analyses must be incorporated into an approved process simulation modeling program utilizing site-specific operating parameters. "Representative", in this case, means having an API gravity no more than 3 degrees below the API gravity of the condensate detected at the facility being permitted. A representative sample with a higher API gravity results in a more conservative emissions estimate and is, therefore, not a concern. If changes to the operating conditions and/or liquid composition are such that the emissions would be expected to exceed those determined with the

representative analyses, the permittee shall either submit site-specific analyses using pressurized samples from the separator (with the highest pressures, if more than one), or submit emissions estimates using another representative analyses. The Director reserves the right to require the owner/operator to obtain samples from the facility in order to verify compliance.

Working and breathing losses may be calculated using E&P Tank, EPA Tanks 4.0 software, or other accepted calculation methodology; and/or the working/loading emissions may be calculated using the "Loading Loss Equation" from AP-42, Section 5.2, for Transportation and Marketing of Petroleum Liquids, which is based on multiplying a loading loss factor (L*) by the annual petroleum liquid throughput in gallons per year, as follows:

*L = 12.46 SPM/T

For uncontrolled loading, the VOC emissions shall be calculated by multiplying an uncontrolled loading loss factor (L_{UC}) by the rolling, 12-month summation of the throughput of condensate and petroleum liquids (in gallons) and dividing by 2000 lbs/ton. The result will be added to the breathing and flashing emission estimates.

L_{UC} = 12.46 SPM/T

For controlled loading, the VOC emissions shall be calculated by multiplying a controlled loading loss factor (L_C) by the rolling, 12-month summation of the throughput of condensate and petroleum liquids (in gallons) and dividing by 2000 lbs/ton. The result will be added to the breathing and flashing emission estimates.

L_C = 12.46 SPM/T [1 – Efficiency/100]

Where:

Capture Efficiency = 97%

Destruction Efficiency = 98%

Control Efficiency = 97% x 98% = 95%

Where:

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

S = saturation factor

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

M = molecular weight of vapor

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

<u>Applicable Compliance Method, through design of collection and controls</u>:

Initial compliance with the Part 60, Subpart OOOO standards for storage vessel affected facilities shall be demonstrated by complying with the applicable portions of 40 CFR

60.5411(b) and (c), and 40 CFR 60.5412(d) or 40 CFR 60.5413(e) if the control device is tested by the manufacturer.

Continuous compliance with the Part 60, Subpart OOOO standards for storage vessel affected facilities shall be demonstrated by complying with the applicable portions of 40 CFR 60.5415(e), 40 CFR 60.5416(c), and 40 CFR 60.5417(d) or (h).

Group 1 storage vessels (installed between 8/24/11 and 4/12/13) must be in compliance by April 15, 2015; and Group 2 storage vessels (installed after 4/12/13) must be in compliance by 4/15/14 or within 60 days after startup. In the event an amendment to NSPS Subpart OOOO requires a performance test for the combustion control device to demonstrate compliance, the permittee shall schedule such performance test as required by the amended rules.

[40 CFR 60.5365(e)], [40 CFR 60.5395], [40 CFR 60.5410(h)], [40 CFR 60.5411(b) and (c)], [40 CFR 60.5412(d) or 40 CFR 60.5413(d)], [40 CFR 60.5415(e)(3)], and [ORC 3704.03(T)]

(2) <u>Visible Emissions Limitation for an enclosed combustion control device used to demonstrate compliance with Part 60 Subpart OOOO</u>:

An enclosed combustion device used to demonstrate compliance must be operated with no visible emissions except for periods not to exceed a total of 1 minute in any 15 minute period, conducting Method 22 once every calendar month.

[40 CFR 60.5412(d)(1)(iii)]

OR

If demonstrating compliance using a combustion control device that is performance tested by the manufacturer, in accordance with 40 CFR 60.5413(d), the combustion device must be operated with no visible emissions except for periods not to exceed a total of 2 minutes in any 1 hour of operation, conducting Method 22 once per calendar quarter.

[40 CFR 60.5413(e)(3)]

<u>Applicable Compliance Method</u>:

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 60.5412(d)(1)(iii)] [40 CFR 60.5413(e)(3)] and [40 CFR 60.5413(a)(1)]

g) Miscellaneous Requirements

(1) Any amendment to Part 60, Subpart OOOO shall supersede the Subpart OOOO compliance limitations and/or options contained in this permit.