

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***STATEMENT OF BASIS / SUMMARY***

Conditinal Major/Synthetic Minor, Construction/Operating

Permit: F-20-043

Midwestern Gas Transmission Company

Hartford Compressor Station

Hartford KY, 42347

December 7, 2020

Philip T. Jarboe P.E. and Hollie Delaney, Reviewers

SOURCE ID: 21-183-00085

AGENCY INTEREST: 39508

ACTIVITY: APE20200001

**Table of Contents**

<b>SECTION 1 – SOURCE DESCRIPTION .....</b>	<b>2</b>
<b>SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM.....</b>	<b>3</b>
<b>SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS .....</b>	<b>3</b>
<b>SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS .....</b>	<b>8</b>
<b>SECTION 5 – PERMITTING HISTORY .....</b>	<b>9</b>
<b>SECTION 6 – PERMIT APPLICATION HISTORY.....</b>	<b>10</b>
<b>APPENDIX A – ABBREVIATIONS AND ACRONYMS .....</b>	<b>11</b>

## SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 4922, Pipeline Transportation of Natural Gas

Single Source Det.  Yes  No If Yes, Affiliated Source AI:

Source-wide Limit  Yes  No If Yes, See Section 4, Table A

28 Source Category  Yes  No If Yes, Category:

County: Ohio

Nonattainment Area  N/A  PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  Ozone  Lead  
If yes, list Classification:

PTE\* greater than 100 tpy for any criteria air pollutant  Yes  No  
If yes, for what pollutant(s)?  
 PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

PTE\* greater than 250 tpy for any criteria air pollutant  Yes  No  
If yes, for what pollutant(s)?  
 PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

PTE\* greater than 10 tpy for any single hazardous air pollutant (HAP)  Yes  No  
If yes, list which pollutant(s): Formaldehyde

PTE\* greater than 25 tpy for combined HAP  Yes  No

\*PTE does not include self-imposed emission limitations.

### **Description of Facility:**

The facility uses compressors to increase the pressure of natural gas in transfer pipelines. The facility has two compressors powered by 2,500 HP spark ignition (SI) (ICE) internal combustion engines and two compressors powered by 5,000 HP SI ICE. The engines are fueled by natural gas. The facility also have an emergency generator powered by a SI ICE 1,468 HP engine.

The facility also has an Oil/Condensate Tank (TK-1). This unit is located in Section C of the permit (Insignificant Activities) along with the TK-1 Loading and Venting/Blowdown emissions.

**SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM**

Permit Number: F-20-043

Activities: APE20200001

Received: October 9, 2020

Application Complete Date(s): December 1, 2020

Permit Action:  Initial  Renewal  Significant Rev  Minor Rev  Administrative

Construction/Modification Requested?  Yes  No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action  Yes  No

**Description of Action:**

- Initial permit for construction/operation of facility.

F-20-043 Emission Summary	
Pollutant	PTE F-20-043 (tpy)
CO	319.88*
NO <sub>x</sub>	73.03
PT	0.03
PM <sub>10</sub>	4.32
PM <sub>2.5</sub>	4.32
SO <sub>2</sub>	0.25
VOC	42.28
Lead	0
Greenhouse Gases (GHGs)	
Carbon Dioxide	61,582
Methane	576.3
Nitrous Oxide	0.095
CO <sub>2</sub> Equivalent (CO <sub>2</sub> e)	76,019
Hazardous Air Pollutants (HAPs)	
Acetaldehyde	3.61
Acrolein	2.22
Formaldehyde	22.82*
Hexane	0.73
Methanol	1.08
Combined HAPs:	30.94*

\* The permittee has taken limits not to exceed 90 tpy of CO, 9 tpy of single HAP and 22.5 tpy of combined HAPs.

**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS**

<b>Emission Unit C-1: Compressor Engine 1                      Emission Unit C-2: Compressor Engine 2                      Emission Unit C-3: Compressor Engine 3                      Emission Unit C-4: Compressor Engine 4</b>				
<b>Pollutant</b>	<b>Emission Limit or Standard</b>	<b>Regulatory Basis for Emission Limit or Standard</b>	<b>Emission Factor Used and Basis</b>	<b>Compliance Method</b>
NOx	1.0 g/HP-hr (82 ppmvd at 15% O <sub>2</sub> )	40 CFR 60.4233(e)	170.513 lb/MMscf (C-1 and C-2), 172.3 lb/MMscf (C-3 and C-4); Manufacturer's specifications	Performance testing and operation/maintenance of the control device
CO	2.0 g/HP-hr (270 ppmvd at 15% O <sub>2</sub> )		750.3 lb/MMscf (C-1 and C-2), 758.0 lb/MMscf (C-3 and C-4); Manufacturer's specifications	
VOC	0.7 g/HP-hr (60 ppmvd at 15% O <sub>2</sub> )		88.7 lb/MMscf (C-1 and C-2) 86.1 lb/MMscf (C-3 and C-4); Manufacturer's specifications	

**Initial Construction Date:** Proposed 2021

**Process Description:**

**Emission Unit C-1 Compressor Engine 1**

Caterpillar G3608 A4, 2,500 Hp  
 Engine Type: 4 stroke, Lean burn  
 Primary Fuel: Natural gas  
 Max Operating Rate: 0.0161 MMscf/hr  
 Control Device: Oxidation Catalyst (CAT-1)

**Emission Unit C-2 Compressor Engine 2**

Caterpillar G3608 A4, 2,500 Hp  
 Engine Type: 4 stroke, Lean burn  
 Primary Fuel: Natural gas  
 Max Operating Rate: 0.0161 MMscf/hr  
 Control Device: Oxidation Catalyst (CAT-2)

**Emission Unit C-3 Compressor Engine 3**

Caterpillar G3616 A4, 5,000 Hp  
 Engine Type: 4 stroke, Lean burn  
 Primary Fuel: Natural gas

<b>Emission Unit C-1: Compressor Engine 1</b> <b>Emission Unit C-2: Compressor Engine 2</b> <b>Emission Unit C-3: Compressor Engine 3</b> <b>Emission Unit C-4: Compressor Engine 4</b>	
Max Operating Rate: 0.032 MMscf/hr Control Device: Oxidation Catalyst (CAT-3)	
<b>Emission Unit C-4            Compressor Engine 4</b> Caterpillar G3616 A4, 5,000 Hp Engine Type: 4 stroke, Lean burn Primary Fuel: Natural gas: Max Operating Rate: 0.032 MMscf/hr Control Device: Oxidation Catalyst (CAT-4)	
<b>Applicable Regulation:</b> 401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.  401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.	
<b>Comments:</b> These engines are not certified by EPA, an OxCat system is required to meet the applicable standards from 40 CFR 60, Subpart JJJJ. Emission factors for NO <sub>x</sub> , CO, VOC, and CO <sub>2</sub> are based on engine manufacturer's specifications and OxCat manufacturer's guarantee, formaldehyde emission factors are based on AP-42 Chapter 3.2 and OxCat manufacturer's guarantee, and the remainder of emissions factors are from AP-42 Chapter 3.2.	

<b>Emission Unit C-5: Emergency Generator Engine 1</b>				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NO <sub>x</sub>	2.0 g/HP-hr, or 160 ppmvd at 15% O <sub>2</sub>	40 CFR 60.4233(e)	318.7 lb/MMscf EPA certification	Purchasing a certified engine
CO	4.0 g/HP-hr, or 540 ppmvd at 15% O <sub>2</sub>		637.4 lb/MMscf EPA certification	
VOC	1.0 g/HP-hr, or 86 ppmvd at 15% O <sub>2</sub>		223.1 lb/MMscf EPA certification	

**Emission Unit C-5: Emergency Generator Engine 1**

**Initial Construction Date:** Proposed 2021

**Process Description:**

**Emission Unit C-5            Emergency Generator Engine 1**

Caterpillar G3512 A4, 1,114 HP (Certified)

Engine Type: 4 stroke, Lean burn

Primary Fuel: Natural gas

Max Operating Rate: 0.0077 MMscf/hr

Control Device: None

**Applicable Regulation:**

401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii) and 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

**Comments:**

The engine is certified to the standards of a non-emergency engine. The EPA certification and manufacturer's specifications were provided with the initial application. Emission factors for NO<sub>x</sub>, CO, VOC are based on the EPA certification. All other emission factors are based on AP-42 Chapter 3.2.

**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)**

**Testing Requirements/Results**

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
C-1, C-2, C-3, C-4	Oxidation Catalyst	NO <sub>x</sub> , CO, VOC	40 CFR 60.4244	Initial and subsequent every three years or 8760 hours, which ever comes first.	NO <sub>x</sub> : Method 7E or 20; CO: Method 10; VOC: Method 25A, 18 or 320	CO 2.0 g/HP-hour NO <sub>x</sub> 1.0 g/HP-hour VOC 0.7 g/HP-hour	TBD	TBD	TBD	TBD
C-1, C-2, C-3, C-4	Oxidation Catalyst	Formaldehyde	To preclude 401 KAR 52:020	Initial	Method 320 or 323	≤ 9.0 tpy source-wide	TBD	TBD	TBD	TBD

**Footnotes:**

**SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS**

**Table A - Group Requirements:**

<b>Emission and Operating Limit</b>	<b>Regulation</b>	<b>Emission Unit</b>
90 tpy of CO emissions	401 KAR 52:030, to preclude 401 KAR 52:020 and 401 KAR 51:017	Source-wide
9.0 tpy of individual HAP emissions	401 KAR 52:030, to preclude 401 KAR 52:020	
22.5 tpy of combined HAPs		

**Table B - Summary of Applicable Regulations:**

<b>Applicable Regulations</b>	<b>Emission Unit</b>
401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.	C-1, C-2, C-3, C-4 and C-5
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.	

**Table C - Summary of Precluded Regulations:**

<b>Precluded Regulations</b>	<b>Emission Unit</b>
401 KAR 52:020, Title V permits	Source-wide
401 KAR 51:017, Prevention of significant deterioration of air quality	

**Table D - Summary of Non Applicable Regulations:**

<b>Non Applicable Regulations</b>	<b>Emission Unit</b>
401 KAR 60:005, Section 2(2)(iiii), 40 C.F.R. 60.5360a to 60.5432a, Tables 1 to 3 (Subpart OOOOa), Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015.	C-1, C-2, C-3, C-4

**Air Toxic Analysis**

**401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances**

The Division for Air Quality (Division) has performed SCREEN View on January 7, 2021 of potentially hazardous matter or toxic substances (Hexane, Benzene, Ethylbenzene, Toluene, Xylene) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

**Single Source Determination**

N/A



**SECTION 5 – PERMITTING HISTORY**

<b>Permit</b>	<b>Permit type</b>	<b>Activity#</b>	<b>Complete Date</b>	<b>Issuance Date</b>	<b>Summary of Action</b>	<b>PSD/Syn Minor</b>
G-04-001 R1	Initial	APE20040001	6/26/2006	5/27/2005	Initial G -Permit	N/A
G-09-002	Renewal	APE20090001	2/11/2010	10/4/2010	Renewal Permit	N/A
V-15-028	Renewal	APE20150001	8/26/15	1/12/2016	Renewal Title V Permit, previously part of the General permit	N/A
-----	Closure	ACL20200001			Removal of all equipment in V-15-28 permit	N/A

**SECTION 6 – PERMIT APPLICATION HISTORY**

None

## **APPENDIX A – ABBREVIATIONS AND ACRONYMS**

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO <sub>x</sub>	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM <sub>10</sub>	– Particulate Matter equal to or smaller than 10 micrometers
PM <sub>2.5</sub>	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO <sub>2</sub>	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds