



Permit / Application Information Sheet
Division of Environmental Protection
West Virginia Office of Air Quality

Company:	Antero Midstream LLC	Facility:	Lafferty Station
Region:	8	Plant ID:	085-00055
Application #:	13-3285A		
Engineer:	Kessler, Joe		Category:
Physical Address:	County Rd 10/4 Pennsboro WV 26415		SIC: [4923] ELECTRIC, GAS AND SANITARY SERVICES - GAS TRANSMISSION AND DISTRIBUTION NAICS: [221210] Natural Gas Distribution
County:	Ritchie		
Other Parties:	ENV_MGR - Schatz, Barry 303-357-7276 VICE PRES - McNeilly, Ward 303-357-6822 Consultant - Steyskal, Michele 719-632-3593		

Information Needed for Database and AIRS
1. Need valid physical West Virginia address with zip
2. Air Program
3. Inspection result
4. Pollutant and class

Regulated Pollutants		
CO	Carbon Monoxide	47.880 TPY
PM10	Particulate Matter < 10 um	6.240 TPY
SO2	Sulfur Dioxide	0.450 TPY
VOC	Volatile Organic Compounds (Reactive organic gases)	91.650 TPY
PM2.5	Particulate Matter < 2.5 um	6.240 TPY
PT	Total Particulate Matter	6.240 TPY
VHAP	VOLATILE ORGANIC HAZARDOUS AIR POLLUTANT	15.320 TPY
NOX	Nitrogen Oxides (including NO, NO2, NO3, N2O3, N2O4, and N2O5)	63.620 TPY

Summary from this Permit 13-3285A		
Air Programs	Applicable Regulations	
MACT		
NSPS		
SIP		
Fee Program	Fee	Application Type
8D	\$4,500.00	MODIFICATION

Notes from Database
 Permit Note: Modifying primarily by replacing engine types and increasing throughput of dehyds.

NOTICE

Activity Dates	
APPLICATION RECIEVED	07/01/2016
APPLICATION FEE PAID	07/05/2016
ASSIGNED DATE	07/05/2016
APPLICANT PUBLISHED LEGAL AD	07/20/2016
APPLICATION INCOMPLETE	08/01/2016
APPLICATION DEEMED COMPLETE	08/16/2016

NON-CONFIDENTIAL

Please note, this information sheet is not a substitute for file research and is limited to data entered into the AIRTRAX database.

Company ID: 085-00055
 Company: Antero Midstream LLC
 Printed: 09/28/2016
 Engineer: Kessler, Joe

IPR FILE INDEX

Applicant : Antero Midstream LLC Plant ID No.: 085-00055
Facility : Lafferty Compressor Station Permit No.: R13-3285A

Chronological Order - Add Index Pages As Necessary

Date	To	From	Subject	# of pages
7/05/16	Antero	Sandra Adkins	48-Hour Letter	
8/01/16	Antero	Joe Kessler	Incompleteness E-mail	
8/05/16	Joe Kessler	Antero	Affidavit of Publication	
8/05/16	Joe Kessler	Antero	E-mail with Catalyst Spec Sheet	
8/16/16	Antero	Joe Kessler	Completeness Determination	
10/11/16	Various	Various	Antero/DAQ E-mail	
10/11/16	File	Joe Kessler	Draft Permit R13-3385A, Evaluation/Fact Sheet, Tracking Manifest	
10/11/16	Various	Sandra Adkins	Public Notice Documents	

JRK
10/11/16

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On July 1, 2016, Antero Midstream LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to modify the Lafferty Compressor Station located approximately 5.4 miles southeast of Pennsboro, WV just east of White Oak Road (County Route 10/4), in Ritchie County, WV at latitude 39.22418 and longitude -80.90627. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the modified facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R13-3285A.

The following changes in potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, -9.40 tons per year (TPY); Particulate Matter less than 10 microns, -9.40 TPY; Particulate Matter, -9.40 TPY; Sulfur Dioxide, -0.17 TPY; Oxides of Nitrogen, -13.44 TPY; Carbon Monoxide, -36.36 TPY; Volatile Organic Compounds, 11.01 TPY; Hazardous Air Pollutants, 1.70 TPY.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on **XXXXXX**. A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed modification will meet all State and Federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Joe Kessler, PE
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1219
FAX: 304/926-0478

Entire Document
NON-CONFIDENTIAL

Additional information, including copies of the draft permit, application and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed above. The draft permit and engineering evaluation can be downloaded at:

www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx

Kessler, Joseph R

From: Adkins, Sandra K
Sent: Friday, October 07, 2016 1:31 PM
To: Glance, Jacob P; Gillenwater, Kelley J
Cc: Kessler, Joseph R
Subject: DAQ Public Notice

Please see below the Public Notice for Draft Permit R13-3285A for Antero Midstream LLC's Lafferty Compressor Station located in Ritchie County.

The notice will be published in *The Pennsboro News* on Wednesday, October 12, 2016, and the thirty day comment period will end on Monday, November 14, 2016.

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On July 1, 2016, Antero Midstream LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to modify the Lafferty Compressor Station located approximately 5.4 miles southeast of Pennsboro, WV just east of White Oak Road (County Route 10/4), in Ritchie County, WV at latitude 39.22418 and longitude -80.90627. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the modified facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R13-3285A.

The following changes in potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, -9.40 tons per year (TPY); Particulate Matter less than 10 microns, -9.40 TPY; Particulate Matter, -9.40 TPY; Sulfur Dioxide, -0.17 TPY; Oxides of Nitrogen, -13.44 TPY; Carbon Monoxide, -36.36 TPY; Volatile Organic Compounds, 11.01 TPY; Hazardous Air Pollutants, 1.70 TPY.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on Monday, November 14, 2016. A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed modification will meet all State and Federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Joe Kessler, PE
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1219
FAX: 304/926-0478

Additional information, including copies of the draft permit, application and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed above. The draft permit and engineering evaluation can be downloaded at:

www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx

Kessler, Joseph R

From: Adkins, Sandra K
Sent: Friday, October 07, 2016 1:31 PM
To: 'wentworth.paul@epa.gov'; 'bradley.megan@epa.gov'; Elizabeth McLaughlin
Cc: Durham, William F; McKeone, Beverly D; McCumbers, Carrie; Hammonds, Stephanie E; Kessler, Joseph R; Taylor, Danielle R; Rice, Jennifer L
Subject: WV Draft Permit R13-3285A for Antero Midstream LLC; Lafferty Compressor Station
Attachments: 3285A.PDF; Eval3285A.PDF; notice.pdf

Please find attached the Draft Permit R13-3285A, Engineering Evaluation, and Public Notice for Antero Midstream LLC's Lafferty Compressor Station located in Ritchie County.

The notice will be published in *The Pennsboro News* on Wednesday, October 12, 2016, and the thirty day comment period will end on Monday, November 14, 2016.

Should you have any questions or comments, please contact the permit writer, Joe Kessler, at 304 926-0499 x1219.

Kessler, Joseph R

From: Adkins, Sandra K
Sent: Wednesday, October 05, 2016 2:36 PM
To: news@ritchiecountynews.com
Cc: Kessler, Joseph R
Subject: Publication of Class I Legal Ad for the WV Division of Air Quality

Please publish the information below as a Class I legal advertisement (one time only) in the Wednesday, October 12, 2016, issue of *The Pennsboro News*. Please let me know that this has been received and will be published as requested. Thank you.

Send the invoice for payment and affidavit of publication to:

Sandie Adkins

**WV Department of Environmental Protection
DIVISION OF AIR QUALITY**

601- 57th Street

Charleston, WV 25304

Thank you for your assistance. Should you have any questions, please contact me at 304-926-0499 x1250.

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On July 1, 2016, Antero Midstream LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to modify the Lafferty Compressor Station located approximately 5.4 miles southeast of Pennsboro, WV just east of White Oak Road (County Route 10/4), in Ritchie County, WV at latitude 39.22418 and longitude -80.90627. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the modified facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R13-3285A.

The following changes in potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, -9.40 tons per year (TPY); Particulate Matter less than 10 microns, -9.40 TPY; Particulate Matter, -9.40 TPY; Sulfur Dioxide, -0.17 TPY; Oxides of Nitrogen, -13.44 TPY; Carbon Monoxide, -36.36 TPY; Volatile Organic Compounds, 11.01 TPY; Hazardous Air Pollutants, 1.70 TPY.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on Monday, November 14, 2016. A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed modification will meet all State and Federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Joe Kessler, PE
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1219
FAX: 304/926-0478

Additional information, including copies of the draft permit, application and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed above. The draft permit and engineering evaluation can be downloaded at:

www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx

West Virginia Department of Environmental Protection

*Earl Ray Tomblin
Governor*

Division of Air Quality

*Randy C. Huffman
Cabinet Secretary*

Permit to Modify

Entire Document
NON-CONFIDENTIAL



R13-3285A

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:
Antero Midstream LLC
Lafferty Compressor Station
085-00055

DRAFT

*William F. Durham
Director*

*Issued: **DRAFT***

This permit will supercede and replace Permit Number R13-3285 issued on May 25, 2016.

Facility Location: Near Pennsboro, Ritchie County, West Virginia
Mailing Address: 1615 Wynkoop Street, Denver, CO 80202
Facility Description: Compressor Station
SIC/NAICS Code: 4923/221210
UTM Coordinates: 508.091 km Easting • 4,341.658 km Northing • Zone 17
Latitude/Longitude: 39.22418/-80.90627
Permit Type: Modification
Desc. of Change: Modification primarily to: (1) Replace the thirteen (13) permitted Waukesha 7044 GSI compressor engines with eight (8) Caterpillar G3608 engines, (2) Installation of a new fuel conditioning heater, (3) Increase the Glycol Dehydrator Units throughput each to 110 mmscf/day, and (4) Revision of the dehydrator flash tank control efficiency.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The source is not subject to 45CSR30.

Table of Contents

1.0. Emission Units	3
2.0. General Conditions	5
2.1. Definitions	5
2.2. Acronyms	5
2.3. Authority	6
2.4. Term and Renewal	6
2.5. Duty to Comply	6
2.6. Duty to Provide Information	6
2.7. Duty to Supplement and Correct Information	7
2.8. Administrative Permit Update	7
2.9. Permit Modification	7
2.10. Major Permit Modification	7
2.11. Inspection and Entry	7
2.12. Emergency	7
2.13. Need to Halt or Reduce Activity Not a Defense	8
2.14. Suspension of Activities	8
2.15. Property Rights	8
2.16. Severability	9
2.17. Transferability	9
2.18. Notification Requirements	9
2.19. Credible Evidence	9
3.0. Facility-Wide Requirements	10
3.1. Limitations and Standards	10
3.2. Monitoring Requirements	10
3.3. Testing Requirements	11
3.4. Recordkeeping Requirements	12
3.5. Reporting Requirements	12
4.0. Source-Specific Requirements	14
4.1. Limitations and Standards	14
4.2. Monitoring Requirements	22
4.3. Testing Requirements	28
4.4. Recordkeeping Requirements	30
4.5. Reporting Requirements	31
CERTIFICATION OF DATA ACCURACY	32

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device ⁽¹⁾
C-2100	1E	Caterpillar G3608 4-Stroke Lean Burn (4SLB) 2,500 hp compressor engines	2016	2,500 hp	OxCat
C-2110	2E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2120	3E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2130	4E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2140	5E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2150	6E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2160	7E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
C-2170	8E	Caterpillar G3608 4SLB Engine	2016	2,500 hp	OxCat
G-8000	14E	Capstone C600 Microturbine	2016	600kWe	None
SV-3110	15E	Glycol Dehydration Unit Still Column	2016	110 mmscf/day	Flare
FT-3110	16E	Glycol Dehydration Unit Flash Tank ⁽²⁾	2016	110 mmscf/day	Reboiler/ VRU/VRU
R-3110	17E	Glycol Dehydration Unit Reboiler	2016	1.5 mmBtu/hr	None
SV-3210	18E	Glycol Dehydration Unit Still Column	2016	110 mmscf/day	Flare
FT-3210	19E	Glycol Dehydration Unit Flash Tank ⁽²⁾	2016	110 mmscf/day	Reboiler/ VRU/VRU
R-3210	20E	Glycol Dehydration Unit Reboiler	2016	1.5 mmBtu/hr	None
TK-9000	21E	Settling Tank	2016	21,000 gallons	VRU/VRU
TK-9200	22E	Condensate Storage Tank	2016	16,800 gallons	VRU/VRU
TK-9210	23E	Condensate Storage Tank	2016	16,800 gallons	VRU/VRU
TK-9100	24E	Produced Water Storage Tank	2016	16,800 gallons	VRU/VRU
TK-9110	25E	Produced Water Storage Tank	2016	16,800 gallons	VRU/VRU
CATHT1	26E	Catalytic Heater	2016	0.024 mmBtu/hr	None
FUEL1	28E	Fuel Conditioning Heater	2016	0.50 mmBtu/hr	None
FL-1000	27E	Enclosed Flare	2016	9.2 mmBtu/hr	n/a
LDOUT1	n/a	Liquids Loading	2016	2,300,000 gal/yr	None
n/a	n/a	Fugitive Emissions	2016	n/a	None

(1) OxCat = Oxidation Catalyst; VRU = Vapor Recovery Unit

(2) The flash tank gases are routed first to the reboiler as fuel. If the reboiler is not operating the flash tank gases are sent to the storage tanks which are in turn controlled by a VRU/VRU combination.

2.0. General Conditions

2.1. Definitions

- 2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.
- 2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.
- 2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	NO_x	Nitrogen Oxides
CBI	Confidential Business Information	NSPS	New Source Performance Standards
CEM	Continuous Emission Monitor	PM	Particulate Matter
CES	Certified Emission Statement	PM_{2.5}	Particulate Matter less than 2.5µm in diameter
C.F.R. or CFR	Code of Federal Regulations	PM₁₀	Particulate Matter less than 10µm in diameter
CO	Carbon Monoxide	Ppb	Pounds per Batch
C.S.R. or CSR	Codes of State Rules	pph	Pounds per Hour
DAQ	Division of Air Quality	ppm	Parts per Million
DEP	Department of Environmental Protection	Ppmv or ppmv	Parts per million by volume
dscm	Dry Standard Cubic Meter	PSD	Prevention of Significant Deterioration
FOIA	Freedom of Information Act	psi	Pounds per Square Inch
HAP	Hazardous Air Pollutant	SIC	Standard Industrial Classification
HON	Hazardous Organic NESHAP	SIP	State Implementation Plan
HP	Horsepower	SO₂	Sulfur Dioxide
lbs/hr	Pounds per Hour	TAP	Toxic Air Pollutant
LDAR	Leak Detection and Repair	TPY	Tons per Year
M	Thousand	TRS	Total Reduced Sulfur
MACT	Maximum Achievable Control Technology	TSP	Total Suspended Particulate
MDHI	Maximum Design Heat Input	USEPA	United States Environmental Protection Agency
MM	Million	UTM	Universal Transverse Mercator
MMBtu/hr or mmbtu/hr	Million British Thermal Units per Hour	VEE	Visual Emissions Evaluation
MMCF/hr or mmcf/hr	Million Cubic Feet per Hour	VOC	Volatile Organic Compounds
NA	Not Applicable	VOL	Volatile Organic Liquids
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

- 2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation.*

2.4. Term and Renewal

- 2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

- 2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R13-3285, R13-3285A, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]
- 2.5.2. This permit will supercede and replace Permit Number R13-3285. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;
- 2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;
- 2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

- a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
- d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

- 2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- 2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are not met.
- 2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;
 - b. The permitted facility was at the time being properly operated;
 - c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,
 - d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.
- 2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
- 2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13. [45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

- 3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]
- 3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]
- 3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]
- 3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]
- 3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]
- 3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

- 3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method.

3.3. Testing Requirements

- 3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:
- a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.
 - b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.
 - c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.
 - d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

- 3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.
- 3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

- 3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.
- 3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.
- 3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class with postage prepaid to the address(es) set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345

If to the USEPA:

Associate Director
Office of Air Enforcement and Compliance
Assistance Review (3AP20)
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

3.5.4. **Operating Fee.**

In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

- 3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R13-3285A, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. Compressor Engines

The compressor engines, identified as C-2100 through C-2170, shall meet the following requirements:

- a. Each unit shall be a Caterpillar G3608 4SLB 2,500 hp compressor engine and shall only be fired by pipeline-quality natural gas;
- b. At all times each engine is in operation, an EMIT Technologies, Inc. Model RT-3615-H oxidation catalyst shall be used for emissions control. Use of a different oxidation catalyst model shall not be defined as a modification under 45CSR13 if the replacement oxidation catalyst meets the requirements under §13-45-2.17(f)(1). The permittee shall submit emissions performance information for any new oxidation catalyst added under §13-45-2.17(f)(1) to the Director within thirty (30) days of operation.
- c. The maximum emissions from each engine, as controlled by the oxidation catalyst specified under 4.1.2(b), shall not exceed the limits given in the following table:

Table 4.1.2(c): Per-Compressor Engine Emission Limits

Pollutant	PPH ⁽¹⁾	TPY
CO	0.88	3.86
NO _x	1.65	7.24
PM _{2.5} /PM ₁₀ /PM ⁽²⁾	0.17	0.74
VOC	1.54	6.76
Formaldehyde	0.17	0.72

(1) PPH emissions based on specific model of engine, engine size, and control technology.

(2) Includes condensables.

- d. As the annual emissions are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis;
- e. The emission limitations specified in Table 4.1.2(c) shall apply at all times except during periods of start-up and shut-down provided that the duration of these periods does not exceed 30 minutes per occurrence. The permittee shall operate the engine in a manner consistent with good air pollution control practices for minimizing emissions at all times, including periods of start-up and shut-down. The emissions from start-up and shut-down shall be included in the twelve (12) month rolling total of emissions. The permittee shall comply with all applicable start-up and shut-down requirements in accordance with 40 CFR Part 60, Subparts JJJJ and Part 63, Subpart ZZZZ.

f. **40 CFR 60, Subpart JJJJ**

Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE.

[40 CFR §60.4233(e)]

Table 1 to Subpart JJJJ of Part 60—NO_x, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards ^a					
			g/HP-hr			ppmvd at 15% O ₂		
			NO _x	CO	VOC ^(d)	NO _x	CO	VOC ^(d)
Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG (except lean burn 500=HP<1,350)	HP≥500	7/1/2010	1.0	2.0	0.7	82	270	60

(a) Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O₂.

(d) For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.

[40 CFR60, Subpart JJJJ, Table 1]

g. **40 CFR 60, Subpart OOOOa**

You must reduce GHG (in the form of a limitation on emissions of methane) and VOC emissions by complying with the standards in paragraphs (a) through (d) of this section for each reciprocating compressor affected facility.

(1) You must replace the reciprocating compressor rod packing according to either paragraph (a)(1) or (2) of this section, or you must comply with paragraph (a)(3) of this section.

(i) On or before the compressor has operated for 26,000 hours. The number of hours of operation must be continuously monitored beginning upon initial startup of your reciprocating compressor affected facility, or the date of the most recent reciprocating compressor rod packing replacement, whichever is later.

[40 CFR §60.5385a(a)(1)]

(ii) Prior to 36 months from the date of the most recent rod packing replacement, or 36 months from the date of startup for a new reciprocating compressor for which the rod packing has not yet been replaced.

[40 CFR §60.5385a(a)(2)]

(iii) Collect the methane and VOC emissions from the rod packing using a rod packing emissions collection system that operates under negative pressure and route the rod packing emissions to a process through a closed vent system that meets the requirements of §60.5411a(a) and (d).

[40 CFR §60.5385a(a)(3)]

(2) You must demonstrate initial compliance with standards that apply to reciprocating compressor affected facilities as required by §60.5410a(c).

[40 CFR §60.5385a(b)]

(3) You must demonstrate continuous compliance with standards that apply to reciprocating compressor affected facilities as required by §60.5415a(c).
[40 CFR §60.5385a(c)]

(4) You must perform the reporting as required by §60.5420a(b)(1) and (4) and the recordkeeping as required by §60.5420a(c)(3), (6) through (9), and (17), as applicable.
[40 CFR §60.5385a(d)]

h. **40 CFR 63, Subpart ZZZZ**

An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

(1) A new or reconstructed stationary RICE located at an area source;
[40 CFR §63.6590(c)(1)]

4.1.3. **Non-Selective Catalytic Reduction**

Use of Non-Selective Catalytic Reduction shall be in accordance with the following:

- a. Rich-burn natural gas-fired compressor engine(s) equipped with non-selective catalytic reduction (NSCR) air pollution control devices shall be fitted with a closed-loop, automatic air/fuel ratio controller to ensure emissions of regulated pollutants do not exceed the emission limit listed in 4.1.2(c) for any engine/NSCR combination under varying load. The closed-loop, automatic air/fuel ratio controller shall control a fuel metering valve to ensure a fuel-rich mixture and a resultant exhaust oxygen content of less than or equal to 2%;
- b. For natural gas compressor engine(s), the permittee shall monitor the temperature to the inlet of the catalyst and in accordance with manufacturer's specifications; a high temperature alarm shall shut off the engine before thermal deactivation of the catalyst occurs. If the engine shuts off due to high temperature, the permittee shall also check for thermal deactivation of the catalyst before normal operations are resumed; and
- c. The permittee shall follow a written operation and maintenance plan that provides the periodic and annual maintenance requirements of the oxidation catalyst (this plan may be based on manufacturer's recommendations on operation and maintenance).

4.1.4. **Microturbine**

The Microturbines, identified as G-8000, shall meet the following requirements:

- a. The unit shall be a Capstone C600 NG 600kWe (output) Microturbine, shall not exceed a rated MDHI of 6.18 mmBtu/hr, and shall only be fired by pipeline-quality natural gas;
- b. The maximum emissions from the unit shall not exceed the limits given in the following table:

Table 4.1.3(b): Per-Microturbine Emission Limits

Pollutant	PPH ⁽¹⁾	TPY
CO	0.66	2.89
NO _x	0.24	1.05

- c. As the annual emissions are based on 8,760 hours of operation, there are no annual limits on hours of operation or natural gas combusted on an annual basis.

4.1.5. Glycol Dehydration Units

The Glycol Dehydration Units shall meet the following requirements:

- a. The maximum dry natural gas throughput to each Glycol Dehydration Unit shall not exceed 110 mmscf/day or 40,150 mmscf/year;
- b. The maximum glycol recirculation rate in each unit shall not exceed 15 gallons per minute;
- c. The controlled maximum emissions from each unit (both Glycol Dehydrator Regeneration Still Vent and Flash Tank), shall not exceed the limits given in the following table:

Table 4.1.5(c): Per-Glycol Dehydrator Regeneration Still Vent/Flash Tank Controlled Emission Limits⁽¹⁾

Pollutant	Still Vent		Flash Tank	
	PPH	TPY	PPH	TPY
VOC	0.22	0.97	0.96	4.19
<i>n-Hexane</i>	0.01	0.05	0.03	0.12
<i>Benzene</i>	0.01	0.06	0.01	0.01
<i>Toluene</i>	0.02	0.13	0.01	0.01
<i>Xylene</i>	0.01	0.03	0.01	0.01
Total HAPs	0.06	0.27	0.03	0.13

(1) Emissions based on GLYCalc Version 4.0 using wet gas throughputs as limited under 4.1.5(a) and glycol recirculation rate as limited under 4.1.5(b).

- d. Vapors from each Glycol Dehydrator Flash Tank shall be captured and sent either to the flame zone of the reboiler as fuel or, when the reboiler is not operating, automatically re-routed to the storage tanks using a closed vent system that meets the requirements given under 4.1.11. Flash tank gases shall not be released directly into the atmosphere. As vapors from the storage tanks are controlled, captured, and recycled back into the system using a VRU/VRU system, the flash tank gases are estimated to controlled at a minimum of 98%;
- e. **40 CFR 63, Subpart HH: Applicability and Designation of Affected Source**
 Any source that has actual emissions of 5 tons per year or more of a single HAP, or 12.5 tons per year or more of a combination of HAP (i.e., 50 percent of the major source thresholds), shall update its major source determination within 1 year of the prior determination or October 15, 2012, whichever is later, and each year thereafter, using gas composition data measured during the preceding 12 months.
[40CFR§63.760(c)]
- f. **40 CFR 63, Subpart HH**
Exemptions. The owner or operator of an area source is exempt from the requirements of paragraph (d) of this section if the criteria listed in paragraph (e)(1)(i) or (ii) of this section are met, except that the records of the determination of these criteria must be maintained as required in § 63.774(d)(1).
[40 CFR §63.764(e)(1)]

- (1) The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year, as determined by the procedures specified in § 63.772(b)(2) of this subpart.

[40 CFR §63.764(e)(1)(ii)]

- g. For the purposes of determining actual average benzene emissions, the methods specified in § 63.772(b) of 40 CFR 63, Subpart HH shall be used if the permittee is exempt from § 63.764(d).

4.1.6. Glycol Dehydration Reboilers

The Glycol Dehydration Unit Reboilers, identified as R-3110 and R-3210, shall meet the following requirements:

- a. The MDHI of each unit shall not exceed 1.5 mmBtu/hr and the units shall only be fired by pipeline-quality natural gas or captured flash gas;
- b. The maximum emissions from each Reboiler’s combustion exhaust shall not exceed the limits given in the following table;

Table 4.1.6(b): Per-Reboiler Emission Limits

Pollutant	PPH ⁽¹⁾	TPY
CO	0.15	0.68
NO _x	0.18	0.81

- c. As the annual emissions are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas/flash gas combusted on an annual basis for either Reboiler; and

d. 45CSR2

No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.

[40CSR§2-3.1]

4.1.7. Catalytic and Fuel Conditioning Heaters

The Catalytic Heater and the Fuel Conditioning Heater, identified as CATHT-1 and FUEL1, respectively, shall meet the following requirements:

- a. The MDHI of CATHT-1 and FUEL1 shall not exceed 0.024 mmBtu/hr and 0.50 mmBtu/hr, respectively and the units shall only be fired by pipeline-quality natural gas;
- b. The maximum emissions from the units’ combustion exhaust shall not exceed the limits given in the following table;

Table 4.1.7(b): Heaters Emission Limits

CATHT-1		
Pollutant	PPH	TPY
CO	0.01	0.01
NO _x	0.01	0.01

FUEL1		
Pollutant	PPH	TPY
CO	0.05	0.23
NO _x	0.06	0.27

- c. As the annual emissions are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for either CATHT-1 or FUEL1.

4.1.8. Storage Tanks

Use of the storage tanks, identified as TK-9000 through TK-9110, shall be in accordance with the following:

- a. Tank size and material stored shall be limited as specified under Table 1.0 of this permit.
- b. The aggregate throughput of all storage tanks shall not exceed a limit of 2,300,000 gallons/year of condensate and 690,000 gallons/year of produced water;
- c. The permittee shall capture all tank vapors (working/breathing/flashing) from the storage tanks using a primary vapor recovery unit (VRU-6000) and recycle the vapors back into the gas system right before the initial filter scrubber using a closed vent system according to the requirements of 4.1.11. A second vapor recovery unit (VRU-6100) is used as back-up to the primary vapor recovery unit. As vapors from the storage tanks are controlled captured and recycled back into the system using a VRU/VRU system, the storage tank vapors are estimated to controlled at a minimum of 98%;

d. Cover Requirements

The permittee shall comply with the following storage tank cover requirements:

- (1) The cover and all openings on the cover (e.g., access hatches, sampling ports, pressure relief valves and gauge wells) shall form a continuous impermeable barrier over the entire surface area of the liquid in the storage vessel.
- (2) Each cover opening shall be secured in a closed, sealed position (e.g., covered by a gasketed lid or cap) whenever material is in the unit on which the cover is installed except during those times when it is necessary to use an opening as follows:
- (i) To add material to, or remove material from the unit (this includes openings necessary to equalize or balance the internal pressure of the unit following changes in the level of the material in the unit);
- (ii) To inspect or sample the material in the unit;
- (iii) To inspect, maintain, repair, or replace equipment located inside the unit; or
- (iv) To vent liquids, gases, or fumes from the unit through a closed-vent system designed and operated in accordance with the requirements of this permit to a control device or to a process.

- (3) Each storage vessel thief hatch shall be weighted and properly seated. The permittee shall select gasket material for the hatch based on composition of the fluid in the storage vessel and weather conditions.

e. **40 CFR 60, Subpart OOOOa - Storage Tank Standards**

If the settling tank, identified as TK-9000, is defined as a Group 2 storage vessel affected facility pursuant to the applicability requirements given under §60.5365a(e), the tank will be subject to the applicable requirements of 40 CFR 60, Subpart OOOOa.

4.1.9. **Truck Loadout**

The Truck Loading operations, identified as L1, shall be in accordance with the following requirements:

- a. All trucks shall be loaded using the submerged-fill method. The "submerged-fill method" shall, for the purposes of this permit, mean either bottom-filling or filling by extending the pipe to near the bottom of the tank, and as soon as is practicable, below the level of liquid; and
- b. The maximum loadout of produced liquids from the storage tanks shall not exceed 2,300,000 gallons/year of condensate and 690,000 gallons/year of produced water.

4.1.10. **Enclosed Flare**

The enclosed flare, identified as FL-1000, shall operate according to the following requirements:

- a. The enclosed flare shall be non-assisted and the maximum capacity of the flare shall not exceed heat input as given under Emissions Table 1.0;
- b. The enclosed flare shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, a hydrocarbon combustion rate of 98.0%;
- c. The enclosed flare shall be operated with a flame present at all times, as determined by the methods specified in 4.2.6(a);
- d. The enclosed flare shall be designed for and operated with no visible emissions as determined by the methods specified in 4.3.4(a) except for either (1) or (2):
 - (1) periods not to exceed a total of one minute during any 15 minute period, determined on a monthly basis; or
 - (2) periods not to exceed a total of two (2) minutes during any hour, determined on a quarterly basis if the enclosed combustion device installed was a model tested under §60.5413(d) which meets the criteria in §60.5413(d)(11).
- e. The enclosed flare shall be operated at all times when emissions are vented to them;
- f. To ensure compliance with 4.1.10(e) above, the permittee shall monitor in accordance with 4.2.6(d).
- g. The permittee shall operate and maintain the enclosed flare according to the manufacturer's specifications for operating and maintenance requirements to maintain the guaranteed control efficiency listed under 4.1.10(b).

- h. The maximum combustion exhaust emissions from the enclosed flare shall not exceed the limits given in the following table;

Table 4.1.10(h): Enclosed Flare Combustion Exhaust Emission Limits

Pollutant	PPH	TPY
CO	2.86	12.51
NO _x	0.63	2.75

- i. **45CSR6**

The enclosed flare are subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

- (1) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

$$\text{Emissions (lb/hr)} = F \times \text{Incinerator Capacity (tons/hr)}$$

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

<u>Incinerator Capacity</u>	<u>Factor F</u>
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

- (2) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
 [45CSR6 §4.3]
- (3) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
 [45CSR6 §4.4]
- (4) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
 [45CSR6 §4.5]
- (5) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
 [45CSR6 §4.6]
- (6) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted

by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.

[45CSR6 §8.2]

4.1.11. Closed Vent Requirements

The permittee shall meet the following requirements for closed vent systems:

- a. The permittee shall design the closed vent system to route all gases, vapors, and fumes captured by the vapor recovery unit system. The permittee shall perform an initial LDAR evaluation within thirty (30) days of start-up and follow the procedures in 4.1.11(b) for ongoing compliance.
- b. The permittee shall design and operate a closed vent system with no detectable emissions, as determined using audio-visual-olfactory (AVO) inspections, USEPA 40CFR60 Method 21, USEPA alternative work practice to detect leaks from equipment using optical gas imaging (OGI) camera (e.g. FLIR camera), or some combination thereof. AVO inspections shall include, but not limited to, defects as visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices. If the permittee uses USEPA Method 21, then no detectable emissions is defined as less than 500 ppm in accordance with Method 21. If the permittee uses an OGI camera, then no detectable emissions is defined as no visible leaks detected in accordance with USEPA alternative OGI work practices.

If any leak is detected, the permittee shall repair the leak as soon as possible. The first attempt at repair must be made within five (5) calendar days of discovering the leak, and the final repair must be made within fifteen (15) calendar days of discovering the leak. The permittee shall record each leak detected and the associated repair. The leak will not be considered repaired until the same monitoring method or a more detailed instrument determines the leak is repaired.

- c. The permittee shall meet the requirements specified in (1) and (2) of this section if the closed vent system 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 to a process.
 - (1) Except as provided in paragraph (2) of this section, you must comply with either paragraph (i) or (ii) of this section for each bypass device.
 - (i) You must properly install, calibrate, maintain, and operate a flow indicator at the inlet to the bypass device that could divert the stream away from the control device or process to the atmosphere that sounds an alarm, or initiates notification via remote alarm to the nearest field office, when the bypass device is open such that the stream is being, or could be, diverted away from the control device or process to the atmosphere.
 - (ii) You must secure the bypass device valve installed at the inlet to the bypass device in the non-diverting position using a car-seal or a lock-and-key type configuration.
 - (2) Low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and safety devices are not subject to the requirements of paragraph (i) of this section. Pressure relief valves used to protect the fluid tanks from overpressure are not subject to this section.

4.1.12. Fugitive Emissions

The permittee shall mitigate the release of fugitive emissions according to the following requirements:

- a. The permittee shall meet all requirements under 40 CFR 60, Subpart OOOOa, Section §60.5497a applicable to the collection of fugitive emissions components located at the compressor station;
 - b. The permittee shall install, maintain, and operate all above-ground piping, valves, pumps, etc. that service lines in the transport of potential sources of regulated air pollutants to prevent any substantive fugitive escape of regulated air pollutants. Any above-ground piping, valves, pumps, etc. that shows signs of excess wear and that have a reasonable potential for substantive fugitive emissions of regulated air pollutants shall be replaced;
 - c. The number of compressor blowdowns, compressor startups, station shutdown vents, and pigging events at the facility shall not exceed 132, 132, 2, and 52, respectively. Compliance with this annual limitation shall be determined using a twelve (12) month rolling total. A twelve (12) month rolling total shall mean the sum of the events from the previous twelve (12) consecutive calendar months. However, in lieu of the event limits given in this section, if the permittee can accurately determine the quantity of gas released during each event, the permittee may show compliance with 4.1.12(c) by limiting total annual gas released to less than 3,485 mscf; and
 - d. The permittee shall develop a plan to limit the duration of any unforeseen release of natural gas by responding to the event in a reasonable time frame. This plan will include the placement of visible contact information at the facility for public reporting such an event. This plan shall be submitted to the DAQ prior to startup of the facility.
- 4.1.13. The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 40 CFR 60, Subpart JJJJ, and Subpart OOOOa, and 40 CFR 63, Subpart HH and Subpart ZZZZ. Any final revisions made to the above rules will, where applicable, supersede those specifically cited in this section.
- 4.1.14. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. Oxidation Catalysts

The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the oxidation catalysts:

- a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices and auxiliary air pollution control devices to ensure functional and effective operation of each compressor engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices and auxiliary air pollution control devices by:
 - (1) Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller.
 - (2) Following the catalyst manufacturer emissions related operating and maintenance recommendations, or develop, implement, or follow a site-specific maintenance plan.

- b. To demonstrate compliance with section 4.1.3, the permittee shall maintain records of the maintenance performed on each RICE and/or generator; and
- c. To demonstrate compliance with section 4.1.3(c), the permittee shall maintain a copy of the site specific maintenance plan or manufacturer maintenance plan.

4.2.2. **Glycol Dehydration Units**

The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the glycol dehydration units:

- a. For the purposes of demonstrating compliance with the maximum dry gas throughput limit set forth in 4.1.5(a), the permittee shall monitor and maintain monthly and rolling twelve month records of the dry gas throughput of the Glycol Dehydration Unit;
- b. Representative gas sample collection and emissions analysis frequency for the dehydration units shall be upon request by the Secretary. If requested, the permittee shall submit the wet gas analysis report required by section this section within 60 days of conducting the sampling of the wet gas stream as required. This report shall include a potential to emit (PTE) estimate using GRI-GlyCalc Version 3.0 or higher, incorporating the specific parameters measured, as well as a copy of the laboratory analysis. If the results of the compliance determination conducted as required in this section predict the emissions to be at or above 95% of HAPs major source levels or 0.95 tons per year of benzene, the permittee shall submit such determination and all supporting documentation to the Secretary within 15 days after making such determination;
- c. Compliance with the Maximum Glycol Recirculation Limitation set forth in 4.1.5(b) shall be determined using an average of a minimum of quarterly readings of the actual glycol pump(s) rate. If more than one pump is operating simultaneously then the rate of each operating pump shall be recorded and totaled for compliance purposes;
- d. To demonstrate compliance with the benzene exemption in 4.1.5(f), the following parameters shall be measured at a minimum frequency of once per annum in order to define annual average values or, if monitoring is not practical, some parameters may be assigned default values as listed below.
 - Natural Gas Flowrate
 - Operating hours per year
 - Annual throughput (MMscf/year)
 - Annual daily average (MMscf/day), and
 - Maximum design capacity (MMscf/day)
 - Absorber temperature and pressure
 - Lean glycol circulation rate
 - Glycol pump type and maximum design capacity (gpm)
 - Flash tank temperature and pressure, if applicable
 - Stripping Gas flow rate, if applicable
 - Wet gas composition (upstream of the absorber – dehydration column) sampled in accordance with GPA method 2166 and analyzed consistent with GPA extended method 2286 as well as the procedures presented in the GRI-GLYCalc™ Technical Reference User Manual and Handbook V4
 - Wet gas water content (lbs H₂O/MMscf)
 - Dry gas water content (lbs H₂O/MMscf) at a point directly after exiting the dehydration column and before any additional separation points

The following operating parameter(s) may be assigned default values when using GRI-GLYCalc:

- Dry gas water content can be assumed to be equivalent to pipeline quality at 7 lb H₂O / MMscf
- Wet gas water content can be assumed to be saturated
- Lean glycol water content if not directly measured may use the default value of 1.5 % water as established by GRI
- Lean glycol circulation rate may be estimated using the TEG recirculation ratio of 3 gal TEG / lb H₂O removed.

Note: If you are measuring and using actual wet or dry gas water content, then you should also measure the glycol circulation rate rather than using the default TEG recirculation ratio.

- e. The permittee shall maintain records of the quarterly dry natural gas throughput through the glycol dehydration unit(s), all monitoring data, wet gas sampling, and GRI-GLYCalc™ emission estimates; and
- f. For the purposes of demonstrating compliance with 4.1.5(d), the permittee shall maintain on-site (or the closest practicable location) a copy of the facility's P&I Diagram that verifies the design of the Glycol Dehydration Flash Tanks as described under 4.1.5(d).

4.2.3. **Glycol Dehydration Reboilers**

Upon request by the Secretary, compliance with the visible emission requirements of 4.1.6(d) shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 4.1.6(d). Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control.

[40CSR§2-3.2]

4.2.4. **Storage Tanks**

For the purposes of demonstrating compliance with the storage tank throughput limits set forth in 4.1.8(b), the permittee shall monitor and maintain monthly and rolling twelve month records of the aggregate throughput of the storage tanks. Alternatively, recording the monthly and rolling twelve (12) month total of produced liquids loaded into tanker trucks from the storage vessels according to 4.2.5. can be used to demonstrate compliance.

4.2.5. **Truck Loadout**

For the purposes of demonstrating compliance with the truck loadout limits set forth in 4.1.8, the permittee shall monitor and maintain monthly and rolling twelve month records of the amount of produced liquids loaded into tanker trucks.

4.2.6. **Enclosed Flare**

The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the enclosed flare:

- a. To demonstrate compliance with the pilot flame requirements of 4.1.10(c), the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the nearest field office, when the pilot light is out;
- b. For any absence of pilot flame, or other indication of smoking or improper equipment operation, you must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, you must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the combustor;
- c. The permittee is exempt from the pilot flame requirements of permit condition 4.2.6(b) of this section if the permittee installed an enclosed combustion device model that was tested under § 60.5413(d) which meets the criteria in § 60.5413(d)(11);
- d. For the purpose of demonstrating compliance with the continuous pilot flame requirements in 4.1.10(c), the permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device:
 - (1) If the permittee is demonstrating compliance to 4.2.6(b) with visual inspections, the permittee shall maintain records of the inspections; and
 - (2) If the permittee is demonstrating compliance to 4.2.6(c) with an enclosed combustion device model that was tested under the conditions of § 60.5413(d), a record shall be maintained of the performance test results.
- e. To demonstrate compliance with 4.1.10(d), the permittee shall maintain records of the manufacturer's specifications for operating and maintenance requirements to maintain the control efficiency;
- f. Any bypass event of an enclosed flare must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the date of the bypass, the estimate of VOC emissions released to the atmosphere as a result of the bypass, the cause or suspected cause of the bypass, and any corrective measures taken or planned; and
- g. Any time the enclosed flare is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

4.2.7. Closed Vent Requirements

To demonstrate compliance with the closed vent system requirements of 4.1.11, the permittee shall:

- a. **Initial requirements.** Conduct an initial AVO inspection for defects that could result in air emissions within thirty (30) days of start-up. Defects include, but are not limited to, visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices.
 - (1) The initial inspection shall include the bypass inspection, conducted according to paragraph (c) of this section;

- (2) In the event that a leak or defect is detected, you must repair the leak or defect as soon as practicable. Grease or another applicable substance must be applied to deteriorating or cracked gaskets to improve the seal while awaiting repair; and
 - (3) Delay of repair of a closed vent system for which leaks or defects have been detected is allowed if the repair is technically infeasible without a shutdown, or if you determine that emissions resulting from immediate repair would be greater than the fugitive emission likely to result from delay of repair. You must complete repair of such equipment by the end of the next shutdown.
- b. **Continuous requirements.** The permittee shall monitor and maintain quarterly records for each component that was inspected for fugitive escape of regulated air pollutants. Each component shall operate with no detectable emissions, as determined using AVO inspections, USEPA 40CFR60 Method 21, USEPA alternative work practice to detect leaks from equipment using optical gas imaging (OGI) camera (ex. FLIR camera), or some combination thereof. AVO inspections shall include, but not limited to, defects as visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices. If permittee uses USEPA Method 21, then no detectable emissions is defined as less than 500 ppm in accordance with Method 21. If permittee uses an OGI camera, then no detectable emissions is defined as no visible leaks detected in accordance with USEPA alternative OGI work practices.

If any leak is detected, the permittee shall repair the leak as soon as possible. The first attempt at repair must be made within five (5) days of discovering the leak, and the final repair must be made within fifteen (15) days of discovering the leak. The permittee shall record each leak detected and the associated repair. The leak will not be considered repaired until the same monitoring method that detected the leak determines the leak is repaired.

The permittee shall maintain records of all quarterly monitoring for fugitive escape of regulated air pollutants.

- c. **Bypass inspection.** Visually inspect the bypass valve during the initial inspection for the presence of the car seal or lock-and-key type configuration to verify that the valve is maintained in the non-diverting position to ensure that the vent stream is not diverted through the bypass device. If an alternative method is used, conduct the inspection of the bypass as described in the operating procedures.
- d. **Unsafe to inspect requirements.** You may designate any parts of the closed vent system as unsafe to inspect if the requirements in paragraphs (1) and (2) of this section are met. Unsafe to inspect parts are exempt from the inspection requirements of paragraphs (a) and (b) of this section.
 - (1) You determine that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with the requirements.
 - (2) You have a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.
- e. To demonstrate compliance with the closed vent monitoring requirements given under paragraphs (a) through (d) above, the following records shall be maintained:
 - (1) The initial compliance requirements;

- (2) Each AVO inspection, Method 21, infrared camera or some combination thereof conducted to demonstrate continuous compliance, including records of any repairs that were made as a result of the inspection;
- (3) If you are subject to the bypass requirements, the following records shall also be maintained:
 - (i) Each inspection or each time the key is checked out or a record each time the alarm is sounded;
 - (ii) Each occurrence that the control device was bypassed. If the device was bypassed, the records shall include the date, time, and duration of the event and shall provide the reason that the event occurred. The record shall also include the estimate of emissions that were released to the environment as a result of the bypass.
- (4) Any part of the system that has been designated as "unsafe to inspect" in accordance with 4.2.7(d).

4.2.8. 40 CFR 60, Subpart JJJJ

The permittee shall comply with all applicable monitoring, compliance demonstration and record-keeping requirements as given under 40 CFR 60, Subpart JJJJ including the following:

If you are an owner or operator of a stationary SI internal combustion engine and must comply with the emission standards specified in §60.4233(d) or (e), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) and (2) of this section.

[40 CFR §60.4243(b)]

- a. Purchasing a non-certified engine and demonstrating compliance with the emission standards specified in §60.4233(d) or (e) and according to the requirements specified in §60.4244, as applicable, and according to paragraphs (b)(2)(i) and (ii) of this section.
[40 CFR §60.4243(b)(2)]

- (1) If you are an owner or operator of a stationary SI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.
[40 CFR §60.4243(b)(2)(ii)]

4.2.9 Fugitive Emissions

The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the fugitive emissions:

- a. For the purposes of determining compliance with 4.1.12(c), the permittee shall monitor and record the monthly and rolling twelve month records of the number of compressor blowdowns, station shutdown vents, filter maintenance releases, and pigging events at the facility. The information will further include the duration, estimated volume of gas vented, and reason for event; and
- b. The permittee shall monitor and record other events (not listed under 4.1.12(c)) where a substantive amount of gas is released (i.e., pressure relief trips). The information will further

include the duration, estimated volume of gas vented, reason for event, and corrective actions taken.

- c. The permittee shall report all events recorded under 4.2.9(b) to the DAQ in writing as soon as practicable but no later than fifteen (15) days after the event.

4.2.10. 40 CFR 63, Subpart HH

The permittee shall comply with all applicable monitoring, compliance demonstration and record-keeping requirements as given under 40 CFR 63, Subpart HH including the following:

Determination of glycol dehydration unit flowrate, benzene emissions, or BTEX emissions. The procedures of this paragraph shall be used by an owner or operator to determine glycol dehydration unit natural gas flowrate, benzene emissions, or BTEX emissions.

[40 CFR §63.772(b)]

- a. The determination of actual average benzene or BTEX emissions from a glycol dehydration unit shall be made using the procedures of either paragraph (b)(2)(i) or (ii) of this section. Emissions shall be determined either uncontrolled, or with federally enforceable controls in place. **[40 CFR §63.772(b)(2)]**

- (1) The owner or operator shall determine actual average benzene or BTEX emissions using the model GRI-GLYCalc™, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc™ Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit 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); or **[40 CFR §63.772(b)(2)(i)]**

- (2) The owner or operator shall determine an average mass rate of benzene or BTEX emissions in kilograms per hour through direct measurement using the methods in § 63.772(a)(1)(i) or (ii), or an alternative method according to § 63.7(f). Annual emissions in kilograms per year shall be determined by multiplying the mass rate by the number of hours the unit is operated per year. This result shall be converted to megagrams per year. **[40 CFR §63.772(b)(2)(ii)]**

- 4.2.11. The permittee shall meet all applicable Monitoring, Compliance Demonstration and Source-Specific Recordkeeping and Reporting Requirements as given under 45CSR2, 45CSR6, 40 CFR 60, Subpart JJJJ, and Subpart OOOOa, and 40 CFR 63, Subpart HH and Subpart ZZZZ. Any final revisions made to 40 CFR Subpart JJJJ and 40 CFR 63, Subpart HH will, where applicable, supercede those specifically cited in this section.

4.3. Performance Testing Requirements

- 4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. Compressor Engines

The permittee shall, pursuant to the timing and other requirements of 40 CFR 60, Subpart JJJJ, conduct, or have conducted, performance testing on the compressor engines to determine the emission

rates of CO, NO_x, and VOCs. The testing shall, in addition to meeting all applicable requirements under 40 CFR 60, Subpart JJJJ, be in accordance with 3.3.1. Results of the this performance testing shall, unless granted in writing a waiver by the Director, be used to determine compliance with the CO, NO_x, and VOC emission limits given under 4.1.2(c).

4.3.3. Glycol Dehydration Units

If requested under 4.2.2(b), the permittee shall sample wet natural gas in accordance with the Gas Processor Association (GPA) Method 2166 and analyze the samples in accordance with GPA Method 2286. The permittee may utilize other equivalent methods provided they are approved in advance by DAQ as part of a testing protocol. If alternative methods are proposed, a test protocol shall be submitted for approval no later than 60 days before the scheduled test date.

Note: The DAQ defines a representative wet gas sample to be one that is characteristic of the average gas composition dehydrated throughout a calendar year. If an isolated sample is not indicative of the annual average composition, then a company may opt to produce a weighted average based on throughput between multiple sampling events, which can be used to define a more representative average annual gas composition profile.

4.3.4. Enclosed Flares

The permittee shall meet the following Performance Testing Requirements for the enclosed flares:

- a. To demonstrate compliance with the visible emissions requirements of 4.1.10(d), the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for each enclosed flare.
 - (1) The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course. The observation period shall be:
 - (i) *[Reserved]*;
 - (ii) a minimum of 15 minutes if demonstrating compliance with 4.1.10(d)(1); or
 - (iii) a minimum of 1 hour if demonstrating compliance with 4.1.10(d)(2).
 - (2) The visible emission check shall be conducted initially within 180 days of start-up to demonstrate compliance while vapors are being sent to the control device.
- b. At such reasonable times as the Secretary may designate, the operator of any incinerator shall be required to conduct or have conducted stack tests to determine the particulate matter loading, by using 40 CFR Part 60, Appendix A, Method 5, and volatile organic compound loading, by using Methods 18 and 25A of 40 CFR Part 60, Appendix A, Method 320 of 40 CFR Part 63, Appendix A, or ASTM D 6348-03 or other equivalent U.S. EPA approved method approved by the Secretary, in exhaust gases. Such tests shall be conducted in such manner as the Secretary may specify and be filed on forms and in a manner acceptable to the Secretary. The Secretary may, at the Secretary's option, witness or conduct such stack tests. Should the Secretary exercise his or her option to conduct such tests, the operator will provide all the necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test

equipment and the required safety equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices. The Secretary may conduct such other tests as the Secretary may deem necessary to evaluate air pollution emissions other than those noted above. **[45CSR§6-7.1 and 7.2]**

- 4.3.5. The permittee shall meet all applicable Performance Testing Requirements as given under 45CSR2, 45CSR6, 40 CFR 60, Subpart JJJJ, and Subpart OOOOa, and 40 CFR 63, Subpart HH and Subpart ZZZZ.

4.4. Additional Recordkeeping Requirements

- 4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

- 4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

- 4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
- f. Steps taken to correct the malfunction.
- g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

- 4.4.4. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.3.4(a) documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent.

4.5. Additional Reporting Requirements

- 4.5.1. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 per 4.3.4(a)(3) must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached _____, representing the period beginning _____ and ending _____, and any supporting documents appended hereto, is true, accurate, and complete.

Signature¹ _____
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title _____
(please print or type) Name Title

Telephone No. _____ Fax No. _____

- ¹ This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:
- a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
 - (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), or
 - (ii) the delegation of authority to such representative is approved in advance by the Director;
 - b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
 - c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or
 - d. The designated representative delegated with such authority and approved in advance by the Director.



west virginia department of environmental protection

Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475 • Fax: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3285A	<i>Entire Document</i> NON-CONFIDENTIAL
Plant ID No.:	085-00055	
Applicant:	Antero Midstream LLC	
Facility Name:	Lafferty Compressor Station	
Location:	Near Pennsboro, Ritchie County	
SIC/NAICS Code:	4923/221210	
Application Type:	Modification	
Received Date:	July 1, 2016	
Engineer Assigned:	Joe Kessler	
Fee Amount:	\$4,500	
Date Received:	July 5, 2016	
Complete Date:	August 16, 2016	
Due Date:	November 14, 2016	
Applicant's Ad Date:	July 20, 2016	
Newspaper:	<i>The Pennsboro News</i>	
UTM's:	508.091 km Easting • 4,341.658 km Northing • Zone 17	
Latitude/Longitude:	39.22418/-80.90627	
Description:	Modification primarily to: (1) Replace the thirteen (13) permitted Waukesha 7044 GSI compressor engines with eight (8) Caterpillar G3608 engines, (2) Installation of a new fuel conditioning heater, (3) Increase the Glycol Dehydrator Units throughput each to 110 mmscf/day, and (4) Revision of the dehydrator flash tank control efficiency.	

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing (As-Permitted) Facility

On May 25, 2016, Antero Midstream LLC (Antero) received Permit Number R13-3285 for the construction of the Lafferty Compressor Station located approximately 5.4 miles southeast of Pennsboro, WV just east of White Oak Road (County Route 10/4). The Lafferty Compressor Station currently is permitted for thirteen (13) Waukesha 7044 GSI 4-Stroke Rich Burn (4SRB) 1,680 horsepower (hp) compressor engines, one (1) Capstone C600 Standard 600kWe Microturbine, two

(2) 72.5 mmscf/day triethylene glycol (TEG) dehydration units (GDUs), one (1) 0.024 mmBtu/hr Catalytic Heater, one (1) 9.2 mmBtu/hr Abutec Model Number 100 non-assisted enclosed flare, one (1) 21,000 gallon produced liquids settling tank, and four (4) 16,800 gallon produced liquids (condensate and water) storage tanks.

In the existing as-permitted facility, natural gas produced in area wells will enter into the facility and will be compressed by the engines (C-2100 through C-2220). The compressed gas is sent through the GDUs (SV-3110 and SV-3210) where it is dehydrated to the desired level. The compressor engines are each controlled (NO_x, CO, VOCs, and formaldehyde) by an EMIT Technologies RT-3615-T oxidation catalyst (1C through 13C).

Glycol dehydration is a liquid desiccant system used for the removal of water from natural gas. In each GDU, lean, water-free glycol is fed to the top of an absorber (known as a "contactor") where it is contacted with the wet natural gas stream. The glycol removes water from the natural gas by physical absorption and is carried out the bottom of the column. The dry natural gas leaves the top of the absorption column and is fed into a pipeline for transportation. The dehydrator still vent gases are each sent to the enclosed flare (FL-1000) for destruction (@ 98% DRE). Additionally, each GDU contains several TEG storage tanks. However, the storage tanks are defined as *de minimis* sources under Table 45-13B of 45CSR13 as they are each less than 10,000 gallons and TEG has an extremely low vapor pressure (<0.01 mm Hg).

After leaving the absorber, each glycol stream - now referred to as "rich" glycol - is fed to a flash vessel (FT-3110 and FT-3210) where flashed hydrocarbon vapors are either sent to the reboiler as fuel or, if the reboiler is not in operation, automatically re-routed to the storage tanks where it is captured by the vapor recovery units (VRU-6000 and VRU-6100) and recycled back into the system prior to the inlet gas scrubber. Any liquids removed in the flash tank are sent first to the settling tank (TK-9000) and then to either one of the condensate or produced liquid water storage tanks (TK-9000 through TK-9110). Vapors from the produced liquids storage tanks (working/breathing/flashing) are captured by the primary VRU (VRU-6000). In the event of downtime of the primary VRU, a backup VRU is employed (VRU-6100).

After leaving the flash vessel, in each unit, the rich glycol is fed to a Glycol Regenerator Column. Each Regenerator Column consists of a column, an overhead condenser, and the reboiler. The glycol is thermally regenerated to remove excess water and regain high purity. The heat for the regeneration is provided by two (2) 1.50 mmBtu/hr natural gas-fired reboilers (R-3110 and R3210). The hot, lean glycol is cooled by a heat-exchanger and is then fed to a pump where it is sent to the glycol absorber for reuse. Liquids produced in the regeneration process are sent to one of the facility storage tanks.

A portion of the gas is withdrawn after dehydration but before the station outlet metering and sent to the fuel gas system. The fuel gas is directed through a fuel gas scrubber and metering before being directed to the compressor engines and other gas-powered equipment.

Additionally, the proposed facility will utilize an uncontrolled truck loadout (LDOUT1) to remove condensate and produced water from the site (estimated to be a maximum of 2,300,000 gallons/year of condensate and 690,000 gallons/year of produced water). One (1) 600 kW_e uncontrolled Microturbine (G-8000) will be used to produce primary power for the facility. One (1)

0.024 mmBtu/hr natural gas-fired catalytic heater (CATHT1) will be used in the fuel gas system (providing gas to the microturbine) to prevent the formation of hydrates and to minimize condensate dropout from the pressure reduction.

Proposed Modifications

Antero is now proposing to modify the existing facility by:

- Replacing the thirteen (13) permitted Waukesha compressor engines with eight (8) Caterpillar G3608 4-Stroke Lean Burn (4SLB) 2,500 hp compressor engines (C-2100 through C-2170) that will each utilize an EMIT Technologies RT-3615-H oxidation catalyst (1C through 8C) for control of CO (~95%), VOCs (~56%), and formaldehyde (~81%);
- Installing a 0.50 mmBtu/hr fuel conditioning heater (FUEL1) to condition/treat fuel gas for the compressor engines prior to the engines to allow more complete combustion;
- Increasing the throughput of each GDU to 110 mmscf/day;
- Revising of the dehydrator flash tank control efficiency to 98% based on the use of a VRU/VRU backup on flash gases not combusted in the reboiler; and
- Updating the facility-wide fugitive emissions based on 52 pigging events per year.

SITE INSPECTION

On March 30, 2016, the writer conducted an inspection of the proposed location of the Lafferty Compressor Station (the facility has not yet been inspected by the DAQ Compliance/Enforcement Section.). The proposed Lafferty site is located in a rural area of Ritchie County approximately 5.4 miles southeast of Pennsboro, WV just east of White Oak Road (County Route 10/4). The writer was accompanied on the inspection by Ms. Lou Ann Lee, Environmental Coordinator with Antero. Observations from the inspection include:

- The proposed facility will lie atop a hill approximately 5.4 miles southeast of Pennsboro, WV. The area is rural in nature with scattered homes and farms within several miles of the proposed location;
- At the time of the inspection, no substantive work had been undertaken at the site;
- The occupied dwelling located nearest to the proposed site is approximately 0.25 miles west of the proposed site along White Oak Road; and
- *Directions:* [Latitude: 39.22418, Longitude: -80.90627] From the intersection of United States (US) Route 50 and State Route (SR) 74 (Pullman Drive), travel south on SR 74 for approximately 1.3 miles and then turn left onto CR 7/1 (Lynn Camp Road). Follow the Lynn Camp Road for approximately 4.1 miles and then turn left onto White Oak Drive (CR 10/4). Travel on White Oak Road for approximately 0.3 miles to the compressor station located at the top of a small hill.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Antero included in Attachment N of the permit application revised facility-wide air emissions calculations for the equipment and processes at the Lafferty Compressor Station. The following will summarize only the calculation methodologies used by Antero to calculate the potential-to-emit (PTE) of equipment and processes modified or added as part of this permitting action.

Compressor Engines

Potential emissions from each of the eight (8) Caterpillar G3608 4SLB 2,500 hp compressor engines (1E through 8E) were based on post-control emission factors provided by the oxidation catalyst vendor, the engine vendor, and as given in AP-42, Section 3.2 (AP-42 is a database of emission factors maintained by USEPA). Hourly emissions were based on the (as calculated using a fuel heat rating of 6,850 Btu/hp-hr) maximum design heat input (MDHI) of the engines of 17.13 mmBtu/hr and the maximum hp rating. Annual emissions were based on 8,760 hours of operation per year. The compressor engines are each controlled (CO, VOCs, and formaldehyde) by an EMIT Technologies RT-3615-H oxidation catalyst (~95%, ~56%, and ~81%, respectively). The following table details the PTE of each compressor engine:

Table 1: Per-Compressor Engine PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO ⁽¹⁾	0.16 g/hp-hr (controlled)	Catalyst/Engine Vendor	0.88	3.86
NO _x	0.30 g/hp-hr	Engine Vendor	1.65	7.24
PM _{2.5} /PM ₁₀ /PM ⁽²⁾	9.91 x 10 ⁻³ lb/mmBtu	AP-42, Table 3.2-2	0.17	0.74
SO ₂	5.88 x 10 ⁻⁴ lb/mmBtu	AP-42, Table 3.2-2	0.01	0.04
VOCs ⁽¹⁾	0.28 g/hp-hr (controlled)	Catalyst/Engine Vendor	1.54	6.76
Total HAPs	Various	AP-42, Table 3.2-2	0.39	1.69
Formaldehyde ⁽¹⁾	0.03 g/hp-hr (controlled)	Catalyst/Engine Vendor	0.17	0.72

(1) Based on control percentages provided by the oxidation catalyst vendor (to be conservative, Antero used data from non-premium catalyst sheet for CO and HCHO emissions even though they will utilize premium grade catalyst). VOC emissions based on NMNEHC + CH₂O emission factors.

(2) Includes condensables.

Glycol Regenerator Column/GDU Flash Tank Emissions

Revised uncontrolled VOC and Hazardous Air Pollutant (HAP) emissions from the glycol regenerators (15E and 18E) and GDU flash tanks (16E and 19E) are based on the emissions calculation program GRI-GLYCalc Version 4.0. GRI-GLYCalc is a well-known program for estimating air emissions from glycol units using TEG. Included in the application is a copy of the appropriate GLY-Calc analysis sheets. Controlled emissions from the regenerators were based on a 98% destruction and removal efficiency (DRE) of hydrocarbons at the flare. Controlled emissions from the flash tanks were based on a 98% DRE of hydrocarbons in the reboiler (with a VRU/VRU backup system in the event of reboiler downtime).

New Fuel Conditioning Heater Emissions

Combustion emissions from the new natural gas-fired 0.50 mmBtu/hr fuel conditioning heater (28E) were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. Hourly emissions were based on the MDHI of the unit and annual emissions were based on an annual operation of 8,760 hours. A fuel/waste gas heat content value of 1,020 Btu/ft³ was used in the calculations as well as a heater efficiency rate of 80%.

Maintenance and Emergency Events

Antero also included in their fugitive emission estimate a certain number of scenarios where natural gas is released for emergency or maintenance purposes. Those included were compressor blowdown/startup events (132 events/year for each), station emergency shutdowns (2 events/year), and “pigging” events (revised upward to 52 events/year). The amount of gas released per event was taken from “engineering based on other facilities.” VOC/HAP by-weight percentages of the natural gas were based on a representative gas analysis.

Emissions Summary

Based on the revised calculations as submitted in Attachment N of the permit application, the post-modification facility-wide PTE of the Lafferty Compressor Station is given in Attachment A. The following table lists the change in facility-wide PTE at the Lafferty Compressor Station from the changes proposed herein:

Table 2: Change in Facility-Wide Post-Modification PTE

Source	CO	NO _x	PM ⁽¹⁾	SO ₂	VOCs	HAPs
R13-3285	84.24	77.06	15.64	0.62	80.64	13.62
R13-3285A	47.88	63.62	6.24	0.45	91.65	15.32
<i>Change in Emissions</i> →	(36.36)	(13.44)	(9.40)	(0.17)	11.01	1.70

(1) All particulate matter emissions are assumed to be less than 2.5 microns. Includes condensables.

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the emission units/sources added or modified at the Lafferty Compressor Station.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

Pursuant to the definition of “fuel burning unit” under 45CSR2 (“producing heat or power by indirect heat transfer”), 45CSR2 does not apply to the compressor engines.

The new fuel conditioning heater has been determined to meet the definition of a “fuel burning unit” under 45CSR2 and is, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of the fuel conditioning heater is less than 10 mmBtu/hr, the unit is not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

Pursuant to 45CSR2, Section 3.1, the heater is subject to an opacity limit of 10%. Proper maintenance and operation of the unit (and the use of natural gas as fuel) should keep the opacity of the unit well below 10% during normal operations.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides - (NON-APPLICABILITY)

Pursuant to the definition of “fuel burning unit” under 45CSR10 (“producing heat or power by indirect heat transfer”), the limitations on fuel burning units under 45CSR10 do not apply to the compressor engines.

45CSR10 has requirements limiting SO₂ emissions from “fuel burning units,” limiting in-stack SO₂ concentrations of “manufacturing processes,” and limiting H₂S concentrations in process gas streams. The only potential applicability of 45CSR10 to the Lafferty Compressor Station is the limitations on fuel burning units. The fuel conditioning heater has been determined to meet the definition of a “fuel burning unit” under 45CSR10. However, pursuant to the exemption given under §45-10-10.1, as the MDHI of the fuel conditioning heater is less than 10 mmBtu/hr, the unit is not subject to the limitations on fuel burning units under 45CSR10.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed modification of the Lafferty Compressor Station does have the potential to increase a regulated pollutant (see Table 2 above) but does not, however, have the potential to increase the facility-wide PTE of any regulated pollutant in excess of the thresholds that would, pursuant to §45-13-2.17, define the changes as a “modification” under 45CSR13. Therefore, the proposed changes would normally be eligible to be reviewed as a Class II Administrative Update. However, Antero voluntarily submitted the application as a modification and it was reviewed as such. Pursuant to §45-13-5.1, “[n]o person shall cause, suffer, allow or permit the construction, modification, relocation and operation of any stationary source to be commenced without . . . obtaining a permit to construct.”

As required under §45-13-8.3 (“Notice Level A”), Antero placed a Class I legal advertisement in a “newspaper of *general circulation* in the area where the source is . . . located.” The ad ran on July 20, 2016 in *The Pennsboro News* and the affidavit of publication for this legal advertisement was submitted on August 5, 2016.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration - (NON APPLICABILITY)

The Lafferty Compressor Station is located in Ritchie County, WV. Ritchie County is classified as "in attainment" with all National Ambient Air Quality Standards. Therefore, as the facility is not a "listed source" under §45-14-2.43, the individual major source applicability threshold for all pollutants is 250 TPY. As given in Attachment A, the revised post-modification facility-wide PTE of the Lafferty Compressor Station is less than 250 TPY for all criteria pollutants. Therefore, the facility is not defined as a "major stationary source" under either 45CSR14 and the rule does not apply.

45CSR27: To Prevent and Control the Emissions of Toxic Air Pollutants - (NON APPLICABILITY)

Pursuant to §45-27-3.1, the "owner or operator of a plant that discharges or may discharge a toxic air pollutant into the open air in excess of the amount shown in the Table A [of 45CSR27] shall employ [Best Available Technology] at all chemical processing units emitting the toxic air pollutant." As calculated from Table 1 above, the aggregate PTE of formaldehyde generated by the compressor engines is greater than 0.5 TPY - greater than the 1,000 pound per year threshold given in Table A of 45CSR27. However, internal combustion engines do not meet the definition of "chemical processing units" under §45-27-2.4 and, therefore, they are not subject to BAT under 45CSR27.

45CSR30: Requirements for Operating Permits - (NON APPLICABILITY)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The modified Lafferty Compressor Station does not meet the definition of a "major source under §112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Attachment A) of any regulated pollutant does not exceed 100 TPY. Additionally, the facility-wide PTE does not exceed 10 TPY of any individual HAP or 25 TPY of aggregate HAPs.

However, as the proposed facility is subject to two New Source Performance Standard (NSPS) - 40 CFR 60, Subpart JJJJ and Subpart OOOO - and two Maximum Achievable Control Technology (MACT) rules - 40 CFR 63, Subpart ZZZZ and 40 CFR 63, Subpart HH, the facility would, in most cases, be subject to Title V as a "deferred source." However, pursuant to §60.4230(c), §60.5370(c), §63.6585(d), and §63.760(h) as a non-major "area source," Antero is not required to obtain a Title V permit for the proposed facility. Therefore, the Lafferty Compressor Station is not subject to 45CSR30.

40 CFR 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

Antero's eight (8) Caterpillar G3608 4SLB 2,500 hp compressor engines proposed for the Lafferty Compressor Station are defined under 40 CFR 60, Subpart JJJJ as stationary spark-ignition internal combustion engines (SI ICE) and are each, pursuant to §60.4230(a)(4)(i), subject to the applicable provisions of the rule. Pursuant to §60.4233(e): "Owners and operators of stationary SI

ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SIICE.” Therefore, as Antero’s compressor engines are greater than 100 hp, each engine must comply with the emission standards under Table 1 for “Non-Emergency SIICE ≥ 500 hp manufactured after July 1, 2010:” NO_x - 1.0 g/HP-hr, CO - 2.0 g/HP-hr, and VOC - 0.7 g/HP-hr. The emission standards and the proposed compliance therewith of the engines are given in the following table:

Table 3: Caterpillar G3608 Subpart JJJJ Compliance

Pollutant	Standard (g/HP-hr)	Uncontrolled Emissions (g/bhp) ⁽¹⁾	Control Percentage	Controlled Emissions (g/bhp) ⁽¹⁾	JJJJ Compliant?
NO _x	1.0	0.30	0.00%	0.30	Yes
CO	2.0	2.62	93.89%	0.16	Yes
VOC	0.7	0.41	31.71%	0.28	Yes

(1) Based on the revised EMIT Technologies, Inc. Model RT-3615-T oxidation catalyst specification sheet. Controlled VOC emissions based on NMNEHC + CH₂O emission factors. However, Subpart JJJJ standard does not include CH₂O emissions.

The Caterpillar G3608 is not a “certified” engine under Subpart JJJJ so Antero will have to show compliance with the emission standards pursuant to §60.4243(b)(2)(ii): conducting an initial performance test and thereafter conducting subsequent performance testing every 8,760 hours or 3 years, whichever comes first, to demonstrate compliance. Performance testing requirements are given under §60.4244 of Subpart JJJJ. Antero will additionally have to meet all applicable monitoring, recording, and record-keeping requirements under Subpart JJJJ.

40CFR60 Subpart OOOOa: Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced after September 18, 2015

EPA published its New Source Performance Standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. EPA published amendments to the Subpart on September 23, 2013 and June 3, 2016. 40 CFR 60, Subpart OOOOa establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification or reconstruction after September 18, 2015. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after September 18, 2015. The effective date of this rule is August 2, 2016.

Compressor Engines

Pursuant to §60.5365a(c), “[e]ach reciprocating compressor affected facility, which is a single reciprocating compressor [not located at a well site]” that is constructed after September 18, 2015 is subject to the applicable provisions of Subpart OOOOa. As the Lafferty Compressor Station is located before the point of custody transfer, the compressor engines are applicable to Subpart OOOOa. The substantive requirements for the engines are given under §60.5385a(a): the engines’

“rod packing” must be replaced according to the given schedule and the engine must meet applicable MRR given under §60.5410a(c), §60.5415a(c), and §60.5420a(b).

Fugitive Emissions Components

Pursuant to §60.5365a(j), “[t]he collection of fugitive emissions components at a compressor station, as defined in §60.5430a, is an affected facility.” The Leak Detection and Repair (LDAR) requirements for a compressor station are given under §60.5497a.

40 CFR 63 Subpart HH: National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities

On June 1, 2013 the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart HH. Pursuant to §63.760(a)(3), as the Lafferty Compressor Station - an area source of HAPs (see Attachment A) - “process[es], upgrade[s], or store[s] natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user,” it is defined as an area source subject to the applicable provisions under Subpart HH.

Pursuant to §63.760(b)(2), each TEG GDU located at an area source that meets the requirements under §63.760(a)(3) is defined as an affected facility under Subpart HH. The requirements for affected sources at area sources are given under §63.764(d). However, for a GDU, exemptions to these requirements are given under §63.764(e): if (1) “actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters [3 mmscf/day] per day” or (2) “actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram [1 TPY] per year.”

Information in the permit application indicates the maximum aggregate revised (based on new throughput of 110 mmscf/day) PTE of benzene emissions from each GDU is less than 1 TPY. Therefore, the GDUs are exempt from the Subpart HH requirements given under §63.764(d).

40 CFR 63 Subpart ZZZZ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

On June 1, 2013 the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart ZZZZ. As the Lafferty Compressor Station is defined as an area source of HAPs (see Attachment A), the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§63.6590(c)(1) specifies that “[a] new or reconstructed stationary RICE located at an area source” is defined as a RICE that shows compliance with the requirements of Subpart ZZZZ by “meeting the requirements of . . . 40 CFR part 60 subpart JJJJ, for spark ignition engines.” Pursuant to §63.6590(a)(2)(iii), a “stationary RICE located at an area source of HAP emissions is new if [the

applicant] commenced construction of the stationary RICE on or after June 12, 2006.” The engines located at the Lafferty Compressor Station are each defined as a new stationary RICE (based on information in the permit application) and, therefore, will show compliance with Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ. Compliance with Subpart JJJJ is discussed above.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that are emitted from the modified Lafferty Compressor Station and that are not classified as “criteria pollutants.” Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM₁₀ and PM_{2.5}), and Sulfur Dioxide (SO₂). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The following table lists each HAP identified by Antero with a facility-wide PTE above 0.05 TPY (100 lbs/year) and the associated carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 4: HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Acetaldehyde	VOC	Yes	B2 - Probable Human Carcinogen
Acrolein	VOC	No	Inadequate Data
Formaldehyde	VOC	Yes	B1 - Probable Human Carcinogen
Methanol	VOC	No	No Assessment Available
Biphenyl	VOC	Yes	Suggestive Evidence of Carcinogenic Potential
n-Hexane	VOC	No	Inadequate Data
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	No	Inadequate Data
Xylenes	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at www.epa.gov/iris.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions of the modified facility are less than applicability thresholds that would define the proposed facility as “major” under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature and location of the proposed source, an air quality impacts modeling analysis was not required under §45-13-7.

CHANGES TO R13-3285

The following substantive changes were made to Permit Number R13-3285A:

- The Emissions Units Table 1.0 was revised to reflect the changes evaluated herein;
- The emission limits for the compressor engines were revised under 4.1.2(c) as based on use of the new engines;
- The maximum lean glycol recirculation rate, the daily and annual GDU gas processing limit, and the minimum control percentage were increased under 4.1.5. pursuant to the modifications evaluated herein;
- Emission limits for the new fuel conditioning heater was added under 4.1.7.;
- The number of allowable pigging events was increased to 52 under 4.1.12.; and
- 40 CFR 60, Subpart OOOO language was removed from the permit and replaced with Subpart OOOOa language.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

The draft permit contains extensive and detailed monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR) on all emission units primarily based on the applicable requirements contained in the recently issued G35-C General Permit. The requirements are given under various sections of the draft permit (per emission unit grouping) and may be

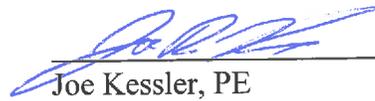
reviewed at that location. There was no substantive changes to the MRR as a result of the proposed changes evaluated herein.

PERFORMANCE TESTING OF OPERATIONS

The draft permit contains performance testing requirements primarily based on the applicable requirements contained in the recently issued G35-C General Permit. The requirements are given under Section 4.3 of the draft permit and may be reviewed at that location. There was no substantive changes to the performance testing requirements as a result of the proposed changes evaluated herein.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-3285A to Antero Midstream LLC for the proposed modification of the Lafferty Compressor Station located near Pennsboro, Ritchie County, WV.



Joe Kessler, PE
Engineer

9/28/16

Date

Attachment A: Facility-Wide PTE
Antero Midstream LLC: Lafferty Compressor Station
Permit Number R13-3285A: Facility ID 085-00055

Emission Unit	EP ID	CO		NO _x		PM _{2.5} /PM ₁₀ /PM		SO _x		VOC		Formaldehyde		HAPs	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Compressor Engine	1E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	2E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	3E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	4E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	5E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	6E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	7E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Compressor Engine	8E	0.88	3.86	1.65	7.24	0.17	0.74	0.01	0.04	1.54	6.76	0.17	0.72	0.39	1.69
Microturbine	14E	0.66	2.89	0.24	1.05	0.04	0.18	0.02	0.09	0.06	0.26	0.004	0.02	0.01	0.03
Dehy #1 Vent/Flash Tank	15E, 16E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	5.16	0.00	0.00	0.09	0.40
Dehy #1 Reboiler	17E	0.15	0.68	0.18	0.81	0.01	0.06	0.00	0.01	0.01	0.04	~0.00	~0.00	0.00	0.02
Dehy #2 Vent/Flash Tank	18E, 19E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	5.16	0.00	0.00	0.09	0.40
Dehy #2 Reboiler	20E	0.15	0.68	0.18	0.81	0.01	0.06	0.00	0.01	0.01	0.04	~0.00	~0.00	0.00	0.02
Storage Tanks	21E - 25E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.06	9.04	0.00	0.00	0.07	0.31
Catalytic Heater	26E	0.00	0.01	0.00	0.01	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00
Fuel Conditioning Heater	28E	0.05	0.23	0.06	0.27	<0.01	0.02	0.00	0.00	<0.01	0.02	0.00	0.00	0.00	0.00
Flare Combustion	27E	2.86	12.51	0.63	2.75	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	~0.00	0.07	0.31
Truck Loadout	n/a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.98	6.77	0.00	0.00	0.13	0.02
Fugitive Emissions	n/a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53	11.08	0.00	0.00	0.07	0.29
Facility-Wide Total⁽¹⁾ →		10.91	47.88	14.49	63.62	1.43	6.24	0.10	0.45	64.34	91.65	1.36	5.78	3.66	15.32

(1) No individual HAP has a PTE over 10 TPY. As the PTE of all individual HAPs are less than 10 TPY (formaldehyde is the highest emitted individual HAP) and the PTE of total HAPs is less than 25 TPY, the Lafferty Compressor Station is defined as a minor (area) source of HAPs for purposes of 40 CFR 61, 40CFR63, and Title V.

INTERNAL PERMITTING DOCUMENT TRACKING MANIFEST

Company Name ANTERO MIDSTREAM LLC

Permitting Action Number R13-32B5A Total Days 89 DAQ Days 43

Permitting Action:

- | | | |
|---|------------------------------------|---|
| <input type="radio"/> Permit Determination | <input type="radio"/> Temporary | <input checked="" type="radio"/> Modification |
| <input type="radio"/> General Permit | <input type="radio"/> Relocation | <input type="radio"/> PSD (Rule 14) |
| <input type="radio"/> Administrative Update | <input type="radio"/> Construction | <input type="radio"/> NNSR (Rule 19) |

Documents Attached:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Engineering Evaluation/Memo
<input checked="" type="checkbox"/> Draft Permit
<input checked="" type="checkbox"/> Notice
<input type="checkbox"/> Denial
<input type="checkbox"/> Final Permit/General Permit Registration | <input checked="" type="checkbox"/> Completed Database Sheet
<input type="checkbox"/> Withdrawal
<input type="checkbox"/> Letter
<input type="checkbox"/> Other (specify) _____
_____ |
|---|---|

Date	From	To	Action Requested
9/28/14	Joe Kessler	Bev McKeone	NOTICE APPROVAL
10/4	Bev	Joe	Cop to Notice

NOTE: Retain a copy of this manifest for your records when transmitting your document(s).

Kessler, Joseph R

From: Elizabeth McLaughlin <emclaughlin@anteroresources.com>
Sent: Wednesday, September 28, 2016 11:51 AM
To: Kessler, Joseph R
Subject: Lafferty CS- Catalyst Data
Attachments: G3608A4_2500hp_6Z_PDS.PDF

Joe,

Please set the attached catalyst spec sheet. Per our conversation, we are going to be using the high efficiency catalyst, however, to be conservative with CO and HCHO, we used the post catalyst emission data from the attached normal efficiency catalyst. Please let me know if you have any questions.

Thanks,

Betsy McLaughlin
Air Quality Specialist



1615 Wynkoop Street
Denver, CO 80202
O: 303.357.6839
C: 303.396.9465

Entire Document
NON-CONFIDENTIAL

I.D. No. 085-00055 Reg. 3285A
Company ANTERO
Facility LAFFERTY Region _____
Initials JM



Prepared For:

Clayton Brown

ANTERO RESOURCES

Date: June 9, 2016

APPLICATION INFORMATION

DRIVER

Make: CATERPILLAR
Model: G3608A4
Horsepower: 2500
RPM: 1000
Compression Ratio: 7.6
Exhaust Flow Rate: 16086 CFM
Exhaust Temperature: 818 °F
Reference: EM0655-05-001
Fuel: Natural Gas
Annual Operating Hours: 8760

CATALYST ELEMENT

Model: RT-3615-Z
Catalyst Type: Oxidation, Platinum Group Metals
Substrate Type: BRAZED
Element Size: Rectangle, 36" x 15" x 3.5"
Element Quantity: 6

UNCONTROLLED EMISSIONS DATA

g/bhp-hr

NO_x: 0.30
CO: 3.01
THC: 4.35
NMHC: 1.62
NMNEHC: 0.62
HCHO: 0.16
Oxygen: 11.70%

POST CATALYST EMISSIONS DATA

g/bhp-hr

NO_x: Unaffected by Oxidation Catalyst
CO: <0.16
NMNEHC: <0.31
HCHO: <0.03

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Tuesday, August 16, 2016 11:18 AM
To: Barry Schatz; Elizabeth McLaughlin
Cc: Kessler, Joseph R
Subject: R13-3285A Permit Application Status

**RE: Application Status: Complete
Antero Midstream LLC
Lafferty Compressor Station
Permit Application: R13-3285A
Plant ID No.: 085-00055**

Dear Mr. Schatz:

Your application for a modification permit was received by the Division of Air Quality (DAQ) on July 1, 2016 and assigned to the writer for review. Upon an initial review of the application, it was determined that additional information needed to be submitted prior to the application being deemed complete. The last of this information was subsequently submitted on August 5, 2016 and the application has now been deemed complete as of the date of this e-mail. The ninety (90) day statutory time frame began on that day.

Should you have any questions, please contact me at (304) 926-0499 ext. 1219.

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Entire Document
NON-CONFIDENTIAL

Kessler, Joseph R

From: Ward, Beth A
Sent: Tuesday, July 05, 2016 2:26 PM
To: Kessler, Joseph R
Subject: ANTERO MIDSTREAM LLC PERMIT APPLICATION FEE

This is the receipt for payment received from:

ANTERO MIDSTREAM LLC, LAFFERTY STATION, CHECK NUMBER 1464, CHECK DATE 06/22/2016, \$4,500.00
R13-3285A ID# 085-00055

OASIS Deposit CR 1700000917

Thank You!

Beth Ward

**WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
BTO FISCAL
601 57TH STREET SE
CHARLESTON, WV 25304
(304) 926-0499 EXT 1846
beth.a.ward@wv.gov**

UC Defaulted Accounts Search Results

Sorry, no records matching your criteria were found.

FEIN:
Business name: ANTERO MIDSTREAM, LLC
Doing business
as/Trading as:

Please use your browsers back button to try again.

<u>WorkforceWV</u>	<u>Unemployment Compensation</u>	<u>Offices of the Insurance Commissioner</u>
------------------------------------	--	--

UC Defaulted Accounts Search Results

Sorry, no records matching your criteria were found.

FEIN: 465517375
Business name:
Doing business as/Trading as:

Please use your browsers back button to try again.

<u>WorkforceWV</u>	<u>Unemployment Compensation</u>	<u>Offices of the Insurance Commissioner</u>
------------------------------------	--	--

Kessler, Joseph R

From: Elizabeth McLaughlin <emclaughlin@anteroresources.com>
Sent: Friday, August 05, 2016 10:45 AM
To: Kessler, Joseph R
Subject: RE: R13-3285A Permit Application Status
Attachments: G3608A4_2500hp_6H_PDS.PDF

Good Morning Joe,

I sent the revised legal ad affidavit out via FedEx earlier this week, so you should receive it by today if you have not already. The oxidation catalyst spec sheet is attached. Sorry, that should have been included in the application. You will notice that we added a bit of a buffer on the CO emissions from what the catalyst manufacturer guarantees, just because they were so low we did not want to get in a situation where they could not actual test that low.

Please let me know if you have any questions or need any additional information.

Thanks,

Betsy McLaughlin
Air Quality Specialist



1615 Wynkoop Street
Denver, CO 80202
O: 303.357.6839
C: 303.396.9465

Entire Document
NON-CONFIDENTIAL

I.D. No. 085-00055 **Reg.** 3285A
Company ANTERO
Facility LAFFERTY **Region** _____
Initials JRS

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Monday, August 01, 2016 12:22 PM
To: Barry Schatz; Elizabeth McLaughlin
Cc: Kessler, Joseph R
Subject: R13-3285A Permit Application Status

RE: Application Status: Incomplete
Antero Midstream LLC
Lafferty Compressor Station
Permit Application: R13-3285A
Plant ID No.: 085-00055

Dear Mr. Schatz:

Your application for a modification permit was received by the Division of Air Quality (DAQ) on July 1, 2016 and assigned to the writer for review. Upon an initial review of the application, it has been determined that the following items need to be addressed prior to the application being deemed complete:

1. The original affidavit of publication from the required Class I Legal Advertisement has not been submitted; and
2. Please provide a copy of the oxidation catalyst specification sheet (including post-control emission rates).

Please address the above items as quickly as possible in order to facilitate review of the permit application. Should you have any questions, please contact me at (304) 926-0499 ext. 1219.

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov



Prepared For:

Clayton Brown
ANTERO

Date: June 9, 2016

APPLICATION INFORMATION

DRIVER

Make: CATERPILLAR
Model: G3608A4
Horsepower: 2500
RPM: 1000
Compression Ratio: 7.6
Exhaust Flow Rate: 16086 CFM
Exhaust Temperature: 818 °F
Reference: EM0655-05-001
Fuel: Natural Gas
Annual Operating Hours: 8760

CATALYST ELEMENT

Model: RT-3615-H
Catalyst Type: Oxidation, Premium Grade Element
Substrate Type: BRAZED
Element Size: Rectangle, 36" x 15" x 3.5"
Element Quantity: 6

UNCONTROLLED EMISSIONS DATA

g/bhp-hr
NO_x: 0.30
CO: 3.01
THC: 4.35
NMHC: 1.62
NMNEHC: 0.62
HCHO: 0.16
Oxygen: 11.70%

POST CATALYST EMISSIONS DATA

g/bhp-hr
NO_x: Unaffected by Oxidation Catalyst
CO: <0.10
NMNEHC: <0.27
HCHO: <0.01

August 3, 2016



Mr. Joe Kessler
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315



Dear Mr. Kessler:

Re: Original Affidavit of Publication
Lafferty Compressor Station – Permit No. R13-3285A

Antero Midstream would like to submit the corrected Original Affidavits of Publication from *The Pennsboro News*. These are being submitted in accordance with a permit application requirement for an oil and gas facility.

Sincerely,

A handwritten signature in black ink that reads "Barry Schatz".

Barry Schatz
Senior Environmental and Regulatory Manager

Encl.

Entire Document
NON-CONFIDENTIAL

I.D. No. 085-00055 Reg. 3285A
Company ANTERO
Facility LAFFERTY Region _____
Initials JS

INVOICE AND AFFIDAVIT OF PUBLICATION



The Pennsboro News

103 North Spring Street, P.O. Box 241
 Harrisville, WV 26362
 Ph. 304.643.4947 • Fax 304.643.4717

WEST CENTRAL PUBLISHING
 FEDERAL I.D. NO. 55-06700561
 STATE OF WEST VIRGINIA
 COUNTY OF RITCHIE, to wit:

I, James McGoldrick, being first duly sworn upon my oath, do depose and say:

- that I am Publisher of The Pennsboro News, a Democratic newspaper,
- that I have been duly authorized to execute this affidavit,
- that such newspaper is regularly published weekly for at least fifty weeks during the calendar year, in the municipality of Harrisville, Ritchie County, West Virginia.
- That such newspaper is a newspaper of "general circulation" as defined in Art. 3, Chap. 59 of the Code of West Virginia 1931 as amended, within Ritchie County
- that such newspaper averages in length four or more pages, exclusive of any cover, per issue;
- that such newspaper is circulated to the general public at a definite price or consideration;
- that such newspaper is a newspaper to which the general public resorts for passing events or a political, religious, commercial and social nature and for current happenings, announcements, miscellaneous reading matters, advertisements and other notices;
- and that the annexed notice described as follows:

Lafferty Compressor Station Air Quality Permit Application

WAS PUBLISHED IN SAID NEWSPAPER AS FOLLOWS:

TIMES	DATES
One	July 20, 2016

PUBLICATION CHARGES \$105.68

CERTIF-BILL TO

Antero Resources
 Attn: Betsy McLaughlin
 1615 Wynkoop St.
 Denver, CO 80202

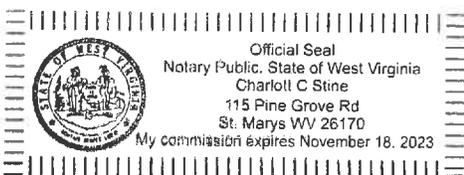
(signed) *James McGoldrick*

NOTARIZATION

Taken, sworn to and subscribed before me this 20th
 day of July, 20 16

Charlott C Stine

Notary Public



**PLEASE RETURN A COPY OF THIS INVOICE WITH YOUR PAYMENT TO:
 P.O. BOX 241, Harrisville, WV 26362**

**Air Quality Permit Notice
 Notice of Application - Lafferty Compressor Station**

Notice is given that Antero Midstream LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a 45CSR13 Construction Permit Modification (R13-3285) for a Natural Gas Compressor Station located southwest of Pennsboro and east of County Road 10/4, in Ritchie County, West Virginia. The latitude and longitude coordinates are: 39.22418N, 80.90627W.

The applicant estimates the difference in the potential to discharge the following Regulated Air Pollutants will be:

Pollutants	Change in Annual Emissions (tpy)
Nitrogen Oxides (NOx)	-13.44
Carbon Monoxide (CO)	-36.30
Volatile Organic Compounds (VOC)	10.51
Particulate Matter less than 10 um (PM10)	-9.40
Particulate Matter less than 2.5 um (PM2.5)	-9.40
Sulfur Dioxide (SO2)	-0.11
Formaldehyde	3.26
Benzene	-1.03
Toluene	-0.17
Ethylbenzene	-0.004
Xylenes	-0.06
n-Hexane	-0.04
Carbon Dioxide equivalent (CO2e)	-14,428

Note that negative numbers in the table above denote a decrease in potential emissions.

Startup of operation is planned to begin on or about the 1st day of November 2016, with construction starting prior to that date. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 24th day of June 2016.

By: Antero Resources Corporation
 Barry Schatz
 Midstream Environmental Supervisor
 1615 Wynkoop Street
 Denver, CO 80202

7-20 R



Kessler, Joseph R

From: Kessler, Joseph R
Sent: Monday, August 01, 2016 2:22 PM
To: Barry Schatz; Elizabeth McLaughlin
Cc: Kessler, Joseph R
Subject: R13-3285A Permit Application Status

**RE: Application Status: Incomplete
Antero Midstream LLC
Lafferty Compressor Station
Permit Application: R13-3285A
Plant ID No.: 085-00055**

Dear Mr. Schatz:

Your application for a modification permit was received by the Division of Air Quality (DAQ) on July 1, 2016 and assigned to the writer for review. Upon an initial review of the application, it has been determined that the following items need to be addressed prior to the application being deemed complete:

1. The original affidavit of publication from the required Class I Legal Advertisement has not been submitted; and
2. Please provide a copy of the oxidation catalyst specification sheet (including post-control emission rates).

Please address the above items as quickly as possible in order to facilitate review of the permit application. Should you have any questions, please contact me at (304) 926-0499 ext. 1219.

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Entire Document
NON-CONFIDENTIAL

Adkins, Sandra K

From: Adkins, Sandra K
Sent: Tuesday, July 05, 2016 12:41 PM
To: 'wmcneilly@anteroresources.com'; 'bschatz@anteroresources.com';
'kmeszaros@kleinfelder.com'
Cc: McKeone, Beverly D; Kessler, Joseph R
Subject: WV DAQ Permit Application Status for Antero Midstream LLC; Lafferty Station

**RE: Application Status
Antero Midstream LLC
Lafferty Station
Facility ID No. 085-00055
Application No. R13-3285A**

Mr. McNeilly,

Your application for modification permit for the Lafferty Compressor Station was received by this Division on July 1, 2016, and was assigned to Joe Kessler. The following item was not included in the initial application submittal:

Original affidavit for Class I legal advertisement not submitted.

This item is necessary for the assigned permit writer to continue the 30-day completeness review.

Within 30 days, you should receive a letter from Joe stating the status of the permit application and, if complete, given an estimated time frame for the agency's final action on the permit.

Any determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit decision.

Should you have any questions, please contact the assigned engineer, Joe Kessler, at 304-926-0499, extension 1219.

Entire Document
NON-CONFIDENTIAL