west virginia department of environmental protection

Division of Air Quality
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Charleston, WV 25304
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Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

March 28, 2017

Ward McNeily
Antero Midstream LLC
1615 Wynkoop Street
Denver, CO 80202

Re: Antero Midstream, LLC
Lafferty Compressor Station
Permit No. R13-3285B
Plant ID No. 085-00055

Dear Mr. McNeily:

Your application for a permit as required by Section 5 of 45CSR13 - "Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permit, General Permit, and Procedures for Evaluation" has been approved. The enclosed permit R13-0882M is hereby issued pursuant to Subsection 5.7 of 45CSR13. Please be aware of the notification requirements in the permit which pertain to commencement of construction, modification, or relocation activities; startup of operations; and suspension of operations.

The source is subject to 45CSR30. The permittee has the duty to update the facility's Title V (45CSR30) permit application to reflect the changes permitted herein.

In accordance with 45CSR30- Operating Permit Program, the permittee shall submit a certified emissions statement 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.

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.

Should you have any questions or comments, please contact me at (304) 926-0499, extension 1208 or michael.egnor@wv.gov.

Sincerely,

Mike Egnor
Engineer

cc: Ward McNeily wmcneily@anteroresources.com
cc: Kaitlin Meszaros kmeszaros@kleinfelder.com

West Virginia Department of Environmental Protection

Jim Justice
Governor

Division of Air Quality

Austin Caperton
Cabinet Secretary

Class II Administrative Update

R13- 3285B

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 above-referenced facility 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

William F. Durham
Director

Issued: March 28, 2017

This permitting action supersedes and replaces R13-3285A issued on November 14, 2016.

Facility Location:	County Road 10/4, Pennsboro, Ritchie County, West Virginia
Mailing Address:	1615 Wynkoop Street, Denver, CO 80202
Facility Description:	Natural gas compressor station
NAICS Codes:	221210
UTM Coordinates:	508.091 km Easting • 4,341.658 km Northing • Zone 17
Permit Type:	Class II Administrative Update
Description of Change:	The pigging events were increased from 52 and separated into 198 low pressure pigging venting and 260 high pressure pigging venting events per year. The number of compressor blowdown/startups was increased from 132 to 936 events per year. These changes will result in an increase of a Potential to Emit (PTE) of 9.63 TPY of VOC's, 0.25 TPY of HAP's, and 915 TPY of carbon dioxide equivalents.

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.

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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

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
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 (45CSR§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
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* CFR	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* CSR	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NOx	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5 µm in diameter
PM_{10}	Particulate Matter less than 10µm in diameter
Ppb	Pounds per Batch
Pph	Pounds per Hour
Ppm	Parts per Million
Ppmv or ppmv	Parts per Million by Volume
PSD	Prevention of Significant Deterioration
Psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

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 supersedes and replaces previously issued Permit R13-3285A. 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 other 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, R13-3285B 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 -10.3.]

2.5.2. 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 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 emissions, 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 45CSR11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

[Reserved]

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
Charleston, WV 25304-2345

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

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

[1]For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, Notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. Operating Fee

3.5.4.1. In accordance with 45CSR22 – Air Quality Management Fee Program, the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the certificate 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. <u>Compressor Engines</u>
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
NOx	1.65	7.24
PM2.5/PM10/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—NOx, 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 standardsa					
			g/HP-hr			ppmvd at 15% O2		
			NOx	CO	VOC[(d)]	NOx	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. **Selective Catalytic Reduction**
Use of Non-Selective Catalytic Reduction shall be in accordance with the following:

a. *[Reserved]*

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 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
NOx	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
n-Hexane	*0.01*	*0.05*	*0.03*	*0.12*
Benzene	*0.01*	*0.06*	*0.01*	*0.01*
Toluene	*0.02*	*0.13*	*0.01*	*0.01*
Xylene	*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. <u>Glycol Dehydration Reboilers</u>
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
NOx	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
NOx	0.01	0.01
FUEL1		
Pollutant	**PPH**	**TPY**
CO	0.05	0.23
NOx	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
NOx	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:

Emissions (lb/hr) = F x 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

Incinerator Capacity	Factor F
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;

b. The permittee shall design and operate the closed vent system with no detectable emissions, as determined following the procedures under 40 CFR 60, Subpart OOOOa for ongoing compliance;

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; or

(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 station shutdown events shall not exceed 2. 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.

d. The maximum number of blowdown/startup events per year shall not exceed 936, with an estimated 3,070 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the blowdown events at any given time during the previous twelve consecutive calendar months.

e. The maximum number of low pressure pigging events per year shall not exceed 198, with an estimated 516 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the low pressure pigging events at any given time during the previous twelve consecutive calendar months.

f. The maximum number of high pressure pigging events per year shall not exceed 260, with an estimated 2,801 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the high pressure pigging events at any given time during the previous twelve consecutive calendar months.

g. 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, supercede 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 H_2O/MMscf)
- Dry gas water content (lbs H_2O/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 H_2O / 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 H_2O 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-GLYCalcTM 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.** The permittee shall follow the procedures in 40 CFR 60, Subpart OOOOa. The initial inspection shall include the bypass inspection, conducted according to paragraph (c) of this section.

b. *[Reserved]*

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 aspracticable 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) *[Reserved]*

(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) through (f), 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;

b. The permittee shall monitor and record other events (not listed under 4.1.12(c) through (f)) 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; and

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-GLYCalcTM, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalcTM 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 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.

4.5.2. Any exceedance of permit Conditions 4.1.12(c) through (f) 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 exceedance, the estimate of VOC emissions released to the atmosphere as a result of the exceedance 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.

Signature[1] (please use blue ink) _____ Responsible Official or Authorized Representative _____ Date

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

Telephone No. _____ Fax No. _____

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[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 U.S. EPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.