West Virginia Department of Environmental Protection
Division of Air Quality

Fact Sheet

For Final Permitting Action Under 45CSR30 and Title V of the Clean Air Act

Permit Number: **R30-09500080-2020**
Application Received: **08/01/2019**
Plant Identification Number: **095-00080**
Permittee: **Antero Midstream LLC**
Facility Name: **East Mountain Compressor Station**
Mailing Address: **1615 Wynkoop Street, Denver, CO 80202**

Physical Location:	Pennsboro, Tyler County, West Virginia
UTM Coordinates:	511.705 km Easting • 4,354.946 km Northing • Zone 17
Directions:	From Pennsboro, WV, drive on WV-74 N for 5.9 miles. Turn right on to 74/4 and drive for 1.6 miles. Go left at the fork for 74/1 and drive for 0.42 miles. Turn right on 74/1 Haymond Ridge Road. Facility is on the right in 1.1 miles.

Facility Description

The East Mountain Compressor Station separates, compresses, and dries gas off the inlet pipeline stream. The station includes twelve (12) compressor engines with oxidation catalysts, one (1) natural gas microturbine generator, one (1) natural gas generator, two (2) 225 mmscfd dehydrators with two (2) reboilers and two (2) flash tanks, three (3) 400-bbl condensate tanks, three (3) 400-bbl produced water tanks, one (1) 500-bbl settling tank, one (1) 0.5 MMBtu/hr fuel conditioning heater, two (2) 6.0 MMBTU/hr thermal oxidizer control devices**,** two (2) vapor recovery units (VRU), liquid load out operations, fugitive component emissions, and six (6) auxiliary tanks.

Emissions Summary

Plantwide Emissions Summary [Tons per Year]		
Regulated Pollutants	**Potential Emissions**	**2019 Actual Emissions**
Carbon Monoxide (CO)	83.91	10.17
Nitrogen Oxides (NO_X)	100.20	13.98
Particulate Matter ($PM_{2.5}$)	10.27	0.85
Particulate Matter (PM_{10})	10.27	1.01
Total Particulate Matter (TSP)	11.91	1.01
Sulfur Dioxide (SO_2)	0.68	0.05
Volatile Organic Compounds (VOC)	154.21	14.46

PM_{10} is a component of TSP.

Hazardous Air Pollutants	Potential Emissions	2019 Actual Emissions
Benzene	0.52	0.07
Toluene	0.81	0.28
Ethylbenzene	0.07	0.05
Xylenes	0.24	0.05
n-Hexane	1.91	0.06
Acetaldehyde	3.90	0.32
Acrolein	2.42	0.20
Methanol	1.22	0.10
Formaldehyde	6.32	0.51
Other HAPs	0.76	0.06
Total HAPs	18.17	1.68

Some of the above HAPs may be counted as PM or VOCs.

Title V Program Applicability Basis

This facility has the potential to emit 100.20 tons of NO_x and 154.21 tons of VOCs per year. Due to this facility's potential to emit over 100 tons per year of a criteria pollutant, Antero Midstream LLC is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR2	Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers
	45CSR6	Open Burning Prohibited
	45CSR11	Standby plans for emergency episodes.
	45CSR13	Construction permit requirement
	45CSR16	Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60.
	WV Code § 22-5-4 (a) (14)	The Secretary can request any pertinent information such as annual emission inventory reporting.
	45CSR30	Operating permit requirement.
	45CSR34	Air toxics national emission standards for hazardous air pollutants (NESHAPs)
	40 C.F.R. Part 60, Subpart JJJJ	Standards of performance for stationary spark ignition internal combustion engines (SI ICE)
	40 C.F.R. Part 60, 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
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. Part 63, Subpart HH	National emission standards for hazardous air pollutants for oil and natural gas production facilities
	40 C.F.R. Part 63, Subpart ZZZZ	National emission standards for hazardous air pollutants for reciprocating internal combustion engines.
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances
State Only:	45CSR4	No objectionable odors.
	45CSR17	To prevent and control particulate matter air pollution from materials handling, preparation, storage and other sources of fugitive particulate matter

Each State and Federally-enforceable condition of the Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit *(if any)*
R13-3373C	01/23/20	

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table," which may be downloaded from DAQ's website.

Determinations and Justifications

This is the initial Title V permit for Antero Midstream LLC's East Mountain Compressor Station.

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 is to establish emission limitations for smoke and particulate matter discharged from fuel burning units. 45CSR2 states that any fuel burning unit that has a heat input under ten MMBTUs per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, and reporting), and 9 (start-ups, shutdowns, and malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual maximum design heat inputs of the reboilers (DREB1 and DREB2) and heater (FUEL1) are below 10 MMBTU/hr. Therefore, these units are exempt from sections 4, 5, 6, 8, and 9 of 45CSR2.

Antero is subject to the opacity requirements in 45CSR2 (10% opacity based on a six-minute block average). Antero shall conduct Method 9 emission observations for the purpose of demonstrating compliance with opacity requirements in 45CSR2.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

The purpose of this rule is to prevent and control air pollution from the combustion of refuse.

Antero has two (2) thermal oxidizers at the facility. These units are subject to section 4, emission standards for incinerators. These units have a negligible hourly particulate matter emission (0.0046 lb/hr); therefore, these units should demonstrate compliance with 45CSR§6-4.1 (hourly particulate matter limit) and 45CSR§6-4.3 (twenty-percent opacity requirement) by operating the thermal oxidizers with a flame present at all times (R13-3373C, condition 6.1.3.b) and with no visible emissions (R13-3373C, condition 6.1.3.f). The facility will demonstrate compliance with R13-3373C, conditions 6.1.3.b and 6.1.3.f by continuously monitoring the pilot flame of the thermal oxidizers and recording the times during all periods which the pilot flame was absent (R13-3373C, conditions 6.2.1 and 6.4.1); and by conducting opacity tests to demonstrate that there are no visible emissions.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

The purpose of 45CSR10 is to establish emission limitations for sulfur dioxide which are discharged from fuel burning units. 45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, and reporting). However, failure to attain an acceptable air quality in parts of some urban areas may require mandatory control of these sources at a later date.

The individual maximum design heat inputs of the reboilers (DREB1 and DREB2) and heater (FUEL1) are below 10 MMBTU/hr; therefore, these units are exempt from sections 3, 6, 7, and 8 of 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 facility is subject to the requirements of the construction permit R13-3373C.

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60, subparts JJJJ and OOOOa. These requirements are discussed under that rule below.

40C.F.R.60 Subpart JJJJ (Standards of Performance for Stationary SI ICE)

40CFR60 Subpart JJJJ establishes emission standards for applicable stationary spark ignition internal combustion engines.

The 2,500 hp Caterpillar G3608 engines (C-100 – C-1200) were manufactured after the July 1, 2007 date for engines with a maximum rated power capacity greater than or equal to 500 hp. These engines will be subject to the following emission limits from 40 C.F.R.§60.4233(e) and Table 1: NO_x – 1.0g/hp-hr (5.51 lb/hr); CO – 2.0g/hp-hr (11.02 lb/hr); and VOC – 0.7 g/hp-hr (3.86 lb/hr). Based on the manufacturer's specifications for these engines, the emission standards will be met.

These engines (C-100 – C-1200) are not certified by the manufacturer to meet the emissions standards listed in 40CFR60 Subpart JJJJ. Therefore, Antero will be required to conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, to demonstrate compliance. This testing is also used to show compliance with the emission limits of condition 4.1.1.

The 649 hp PSI Industrial generator engine (GEN2) was manufactured after the July 1, 2007 date for engines with a maximum rated power capacity greater than or equal to 500 hp. This engine will be subject to the following emission limits from 40 C.F.R.§60.4233(e) and Table 1: NO_x – 1.0 g/hp-hr (1.43 lb/hr); CO – 2.0 g/hp-hr (2.86 lb/hr); and VOC – 0.7 g/hp-hr (1.00 lb/hr). Based on the manufacturer's specifications for this engine, the emission standards will be met.

This engine (GEN2) does possess an EPA Certificate of Conformity to meet the emission standards listed in 40CFR60 Subpart JJJJ. Therefore, as long as this engine is operated in a certified manner, Antero is not required to conduct performance testing on this unit. Since the hourly and annual emission limits in condition 4.1.3 are the hourly limits from 40 C.F.R.60 Subpart JJJJ for 8,760 hours/year of operation, compliance with condition 4.1.3 will be demonstrated through compliance with 40 C.F.R.60 Subpart JJJJ.

Permit R13-3373C included several conditions of 40 C.F.R. 60 Subpart JJJJ that were not applicable to the engines at the facility. For example, it included the 40 C.F.R. 60 subpart JJJJ requirements for engines less than 500 hp when all engines at the facility are greater than 500 hp. The Title V permit only includes 40 C.F.R. 60 Subpart JJJJ requirements that are applicable to engines at the facility.

40C.F.R.60 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. 40CFR60 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 (SO_2) emissions from affected facilities that commence construction, modification, or reconstruction after September 18, 2015. The effective date of this rule is August 2, 2016.

A source is subject to 40C.F.R.60 Subpart OOOOa if they operate one or more of the affected facilities below:

a) Each well affected facility, which is a single well that conducts a well completion operation following hydraulic fracturing or refracturing.

There are no wells at this facility; therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOOa would not apply.

b) Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the East Mountain Compressor Station; therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOOa would not apply.

c) Each reciprocating compressor affected facility, which is a single reciprocating compressor. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are reciprocating internal combustion engines located at the East Mountain Compressor Station that were constructed after September 18, 2015; therefore, the requirements regarding reciprocating compressors under 40CFR60 Subpart OOOOa will apply. Antero will be required to perform the following:

- Antero has indicated that they will comply with 40 C.F.R.§60.5385a by replacing the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months.
- Demonstrate initial compliance by continuously monitoring the number of hours of operation or track the number of months since the last rod packing replacement
- Submit the appropriate start up notifications
- Submit the initial annual report for the reciprocating compressors
- Maintain records of hours of operation since last rod packing replacement, records of the date and time of each rod packing replacement, and records of deviations in cases where the reciprocating compressor was not operated in compliance

d) Pneumatic Controllers

- Each pneumatic controller affected facility not located at a natural gas processing plant, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh

- Each pneumatic control affected facility located at a natural gas processing plant, which is a single continuous bleed natural gas-driven pneumatic control

All pneumatic controllers at the facility will be air driven; therefore, there are no applicable pneumatic controllers within the facility. The facility will not have any requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOOa.

e) Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy.

40CFR60 Subpart OOOOa defines a storage vessel as a unit that is constructed primarily of non-earthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges, or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.

- Process vessels such as surge control vessels, bottoms receivers, or knockout vessels

- Pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere

The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal or state authority. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permitee must reduce VOC emissions by 95% or greater within 60 days of start-up.

The storage vessels (T01-T07) located at the East Mountain Compressor Station have legally and practically enforceable permit conditions from R13-3373C where VOC emissions are controlled by a VRU which will reduce the potential to emit to less than 6 tpy of VOC. Therefore, Antero is not required by 40 C.F.R. 60 Subpart OOOOa to further reduce VOC emissions. Antero is claiming a control efficiency of 98% for the VRU. In order to claim a control efficiency of 98%, Antero is required to meet additional design/function requirements. Antero will be required to perform three (3) of the following additional requirements:

- *Additional sensing equipment*
- *Properly designed bypass system*
- *Appropriate gas blanket*

- *A compressor that is suitable and has the ability to vary the drive speed*

f) The group of all equipment, except compressors, within a process unit is an affected facility.

- Addition or replacement of equipment for the purpose of process improvement that is accomplished without capital expenditure shall not by itself be considered a modification under this subpart.

- Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400a, 60.5401a, 60.5402a, 60.5421a and 60.5422a of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400a, 60.5401a, 60.5402a, 60.5421a and 60.5422a of this subpart.

- The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The East Mountain Compressor Station is not a natural gas processing plant; therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants will not apply.

g) Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.

- Each sweetening unit that processes natural gas is an affected facility; and

- Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.

- Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H_2S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423a(c) but are not required to comply with §§60.5405a through 60.5407a and paragraphs 60.5410a(g) and 60.5415a(g) of this subpart.

- Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405a through 60.5407a, 60.5410a(g), 60.5415a(g), and 60.5423a of this subpart.

There are no sweetening units at the East Mountain Compressor Station; therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOOa would not apply.

h) Pneumatic Pumps

The pneumatic pump requirements only apply to natural gas processing facilities and well sites; therefore, all requirements regarding pneumatic pumps under 40 CFR 60 Subpart OOOOa would not apply.

i) Collection of fugitive emission components

The rule requires quarterly leak monitoring at natural gas compressor stations. Therefore, the requirements regarding leak monitoring under 40 C.F.R. 60 Subpart OOOOa will apply. In addition to optical gas imaging (OGI), the rule allows owners/operators to use Method 21 with a repair threshold of 500 ppm as an alternative for finding and repairing leaks. Method 21 is an EPA method for determining VOC emissions from process equipment. This method utilizes portable VOC monitoring equipment.

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities)

Subpart HH establishes national emission limitations and operation limitations for HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. The glycol dehydration units at the East Mountain Compressor Station are subject to the area source requirements for glycol dehydration units; however, because the facility is an area source of HAP emissions and the actual average benzene emissions from the glycol dehydration units are below 0.90 megagrams per year (1.0 tons/year), it is exempt from all requirements of Subpart HH except maintaining records of actual average benzene emissions.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The engines (C-100 – C-1200 and GEN2) at the East Mountain Compressor Station are subject to the area source requirements for non-emergency spark ignition engines.

The applicable requirements for new stationary spark ignition RICEs located at an area source of HAPs is the requirement to meet the standards of 40CFR60 Subpart JJJJ. These requirements were outlined above.

Non-Applicability Determinations

The following requirements have been determined not to be applicable to the subject facility due to the following:

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb applies to storage vessels with a capacity greater than or equal to 75 m^3 (19,812.9 gal). The settling tank (T04) is a 21,000-gallon tank; however, 40 C.F.R.60 Subpart Kb does not apply to storage vessels that are used for petroleum or condensate storage prior to custody transfer per 40 C.F.R. 60.110b(b)(4).

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or before August 23, 2011. The East Mountain Compressor Station is not a natural gas processing facility; therefore, the facility is not subject to this rule.

40CFR60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

40 C.F.R. 60 Subpart KKKK applies to stationary combustion turbines with a heat input rating of greater than 10 million BTU/hr per 40 C.F.R.§60.4305(a). The turbine (GEN1) on site is below 10 million BTU/hr; therefore, the facility is not subject to this subpart.

Request for Variances or Alternatives

None

Insignificant Activities

Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period

Beginning Date:	March 4, 2020
Ending Date:	April 3, 2020

Point of Contact

All written comments should be addressed to the following individual and office:

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Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Response to Comments (Statement of Basis)

No comments were received.