INTERNAL PERMITTING DOCUMENT TRACKING MANIFEST

Company Name Antero Midstream, LLC

Permitting Action Number 13-3347 Total Days_____ DAQ Days_____

Permitting Action:

- ❍ Permit Determination
- ❍ General Permit
- ❍ Administrative Update
- ❍ Temporary
- ❍ Relocation
- ☑ Construction
- ❍ Modification
- ❍ PSD (Rule 14)
- ❍ NNSR (Rule 19)

Documents Attached:

- ☑ Engineering Evaluation/Memo
- ☑ Draft Permit
- ☑ Notice
- ❍ Denial
- ❍ Final Permit/General Permit Registration
- ❍ Completed Database Sheet
- ❍ Withdrawal
- ❍ Letter
- ❍ Other *(specify)*_____

Date	From	To	Action Requested
1/20/17	Jonathan Carney	Bev McKeone	Review for public Notice
1/30	Bev	Jonathan	See Comments - Addressed - Return
1/31	Jonathan Carney	Bev McKeone	Revisions review for Public Notice
2/6	Bev	Jon	Cover Notice

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

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On, October 25, 2016 Antero Midstream, LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct a compressor station facility located in Tyler County, WV at 39.416560 latitude and -80.963581 longitude. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as Permit R13-3347.

The following changes in potential emissions will be authorized by this permit action: Carbon Monoxide, 58.99 TPY increase; Nitrogen Oxides, 91.91 TPY increase; Particulate Matter less than 10 microns, 9.39 tons per year (TPY) increase; Sulfur Dioxide, 0.66 TPY increase; Volatile Organic Compounds, 211.16 TPY increase; Total Hazardous Air Pollutants, 0.67 TPY increase.

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

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

Jonathan Carney
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1203
FAX: 304/926-0478

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

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

west virginia department of environmental protection

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

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

BACKGROUND INFORMATION

Application No.:	13-3347
Plant ID No.:	095-00074
Applicant:	Antero Midstream, LLC
Facility Name:	Middlebourne III
Location:	Wick, Tyler County
NAICS Code:	221210
Application Type:	Construction
Received Date:	October 25, 2016
Engineer Assigned:	Jonathan Carney
Fee Amount:	$4,500
Date Received:	October 27, 2016
Complete Date:	November 18, 2016
Due Date:	February 16, 2017
Applicant Ad Date:	November 2, 2016
Newspaper:	Tyler Star News
UTM's:	Easting: 4363.005 km Northing: 503.135 km Zone:17
Description:	Installation of a new natural gas compressor station

DESCRIPTION OF PROCESS

The following process description was taken from the application 13-3347:

Gas from surrounding pipelines enters the facility through receivers and associated slug catcher. From there, the gas is metered and routed through a scrubber and filter separator. Any produced liquids from the scrubber or separator are sent to the 500 barrel settling tank (T04). Gas from the filter separator is sent to one (1) of twelve (12) 2,500 horsepower (hp) Caterpillar G3608 lean burn compressor engines (C-100 through C-1200). The twelve (12) compressor engines are controlled with oxidation catalysts (1C through 12C). Fuel gas for the compressor engines will be treated prior to the engines by a fuel conditioning skid with a 0.5 MMBtu/hr heater (FUEL1) to allow more complete combustion. Produced fluids are routed to the settling tank and gas goes to one of the three (3) TEG dehydrators.

Each TEG dehydrator (DEHY1 through DEHY3) contains a flash gas tank and 1.5 MMBtu/hr reboiler. Each dehydrator has a design rate of 150 million standard cubic feet per day (MMscf/day). Within the dehydrator unit, vent gas from the flash gas tank (DFLSH1 through DFLSH3) is routed to the reboiler (DREB1 through DREB3) and used as fuel. In the case where the flash tank gas cannot be used by the reboiler due to the excess gas or the reboiler being offline, the gas will be sent to the vapor revovery units (VRU-100 and VRU-200) via the storage tanks (T01 through T07) and thus controlled by 98%. Emissions from each reboiler are routed to the atmosphere. The dehydrator still vents are controlled by a flare with at least 98% control efficiency (FLARE1). Produced fluids from the dehydrators (DEHY1 through DEHY3) are routed to the settling tank (T04). The dry gas from the dehydration process is either routed to a fuel gas scrubber, metered, and routed to the compressors as fuel gas or metered and sent to plant discharge.

All produced fluids enter one (1) 500 barrel settling tank (T04) where the fluids settle out as either condensate or produced water. The produced water goes to three (3) 400 barrel produced water tanks (T05 through T07) and the condensate goes to three (3) 400 barrel condensate tanks (T01 through T03). Flashing only occurs at the settling tank as the fluids stabilize in the settling tank before going to the other storage tanks. All seven (7) tanks are connected to a vapor recovery unit (VRU-100) where tank vapors are collected and recycled back into the gas system right before the initial filter scrubber. A second vapor recovery unit (VRU-200) is also connected to the tanks as a backup unit. The produced fluids are trucked out via tanker trucks as needed (LDOUT1). The anticipated production is 300 barrels per day of condensate and 90 barrels per day of produced water.

One (1) natural gas microturbine generator rated as 800 kWe supplies power to the facility (GEN1). The 800 kWe generator is actually comprised of four smaller units, each rated at 200 kWe. There are also small storage tanks (1,000 to 4,000 gallons) located at the facility.

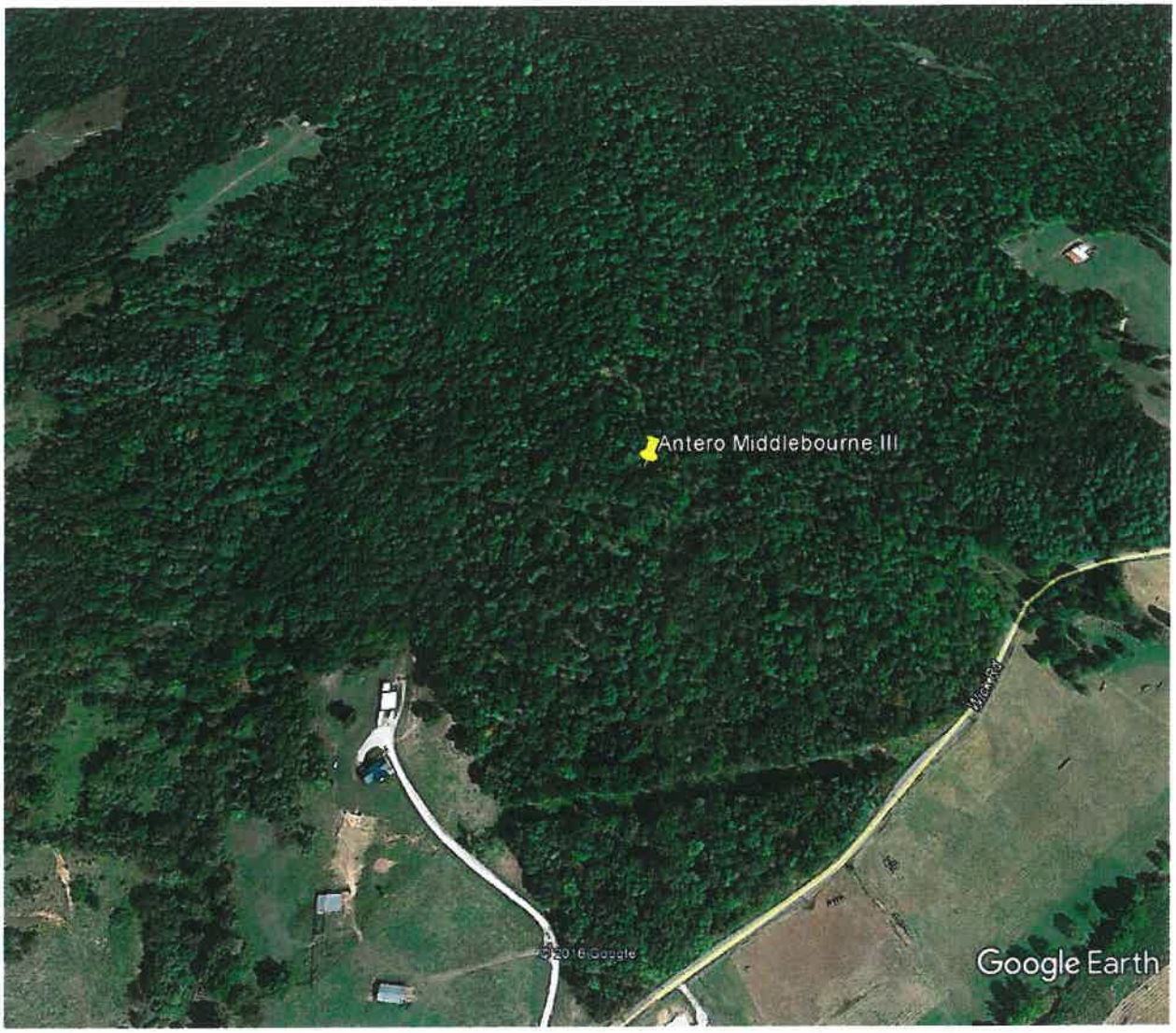
Fugitive emissions from component leaks and emissions from pigging venting or blowdown events also occur.

SITE INSPECTION

The following site inspection was performed by Inspector Douglas Hammell:

> *There was extensive site work underway, still working on access road and leveling off the hill top.*
>
> *No permitted equipment had been delivered, no enforcement issues.*
>
> *The site is acceptable for permit R13-3347, with closest house ~780 to the South West per GE (this house was not visible from hilltop at this time)*

Directions: From Wick, WV, at the intersection of Hog Run Road/CR-6 and Wick Road, head east on Wick Road for 0.85 miles and turn left into the facility entrance.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this facility consist of the equipment listed in the following table and fugitive emissions. The following table indicates which methodology was used in the emissions determination:

Emission Unit ID#	Process Equipment	Calculation Methodology
C-100	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98

Emission Unit ID#	Process Equipment	Calculation Methodology
C-200	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-300	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-400	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-500	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-600	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-700	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-800	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-900	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-1000	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-1100	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
C-1200	2,500 bhp Caterpillar G3608 4SLB Reciprocating Internal Combustion Engine (RICE) w/Oxidation Catalyst	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
GEN1	800 kWe (output) Capstone C800 Standard Microturbine	Mfg. Data, EPA AP-42 Emission Factors, 40CFR Part 98
DEHY1	150 MMscfd Glycol (TEG) Dehydration Unit	GRI-GlyCalc 4.0
DFLSH1	150 MMscfd Dehydrator Still Vent	GRI-GlyCalc 4.0
DREB1	1.5 MMBtu/hr Dehydrator Reboiler	AP-42, 40 CFR Part 98
DEHY2	150 MMscfd Glycol (TEG) Dehydration Unit	GRI-GlyCalc 4.0

Emission Unit ID#	Process Equipment	Calculation Methodology
DFLSH2	150 MMscfd Dehydrator Still Vent	GRI-GlyCalc 4.0
DREB2	1.5 MMBtu/hr Dehydrator Reboiler	AP-42, 40 CFR Part 98
DEHY3	150 MMscfd Glycol (TEG) Dehydration Unit	GRI-GlyCalc 4.0
DFLSH3	150 MMscfd Dehydrator Still Vent	GRI-GlyCalc 4.0
DREB3	1.5 MMBtu/hr Dehydrator Reboiler	AP-42, 40 CFR Part 98
T01	400 bbl Condensate Tank	ProMax Simulation
T02	400 bbl Condensate Tank	ProMax Simulation
T03	400 bbl Condensate Tank	ProMax Simulation
T04	500 bbl Settling Tank	ProMax Simulation
T05	400 bbl Produced Water Tank	ProMax Simulation
T06	400 bbl Produced Water Tank	ProMax Simulation
T07	400 bbl Produced Water Tank	ProMax Simulation
FUEL1	0.5 MMBtu/hr Fuel Conditioning Heater	AP-42, 40 CFR Part 98
FLARE1	4.8 MMBtu/hr Flare Control Device	AP-42, 40 CFR Part 98
FLARE1(pilot)	0.02 MMBtu/hr Flare Pilot	AP-42, 40 CFR Part 98
VRU-100	Vapor Recovery Unit #1	Mass Balance
VRU-200	Vapor Recovery Unit #2	Mass Balance
LDOUT1	390 bbl/day Production Liquids Truck Loadout	AP-42, ProMax Simulation
	Compressor Blowdowns	Engineering Estimate
	Engine Starter Vents	Engineering Estimate
	Pigging Operations	Engineering Estimate

The following table indicates the control device efficiencies that are required for this facility:

Emission Unit	Pollutant	Control Device	Control Efficiency
Twelve 2,500 hp Caterpillar G3608 4SLB RICE (C-100 – C-1200)	Carbon Monoxide	Oxidation Catalyst	94%
	Volatile Organic Compounds		34%
	Formaldehyde		88%
Three 150 MMscfd TEG Dehydrator Still Vent (DEHY1 – DEHY3)	Volatile Organic Compounds	Flare	98%
	Hazardous Air Pollutantas		98%
Three Condensate Tanks (T01-T03), One Settling Tank (T04), Three Produced Water Tanks (T05-T07)	Volatile Organic Compounds	VRU w/ Backup VRU	98%
	Hazardous Air Pollutants		98%

The total facility PTE (excluding fugitives) for the Station is shown in the following table:

Pollutant	**R13-3347 PTE (tons/year)**
Nitrogen Oxides	91.91
Carbon Monoxide	58.99
Volatile Organic Compounds	211.16
Particulate Matter-10/2.5	9.39
Sulfur Dioxide	0.66
Formaldehyde	5.82
Total HAPs	21.51
Carbon Dioxide Equivalent	158,287

Maximum detailed controlled point source emissions were calculated by Antero Midstream, LLC and checked for accuracy by the writer and are summarized in the tables on the next pages. The compressor blowdowns, compressor startups, plant shut downs, and pigging operations are based on scheduled events and therefore the estimated emissions from such events are included in the facility's PTE. Limits have been placed in the permit that limit the the number of compressor blowdowns, compressor startups, plant shut downs, and pigging operations.

			NO_x		CO		VOC		SO_2		PM_{10}	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C-100	1E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-200	2E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-300	3E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-400	4E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-500	5E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-600	6E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-700	7E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-800	8E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-900	9E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-1000	10E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75

			NO_x		CO		VOC		SO_2		PM_{10}	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C-1100	11E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
C-1200	12E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	1.65	7.24	0.87	3.80	1.49	6.53	0.01	0.04	0.17	0.75
GEN1	13E	Capstone C800 800kW Microturbine Generator	0.32	1.40	0.88	3.85	0.08	0.35	0.03	0.12	0.05	0.24
DEHY1	14E	Dehydrator Still Vent #1	-	-	-	-	1.46	6.41	-	-	-	-
DFLSH1	15E	Dehydrator Flash Tank #1	-	-	-	-	1.13	4.93	-	-	-	-
DREB1	16E	Dehydrator Reboiler #1	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05
DEHY2	17E	Dehydrator Still Vent #2	-	-	-	-	1.46	6.41	-	-	-	-

			NO_x		CO		VOC		SO_2		PM_{10}	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
DFLSH2	18E	Dehydrator Flash Tank #2	-	-	-	-	1.13	4.93	-	-	-	-
DREB2	19E	Dehydrator Reboiler #2	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05
DEHY3	20E	Dehydrator Still Vent #3	-	-	-	-	1.46	6.41	-	-	-	-
DFLSH3	21E	Dehydrator Flash Tank #3	-	-	-	-	1.13	4.93	-	-	-	-
DREB3	22E	Dehydrator Reboiler #3	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05
T01	23E	Condensate Tank #1	-	-	-	-	0.03	0.14	-	-	-	-
T02	24E	Condensate Tank #2	-	-	-	-	0.03	0.14	-	-	-	-
T03	25E	Condensate Tank #3	-	-	-	-	0.03	0.14	-	-	-	-
T04	26E	Settling Tank	-	-	-	-	6.34	27.77	-	-	-	-
T05	27E	Produced Water Tank #1	-	-	-	-	1.55E-06	0.00	-	-	-	-

			NO_x		CO		VOC		SO_2		PM_{10}	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
T06	28E	Produced Water Tank #2	-	-	-	-	1.55E-06	0.00	-	-	-	-
T07	29E	Produced Water Tank #3	-	-	-	-	1.55E-06	0.00	-	-	-	-
FUEL1	30E	Fuel Conditioning Heater	0.05	0.21	0.04	0.18	0.00	0.01	0.00	0.00	0.00	0.02
FLARE1	31E	Flare Combustion Device	0.33	1.43	1.78	7.78	0.34	1.48	-	-	-	-
FLARE1(pilot)	31E	Flare (pilot)	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
VRU-100 with VRU-200 back-up		Vapor Recovery Unit #1 and #2 back-up (98% capture efficiency)	-	-	-	-	6.31	27.64	-	-	-	-
LDOUT1	32E	Production Liquids Truck Loadout	-	-	-	-	72.12	15.19	-	-	-	-
VENTING OPERATIONS		Compressor Blowdowns/Compressor Startup/Plant Shut Downs/Pigging Operations	-	-	-	-	-	25.80				
Total			20.98	91.91	13.47	58.99	109.87	211.16	0.15	0.66	2.14	9.39

			Formal-dehyde		HAPs		GHG (CO_2e)	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C-100	1E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-200	2E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-300	3E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-400	4E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-500	5E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-600	6E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71

			Formal-dehyde		HAPs		GHG (CO_2e)	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C-700	7E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-800	8E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-900	9E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-1000	10E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-1100	11E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71
C-1200	12E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	0.11	0.46	0.32	1.38	2811.12	12312.71

			Formal-dehyde		HAPs		GHG (CO_2e)	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
GEN1	13E	Capstone C800 800kW Microturbine Generator	0.01	0.03	0.01	0.06	1064.02	4660.41
DEHY1	14E	Dehydrator Still Vent #1	-	-	0.12	0.51	9.01	40.48
DFLSH1	15E	Dehydrator Flash Tank #1	-	-	0.03	0.12	59.26	259.5
DREB1	16E	Dehydrator Reboiler #1	0.00	0.00	0.00	0.01	155.84	682.59
DEHY2	17E	Dehydrator Still Vent #2	-	-	0.12	0.51	9.24	40.48
DFLSH2	18E	Dehydrator Flash Tank #2	-	-	0.03	0.12	59.26	259.5
DREB2	19E	Dehydrator Reboiler #2	0.00	0.00	0.00	0.01	155.84	682.59
DEHY3	20E	Dehydrator Still Vent #3	-	-	0.09	0.39	9.24	40.48
DFLSH3	21E	Dehydrator Flash Tank #3	-	-	0.03	0.12	59.26	259.5
DREB3	22E	Dehydrator Reboiler #3	0.00	0.00	0.00	0.01	155.84	682.59
T01	23E	Condensate Tank #1	-	-	0.00	0.00	0.00	0.33
T02	24E	Condensate Tank #2	-	-	0.00	0.00	0.00	0.33
T03	25E	Condensate Tank #3	-	-	0.00	0.00	0.00	0.33

			Formal-dehyde		HAPs		GHG (CO_2e)	
Emission Unit ID	Emission Point ID	Emission Unit Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
T04	26E	Settling Tank	-	-	0.18	0.79	0.26	114.00
T05	27E	Produced Water Tank #1	-	-	0.00	0.00	0.00	0.00
T06	28E	Produced Water Tank #2	-	-	0.00	0.00	0.00	0.00
T07	29E	Produced Water Tank #3	-	-	0.00	0.00	0.00	0.00
FUEL1	30E	Fuel Conditioning Heater	0.00	0.00	0.00	0.00	51.95	227.53
FLARE1	31E	Flare Combustion Device	-	-	0.12	0.52	562.07	2461.87
FLARE1 (pilot)	31E	Flare (pilot)	0.00	0.00	0.00	0.00	2.12	9.27
VRU-100 with VRU-200 back-up		Vapor Recovery Unit #1 and #2 back-up (98% capture efficiency)	-	-	1.79E-01	7.86E-01	2.57E-01	1.13E+02
LDOUT1	32E	Production Liquids Truck Loadout	-	-	2.02	0.42		
VENTING OPERATIONS		Compressor Blowdown/ Compressor Startup/Plant Shutdown/ Pigging Operations				0.52		2,035
Total			1.28	5.59	6.72	21.51	36086.94	160,322.05

REGULATORY APPLICABILITY

45CSR2 - *To Prevent and Control 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 which are discharged from fuel burning units. 45CSR2 states that any fuel burning unit that has a heat input under ten (10) million Btu's per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, 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 Glycol Dehydrator Reboilers (DREB1-DREB3) and fuel conditioning heater (FUEL) at this facility meet the definition for fuel burning units (section 2.10). The fuel burning units have heat input ratings that are less than 10 MMBtu and are exempt from the aforementioned sections of 45CSR2.

The reboilers and fuel heater will have to meet a 10 percent opacity limit. Visible emission monitoring will be required.

45CSR4 - *To Prevent and Control the Discharge of Air Pollutants Into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors*

The facility is subject to the requirements of 45CSR4 and shall not allow the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.

45CSR6 - *Control of Air Pollution From Combustion of Refuge*

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

From section 2.7 this facilities ground level flare (F1) meets the definition of an incinerator and is therefore subject to applicable Rule 6 requirements. From section 4.1 the maximum allowable total particulate matter emission rate is 0.46 lb/hr. The flare is a smokeless design. The flare has a potential to emit particulate matter of <0.01 lb/hr and does not exceed the threshold. The opacity limit for the emergency flare is 20%.

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 45CSR13 because this source has the potential to emit at least 6 lb/hr and 10 tons/year of NO_x, CO, and VOC (any uncontrolled regulated air pollutant), and the potential to emit two (2) pounds per hour or five (5) tons per year of hazardous

air pollutants, and is subject to a substantive requirement of an emission control rule promulgated by the Secretary (45 CSR 6, 40 CFR 60 JJJJ, and OOOOa, 40 CFR 63 Subpart HH)

Antero Midstream, LLC paid the appropriate fee of $4,500.00 and published the required legal advertisement for a construction permit application.

45CSR16 - *Standards of Performance for New Stationary Sources Pursuant to 40CFR60*

45CSR16 incorporates by reference the standards of performance for new stationary sources (40CFR60). Middlebourne III Station is subject to 40CFR60 Subpart JJJJ, and OOOOa, and is therefore subject to 45CSR16.

45CSR22 - *Air Quality Management Fee Program*

The facility is subject to the requirements of 45CSR22 and shall pay fees according to the application fee schedule. The proper application fee ($1,000 for construction application fee, $1,000 for additional NSPS fee, and $2,500 for additional NESHAP fee) $4,500 was received on October 27, 2016.

45CSR30 - *Requirements for Operating Permits*

Antero Midstream's Middlebourne Station exceeds the 100 ton/yr threshold for VOC and is therefore subject to 45CSR30 as a major source. The Middlebourne III Compressor Station will need to apply for a permit under this rule within 12 months after commencing operation per Section 4.1.a.2 of the rule. Middlebourne Station will be required to keep their Certificate to Operate current.

45CSR34 – *Emission Standards for Hazardous Air Pollutants*

45CSR34 incorporates by reference the standards for hazardous air pollutants (40CFR63). Middlebourne III Station is subject to 40CFR63 Subpart HH and is therefore subject to 45CSR34.

40CFR60 Subpart JJJJ - *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject spark ignition internal combustion engine. This subpart applies to the twelve (12) compressor engines, C-100 through C-1200, because they will be manufactured on or after July 1, 2007. Engines C-100 through C-1200 will have to meet the following emission standards: NOx 1.0 g/hp-hr, CO 2.0 g/hp-hr, and VOC 0.7 g/hp-hr. These emissions standard will have to be met over the entire life of each engine. The non-certified engines (C-100 through C-1200) will have to undergo initial performance testing

and be tested every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance with the emission standards of 40CFR60 Subpart JJJJ.

40CFR60 Subpart OOOOa – *Standards of Performance for Crude Oil and Natural Gas Facilities 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.

The Station is not a gas well pad but is a natural gas processing plant. Any pneumatic controllers installed at the Station will operate at a natural gas bleed rate less than 6 standard cubic feet per hour. The storage tanks at the Station have VOC emissions less than 6 tons per year via voluntary controls that consist of a VRU and a back-up VRU. Therefore, they are not subject to Subpart OOOOa.

Antero Midstream, LLC will comply with applicable requirements for reciprocating compressors under Subpart OOOOa. This includes replacement of the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months or installation of a rod packing emissions collection system.

Antero Midstream, LLC will develop a fugitive emission monitoring plan and perform fugitive component monitoring as required by this rule. Antero Midstream, LLC will be required to conduct quarterly Leak Detection and Repair (LDAR) monitoring. Antero Midstream, LLC will have one year to conduct an initial leaks monitoring survey.

40CFR63 Subpart HH – *National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities.*

Subpart HH applies to owners and operators of each triethylene glycol (TEG) dehydration unit that are located at oil and natural gas production facilities.

The Middlebourne III facility is exempt from the requirements of this subpart in accordance with 40 CFR 63.764 (e)(ii) in which the facility is exempt if the actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram (1 ton) per year as determined by the procedures specified in §63.772(b)(2)(GRI-GlyCalc).

The results from GRI-GlyCalc provided in the application indicate that each of the TEG Dehydration units at the Middlebourne III facility will not exceed the exemption threshold of 0.90 megagram(1 ton) of benzene emissions per year. Therefore the facility is exempt from the requirements of 40 CFR 63 Subpart HH except that the records of the determination of these criteria must be maintained as required in §63.774(d)(1).

40CFR63 Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants For Stationary Reciprocating Internal Combustion Engines (RICE).*

Subpart ZZZZ applies to stationary RICE at a major or area source of HAP emissions. Subpart ZZZZ applies to the Middlebourne III Compressor Station as the compressor engines will be new RICE. The engines will comply with Subpart ZZZZ by complying with 40 CFR Part 60, Subpart JJJJ in accordance with 40 CFR 63.6590(c).

The following rules do not apply to the facility:

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Station is located in Tyler County, which is an unclassified county for all criteria pollutants, therefore the Station is not applicable to 45CSR19.

As shown in the following table, Antero Midstream is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, the fugitive emissions are not included in the PTE below.

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy)**	**Station PTE (tpy)**	**45CSR14 or 45CSR19 Review Required?**
Carbon Monoxide	250	NA	58.99	No
Nitrogen Oxides	250	NA	91.91	No
Sulfur Dioxide	250	NA	0.66	No
Particulate Matter 2.5	250	NA	9.39	No
VOC	250	NA	211.16	No

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

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The largest tank that Antero Midstream, LLC has proposed to install are 63.59 cubic meters each. Therefore, Antero Midstream, LLC would not be subject to this rule.

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 Station is has not yet been constructed, therefore, Antero Midstream, LLC is not subject to this rule.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The Station is classified as an area source of hazardous air pollutants. Listed below is a description of the primary hazardous air pollutants for this facility.

Acetaldehyde
Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is common in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Acrolein
Acrolein is primarily used as an intermediate in the synthesis of acrylic acid and as a biocide. It may be formed from the breakdown of certain pollutants in outdoor air or from the burning of organic matter including tobacco, or fuels such as gasoline or oil. It is toxic to humans following inhalation, oral or dermal exposures. Acute (short-term) inhalation exposure may result in upper respiratory tract irritation and congestion. No information is available on its reproductive, developmental, or carcinogenic effects in humans, and the existing animal cancer data are considered inadequate to make a determination that acrolein is carcinogenic to humans.

Benzene
Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and,

at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Toluene
The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. `Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies.

Ethylbenzene
Ethyl benzene is mainly used in the manufacturing of styrene. Acute (short-term) exposure to ethyl benzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects, such as dizziness. Chronic (long-term) exposure to ethyl benzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethyl benzene. Limited information is available on the carcinogenic effects of ethyl benzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethyl benzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethyl benzene as a Group D, not classifiable as to human carcinogenicity.

Xylenes
Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity. Mixed xylenes are used in the production of ethylbenzene, as solvents in products such as paints and coatings, and are blended into gasoline.

Formaldehyde
Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

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

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) or 45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment) as seen in the table listed in the Regulatory Discussion section under 45CSR14/45CSR19.

SOURCE AGGREGATION

"Building, structure, facility, or installation" is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

The Source Determination Rule for the oil and gas industry was published in the Federal Register on June 3, 2016 and will become effective on August 2, 2016. EPA defined the term "adjacent" and stated that equipment and activities in the oil and gas sector that are under common control will be considered part of the same source if they are located on the same site or on sites that share equipment and are within ¼ mile of each other.

The Station will operate under SIC code 4923 (Natural Gas Distribution). There is another compressor station (Mountain Compressor Station) 4.4 miles south of the Middlebourne facility operated by Antero Midstream under the same SIC code. The land between these two facilities is not owned or managed by Antero Midstream LLC and therefore these two facilities are not contiguous or adjacent.

"Contiguous or Adjacent" determinations are made on a case by case basis. There are no other equipment and activities in the oil and gas sector that are under common control of Antero Midstream LLC that are located on the same site or on sites that share equipment and are within ¼ mile of each other.

Because the Station is not located on contiguous or adjacent properties with other facilities under common control, the emissions from this facility shall not be aggregated with other facilities for the purposes of making Title V and PSD determinations.

MONITORING OF OPERATIONS

Antero Midstream, LLC will be required to perform the following monitoring and recordkeeping:

- Monitor and record quantity of natural gas consumed for all engines and combustion sources.
- Monitor and record quantity of tank and truck loading throughputs.
- Monitor and record all compressor blowdowns/startups, pigging operations, and plant shutdowns.
- Monitor all applicable requirements of 40CFR60 Subparts JJJJ and OOOOa.
- Monitor the presence of the flare pilot flame with a thermocouple or equivalent.
- Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
- Maintain records of the visible emission opacity tests conducted per the permit.
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
- Maintain records of all applicable requirements of 40CFR60 Subparts JJJJ and OOOOa and 40CFR63 Subpart HH.
- Maintain records of the flare design evaluation.
- The records shall be maintained on site or in a readily available off-site location maintained by Antero Midstream, LLC for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that the Antero Midstream, LLC-Middlebourne III natural gas compressor station should meet all the requirements of applicable rules and regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Tyler County location should be granted a 45CSR13 construction permit for their facility.

Jonathan Carney
Permit Writer

1/31/2017
DATE

West Virginia Department of Environmental Protection

Jim Justice
Governor

Division of Air Quality

Austin Caperton
Cabinet Secretary

Permit to Construct

R13-3347

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
Middlebourne III
095-00074

William F. Durham
Director

Issued: DRAFT • Effective: DRAFT

Facility Location:	Wick, Tyler County, West Virginia
Mailing Address:	1615 Wynkoop Street, Denver, CO 80202
Facility Description:	Natural gas compressor station
NAICS Codes:	221210
UTM Coordinates:	503.135 km Easting • 4363.005 km Northing • Zone 17
Permit Type:	Construction
Description of Change:	Natural gas compressor station

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.

As a result of the granting of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the date of the commencement of the operation or activity (activities) authorized by this permit.

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1.0. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
C-100	1E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(1C)
C-200	2E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(2C)
C-300	3E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(3C)
C-400	4E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(4C)
C-500	5E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(5C)
C-600	6E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(6C)
C-700	7E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(7C)
C-800	8E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(8C)
C-900	9E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(9C)
C-1000	10E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(10C)
C-1100	11E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(11C)
C-1200	12E	Caterpillar G3608 SIIC Lean Burn 4 Stroke Compressor Engine	2017	2,500 bhp	OxCat(12C)
GEN1	13E	Capstone C800 800kW Microturbine Generator	2017	800 kWe	None
DEHY1	14E	Dehydrator Still Vent #1	2017	150 MMscfd	FLARE1
DFLSH1	15E	Dehydrator Flash Tank #1	2017	150 MMscfd	DREB1
DREB1	16E	Dehydrator Reboiler #1	2017	1.5 MMBtu/hr	None
DEHY2	17E	Dehydrator Still Vent #2	2017	150 MMscfd	FLARE1
DFLSH2	18E	Dehydrator Flash Tank #2	2017	150 MMscfd	DREB2
DREB2	19E	Dehydrator Reboiler #2	2017	1.5 MMBtu/hr	None
DEHY3	20E	Dehydrator Still Vent #3	2017	150 MMscfd	FLARE1

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
DFLSH3	21E	Dehydrator Flash Tank #3	2017	150 MMscfd	DREB3
DREB3	22E	Dehydrator Reboiler #3	2017	1.5 MMBtu/hr	None
T01	23E	Condensate Tank #1	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
T02	24E	Condensate Tank #2	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
T03	25E	Condensate Tank #3	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
T04	26E	Settling Tank	2017	500 barrel	VRU-100 & VRU-200 (14C&15C)
T05	27E	Produced Water Tank #1	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
T06	28E	Produced Water Tank #2	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
T07	29E	Produced Water Tank #3	2017	400 barrel	VRU-100 & VRU-200 (14C&15C)
FUEL1	30E	Fuel Conditioning Heater	2017	0.5 MMBtu/hr	None
FLARE1	31E	Flare Combustion Device	2017	4.8 MMBtu/hr	
VRU-100	----	Vapor Recovery Unit #1	2017	TBD	
VRU-200	----	Vapor Recovery Unit #2	2017	TBD	
LDOUT1	32E	Production Liquids Truck Loadout	2017	390 bbl/day	None
VENT1	33E	Compressor Blowdowns/Startups/Plant Shutdowns/Pigging Operations	2017	NA	None

1.1 Control Devices

Emission Unit	Pollutant	Control Device	Control Efficiency
2,500 hp Caterpillar G3608 4SLB RICE (C-100 – C-1200)	Carbon Monoxide	Oxidation Catalyst	94%
	Volatile Organic Compounds		34%
	Formaldehyde		88%
150 MMscfd TEG Dehydrator Still Vent (DEHY1 – DEHY3)	Volatile Organic Compounds	Flare	98%
	Hazardous Air Pollutantas		98%
Condensate Tanks (T01-T03), Settling Tank (T04), Produced Water Tanks (T05-T07)	Volatile Organic Compounds	VRU w Backup VRU	98%
	Hazardous Air Pollutants		98%

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	**NO_X**	Nitrogen Oxides
CBI	Confidential Business Information	**NSPS**	New Source Performance Standards
CEM	Continuous Emission Monitor	**PM**	Particulate Matter
CES	Certified Emission Statement	**$PM_{2.5}$**	Particulate Matter less than 2.5 µm in diameter
C.F.R. *or* CFR	Code of Federal Regulations		
CO	Carbon Monoxide	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.S.R. *or* CSR	Codes of State Rules		
DAQ	Division of Air Quality	**Ppb**	Pounds per Batch
DEP	Department of Environmental Protection	**Pph**	Pounds per Hour
		Ppm	Parts per Million
dscm	Dry Standard Cubic Meter	**Ppm_V or ppmv**	Parts per Million by Volume
FOIA	Freedom of Information Act		
HAP	Hazardous Air Pollutant	**PSD**	Prevention of Significant Deterioration
HON	Hazardous Organic NESHAP		
HP	Horsepower	**Psi**	Pounds per Square Inch
lbs/hr	Pounds per Hour	**SIC**	Standard Industrial Classification
LDAR	Leak Detection and Repair		
M	Thousand	**SIP**	State Implementation Plan
MACT	Maximum Achievable Control Technology	**SO_2**	Sulfur Dioxide
		TAP	Toxic Air Pollutant
MDHI	Maximum Design Heat Input	**TPY**	Tons per Year

MM	Million	**TRS**	Total Reduced Sulfur
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour	**TSP**	Total Suspended Particulate
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour	**USEPA**	United States Environmental Protection Agency
NA	Not Applicable	**UTM**	Universal Transverse Mercator
NAAQS	National Ambient Air Quality Standards	**VEE**	Visual Emissions Evaluation
NESHAPS	National Emissions Standards for Hazardous Air Pollutants	**VOC**	Volatile Organic Compounds
		VOL	Volatile Organic Liquids

2.3. Authority

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

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

2.4. Term and Renewal

2.4.1. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any 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 Application R13-3347, 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; and

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:
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

3.5.4. **Operating Fee**

3.5.4.1. 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.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

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. **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.

4.1.2. **Minor Source of Hazardous Air Pollutants (HAP).** HAP emissions from the facility shall be less than 10 tons/year of any single HAP or 25 tons/year of any combination of HAPs. Compliance with this Section shall ensure that the facility is a minor HAP source.

4.1.3. **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.]

4.1.4 **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.

4.1.5. 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.

5.0. Source-Specific Requirements (Compressor Engines, C-100 to C1200)

5.1 Limitations and Standards

5.1.1 Maximum emissions from each of the 2,500 hp natural gas fired reciprocating engines equipped with oxidation catalysts, Caterpillar G3608 (C-100 – C-1200) shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	1.65	7.24
Carbon Monoxide	0.88	3.86
Volatile Organic Compounds (includes formaldehyde)	1.49	6.53
Formaldehyde	0.11	0.48

5.1.2. Requirements for Use of Catalytic Reduction Devices (OxCat (1C-12C))

a. Lean-burn natural gas engine(s) equipped with oxidation catalyst air pollution control devices shall be fitted with a closed-loop automatic air/fuel ratio feedback controller to ensure emissions of regulated pollutants do not exceed permit requirement 5.1.1 for any engine/oxidation catalyst combination under varying load. The closed-loop, automatic air/fuel ratio controller shall control a fuel metering valve to ensure a lean-rich mixture;

b. The automatic air/fuel ratio controller or closed-loop automatic feedback controller shall provide a warning or indication to the operator and/or be interlocked with the engine ignition system to cease engine operation in case of a masking, poisoning or overrich air/fuel ratio situation which results in performance degradation or failure of the catalyst element; and

c. No person shall knowingly:

1. Remove or render inoperative any air pollution or auxiliary air pollution control device installed subject to the requirements of this permit;
2. Install any part or component when the principal effect of the part or component is to bypass, defeat or render inoperative any air pollution control device or auxiliary air pollution control device installed subject to the requirements of this permit; or
3. Cause or allow engine exhaust gases to bypass any catalytic reduction device.

d. The permittee shall follow a written operation and maintenance plan that provides the periodic and annual maintenance requirements.

5.2. Monitoring Requirements

5.2.1. Catalytic Oxidizer Control Devices (OxCat (1C-12C))

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 the 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 operating and maintenance recommendations of the catalyst element manufacturer.

5.3. Testing Requirements

5.3.1. See Facility-Wide Testing Requirements Section 3.3 and Testing Requirements of Section 11.5.

5.4. Recordkeeping Requirements

5.4.1. The permittee shall maintain records of the hours of operation of each engine. Said records shall be kept in accordance with permit condition 3.4.1.

5.4.2. To demonstrate compliance with permit condition 5.1.2, the permittee shall maintain records of all catalytic reduction device maintenance. Said records shall be kept in accordance with permit condition 3.4.1.

5.5. Reporting Requirements

5.5.1. See Facility-Wide Reporting Requirements Section 3.5 and Reporting Requirements of Sections 11.6 and 12.4

6.0. Source-Specific Requirements (Gen 1)

6.1. Limitations and Standards

6.1.1. The Gen 1 unit shall be a Capstone C800 Standard 800 kWe (output) Microturbine and shall only be fired by natural gas;

6.1.2. The maximum emissions from the Microturbine shall not exceed the limits given in the following table:

Pollutant	lb/hr	TPY
CO	0.88	3.85
NO_x	0.32	1.40
VOC	0.08	0.35
PM_{10}	0.06	0.24
Formaldehyde	0.01	0.03

6.1.3. 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.

6.1.4 Maintenance of the microturbine shall be performed in accordance with manufacturer recommendations or in accordance with a site specific maintenance plan.

6.2. Testing Requirements

6.2.1. See Facility-Wide Testing Requirements Section 3.3.

6.3. Recordkeeping Requirements

6.3.1. In order to demonstrate compliance with permit condition 6.1.4, the permittee shall maintain records of all maintenance performed on the microturbine. Said records shall be kept in accordance with permit condition 3.4.1.

6.4. Reporting Requirements

6.4.1. See Facility-Wide Reporting Requirements Section 3.5.

7.0. Source-Specific Hazardous Air Pollutant Requirements (Natural Gas Dehydration Unit Not Subject to MACT Standards and being controlled by a Flare Control Device)

7.1. Limitations and Standards

7.1.1. **Maximum Throughput Limitation.** The maximum dry natural gas throughput to each TEG dehydration unit/still columns (DEHY1-DEHY3) shall not exceed 150 million standard cubic feet per day.

7.1.2. The TEG dehydration unit/still column (DEHY1-DEHY3) shall be controlled by the flare control device (FLARE1) at all times. Maximum emissions from the flare (FLARE1) shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Volatile Organic Compounds (includes formaldehyde)	4.38	19.23
Benzene	0.05	0.22

7.1.3. The flare subject to this section shall be designed and operated in accordance with the following:

a Flare shall be air-assisted.

b. Flare shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

c. Flare shall be operated, with a flame present at all times whenever emissions may be vented to them, except during SSM (Startup, Shutdown, Malfunctions) events.

d. A flare shall be used only where the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or where the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flares is non-assisted. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\sum_{i=1}^{n} C_i H_i$$

Where:

H_T=Net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C.

K=Constant=

$$1.740\times10^{-7}\left(\frac{1}{ppmv}\right)\left(\frac{\text{g-mole}}{\text{scm}}\right)\left(\frac{\text{MJ}}{\text{kcal}}\right)$$

where the standard temperature for (g-mole/scm) is 20 °C.

C_i=Concentration of sample component i in ppmv on a wet basis, which may be measured for organics by Test Method 18, but is not required to be measured using Method 18 (unless designated by the Director).

H_i=Net heat of combustion of sample component i, kcal/g-mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 if published values are not available or cannot be calculated.
n=Number of sample components.

e. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, Vmax, as determined by the method specified below:

The maximum permitted velocity, Vmax, for air-assisted flares shall be determined by the following equation.

Vmax = 8.706 + 0.7084 (HT)

Vmax = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

HT = The net heating value as determined in paragraph (f)(3) of §60.18.

[40CFR§61.11(b)]

7.1.4. The permittee is not required to conduct a flare compliance assessment for concentration of sample (i.e. Method 18) and tip velocity (i.e. Method 2) until such time as the Director requests a flare compliance assessment to be conducted in accordance with section 7.3.2, but the permittee is required to conduct a flare design evaluation in accordance with section 7.4.2. Alternatively, the permittee may elect to demonstrate compliance with the flare design criteria requirements of section 7.1.3 by complying with the compliance assessment testing requirements of section 7.3.2.

7.2. Monitoring Requirements

7.2.1. In order to demonstrate compliance with the requirements of permit condition 7.1.3.c, the permittee shall monitor the presence or absence of a flare pilot flame using a thermocouple or any other equivalent device, except during SSM events.

7.2.2. The permittee shall monitor the throughput of dry natural gas fed to the dehydration system on a monthly basis for each glycol dehydration unit.

7.3. Testing Requirements

7.3.1. In order to demonstrate compliance with the flare opacity requirements of permit condition 7.1.3.b the permittee shall conduct a Method 22 opacity test for at least two hours. This test shall demonstrate no visible emissions are observed for more than a total of 5 minutes during any 2 consecutive hour period using 40CFR60 Appendix A Method 22. The permittee shall conduct this test within one (1) year of permit issuance or initial startup whichever is later. The visible emission checks shall determine the presence or absence of visible emissions. 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 40 CFR part 60, appendix A, Method 22 or from the lecture portion of 40 CFR part 60, appendix A, Method 9 certification course.

7.3.2. The Director may require the permittee to conduct a flare compliance assessment to demonstrate compliance with permit condition 7.1.3. This compliance assessment testing shall be conducted in accordance with Test Method 18 for organics and Test Method 2, 2A, 2C, or 2D in appendix A to

40 CFR part 60, as appropriate, or other equivalent testing approved in writing by the Director. Also, Test Method 18 may require the permittee to conduct Test Method 4 in conjunction with Test Method 18.

7.3.3. In order to demonstrate compliance with the minor source status of hazardous air pollutants required by permit condition 4.1.2, upon request of the Director, the permittee shall demonstrate compliance with the HAP emissions thresholds using GLYCalc Version 3.0 or higher. The permittee shall sample in accordance with GPA Method 2166 and analyze the samples utilizing the extended GPA Method 2286 as specified in the GRI-GLYCalc V4 Technical Reference User Manual and Handbook.

7.3.4. Determination of glycol dehydration benzene emissions. In order to demonstrate that the benzene emissions are less than 1 tpy, the permittee shall determine the actual average benzene emissions using the procedure in the paragraph below. Emissions shall be determined either uncontrolled, or with federally enforceable controls in place.

The owner or operator shall determine actual average benzene or BTEX emissions using the model GRI-GLYCalc™, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc™ Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit and may be determined using the procedures documented in the Gas Research Institute (GRI) report entitled "Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions" (GRI-95/0368.1). **[40CFR§63.772 (b)(2)]**

7.4. Recordkeeping Requirements

7.4.1. For the purpose of demonstrating compliance with permit conditions 7.1.3.c and 7.2.1, the permittee shall maintain records of the times and duration of all periods which the pilot flame was absent.

7.4.2. For the purpose of demonstrating compliance with permit conditions 7.1.4 and 7.3.2, the permittee shall maintain a record of the flare design evaluation. The flare design evaluation shall include, net heat value calculations, exit (tip) velocity calculations, and all supporting concentration calculations and other related information requested by the Director.

7.4.3. For the purpose of demonstrating compliance with the requirements set forth in permit conditions 7.1.3 and 7.3.3., the permittee shall maintain records of testing conducted in accordance with permit condition 7.3.3.

7.4.4. The permittee shall document and maintain the corresponding records specified by the on-going monitoring requirements of section 7.2 and testing requirements of section 7.3.

7.4.5. For the purpose of demonstrating compliance with permit condition 7.1.3.b, the permittee shall maintain records of the visible emission opacity tests conducted per Section 7.3.1.

7.4.6. For the purpose of demonstrating compliance with the minor source status of hazardous air pollutants required by permit condition 4.1.2, the permittee shall maintain a record of all potential to emit (PTE) HAP calculations for the entire affected facility. These records shall include the natural gas compressor engines and ancillary equipment.

7.4.7. The permittee shall maintain a record of the dry natural gas throughput through the dehydration system to demonstrate compliance with permit condition 7.1.1.

7.4.8. To demonstrate that the permittee is exempt from the requirements of 40 CFR § 63.764 (d) if the actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere is less than 0.90 megagram per year (1 tpy), as determined by the procedures specified in 40 CFR §

63.772(b)(2) and section 7.3.4 of this permit, records of the actual average benzene emissions (in terms of benzene emissions per year) shall be maintained.
[40CFR§63.764(e)]

7.4.9. All records required under Section 7.4 shall be shall be kept in accordance with permit condition 3.4.1.

7.5. Reporting Requirements

7.5.1. If permittee is required by the Director to demonstrate compliance with permit condition 7.3.2, then the permittee shall submit a testing protocol at least thirty (30) days prior to testing and shall submit a notification of the testing date at least fifteen (15) days prior to testing. The permittee shall submit the testing results within sixty (60) days of testing and provide all supporting calculations and testing data.

7.5.2. Any deviation(s) from the allowable visible emission requirement for any emission source discovered during observations using 40CFR Part 60, Appendix A, Method 9 or 22 shall be reported in writing to the Director of the Division of Air Quality as soon as practicable, but in any case within ten (10) calendar days of the occurrence and shall include at least 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.

7.5.3. Any deviation(s) from the flare design and operation criteria in permit condition 7.1.3 shall be reported in writing to the Director of the Division of Air Quality as soon as practicable, but in any case within ten (10) calendar days of discovery of such deviation.

8.0. Source-Specific Requirements (Reboilers, DREB1 – DREB3)

8.1. Limitations and Standards

8.1.1. Maximum Design Heat Input. The maximum design heat input for each of the TEG Dehydration Unit Reboilers (DREB1 – DREB3) shall not exceed 1.5 MMBtu/hr.

8.1.2. 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.
[45CSR§2-3.1.]

8.2. Monitoring Requirements

8.2.1. At such reasonable times as the Secretary may designate, the permittee shall conduct Method 9 emission observations for the purpose of demonstrating compliance with permit condition 8.1.2. Method 9 shall be conducted in accordance with 40 CFR 60 Appendix A.

8.3. Testing Requirements

8.3.1. Compliance with the visible emission requirements of permit condition 8.1.2 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 Director. The Director 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 permit condition 8.1.2. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control.
[45CSR§2-3.2.]

8.4. Recordkeeping Requirements

8.4.1 All records required under Section 9.3 shall be kept in accordance with permit condition 3.4.1.

8.4.2. The permittee shall maintain records of all monitoring data required by permit condition 8.2.1 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.

8.5. Reporting Requirements

8.5.1. Any deviation(s) from the allowable visible emission requirement for any emission source discovered during observations using 40CFR Part 60, Appendix A, Method 9 or 22 shall be reported in writing to the Director of the Division of Air Quality as soon as practicable, but in any case within ten (10) calendar days of the occurrence and shall include at least 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.

9.0. Source-Specific Requirements (Condensate Storage Tanks (T01-T03), Settling Tank (T04), Produced Water Storage Tank (T05-T07))

9.1. Limitations and Standards

9.1.1. The permittee shall route all VOC and HAP emissions from the Condensate Storage Tanks (T01-T03), Settling Tank (T04), Produced Water Storage Tank (T05-T07) to the VRU-100 prior to release to the atmosphere. The vapor recovery system shall be designed to achieve a minimum guaranteed control efficiency of 98% for volatile organic compound (VOC) and hazardous air pollutants (HAP) emissions. Emissions from the condensate storage tanks, settling tank, and produced water storage tanks will be collected and compressed by the vapor recovery unit whereby the vapors are sufficiently compressed to be introduced into the gas system right before the initial filter scrubber.

9.1.2. *Operation and Maintenance of Air Pollution Control Equipment.* The permittee shall, to the extent practicable, install, maintain, and operate the vapor recovery unit with vapor recovery backup unit (VRU-200) 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.]

9.1.3. The maximum annual throughput of product to the storage tanks shall not exceed the following:

Storage Tank ID	Product Stored	Maximum Annual Throughput (gal/yr)
T01	Condensate	1,533,000
T02	Condensate	1,533,000
T03	Condensate	1,533,000
T04	Settling	5,978,700
T05	Produced Water	459,900
T06	Produced Water	459,900
T07	Produced Water	459,900

[45CSR§13-5.11]

9.2. Monitoring Requirements

9.2.1. The permittee shall monitor the throughput to the storage tanks (T01-T07) on a monthly basis.

9.2.2. To demonstrate compliance with permit condition 9.1.1, the permittee shall monitor the vapor recovery unit in accordance with the plans and specifications and manufacturer's recommendations.

9.3. Recordkeeping Requirements

9.3.1. All records required under Section 9.3 shall be kept in accordance with permit condition 3.4.1.

9.3.2. *Record of Maintenance of VRUs.* The permittee shall maintain accurate records of the vapor recovery unit equipment inspection and/or preventative maintenance procedures.

9.3.3. *Record of Malfunctions of VRU.* The permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the vapor recovery unit during which excess emissions occur. For each malfunction, the permittee shall record the information as required in in condition 4.14.

9.3.4. To demonstrate compliance with permit condition 9.1.3, the permittee shall maintain a record of the aggregate throughput for the storage tanks on a monthly and rolling twelve month total.

9.3.5. The permittee shall maintain a copy all design records of the process, maintenance records of equipment and any downtime hours associated with the vapor recovery units.

i. The initial compliance requirements;

ii. Each annual visual inspection conducted to demonstrate continuous compliance, including records of any repairs that were made as results of the inspection;

iii. Bypass requirements.

a. 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 the event occurred. The record shall also include the estimate of emissions that were released to the environment as a result of the bypass.

iv. Any part of the system that has been designated as "unsafe to inspect" in accordance with permit condition 8.2.3.d or "difficult to inspect" in accordance with permit condition 8.2.3.e.

[45CSR§13-5.11]

9.4. Reporting Requirements

9.4.1. Upon request by the Director, the permittee shall report deviations within a requested time from of any occurrences when the control device was operated outside of the parameters defined in the monitoring plan.

9.4.2. The permittee shall notify the Director of any downtime of the VRUs in excess of 2%, based on the 12 month rolling total, in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days of the discovery and shall include, at a minimum, the following information: the dates and durations of each downtime event, the cause or suspected causes for each downtime event, any corrective measures taken or planned for each downtime event.

10.0. Source-Specific Requirements (Truck Loading, LDOUT1)

10.1. Limitations and Standards

10.1.1. 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.

10.1.2. The maximum quantity of produced water from truck loading (LDOUT1) that shall be loaded shall not exceed 1,380,000 gallons per year. Compliance with the Maximum Yearly Operation Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the throughput at any given time during the previous twelve consecutive calendar months.

10.1.3. The maximum quantity of condensate from pressurized truck loading (LDOUT1) that shall be loaded shall not exceed 4,599,000 gallons per year. Compliance with the Maximum Yearly Operation Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the throughput at any given time during the previous twelve consecutive calendar months.

10.1.4. The Produced Water and Condensate Truck Loading (LDOUT1) shall be operated using submerged filling into uncleaned dedicated service cargo vessels.

10.2. Monitoring Requirements

10.2.1. See Facility-Wide Monitoring Requirements Section 3.2.

10.3. Recordkeeping Requirements

10.3.1. All records required under Section 10.3 shall be kept in accordance with permit condition 3.4.1.

10.3.2. To demonstrate compliance with permit conditions 10.1.2 and 10.1.3, the permittee shall maintain a record of the aggregate throughput for the truck loading (LDOUT1) on a monthly and rolling twelve month total.

10.4. Reporting Requirements

10.4.1. See Facility-Wide Reporting Requirements Section 3.5.

11.0. Source-Specific Requirements (40CFR60 Subpart JJJJ Requirements, C-100 to C-1200)

11.1. Limitations and Standards

11.1.1. The provisions of this subpart are applicable to owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified below. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

a. Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured:

1. On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP);

[40CFR§60.4230(a)]

11.1.2. The provisions of this subpart are not applicable to stationary SI ICE being tested at an engine test cell/stand. **[40CFR§60.4230(b)]**

11.1.3. If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable. **[40CFR§60.4230(c)]**

11.1.4. Stationary SI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR parts 90 and 1048, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security. **[40CFR§60.4230(e)]**

11.1.5. Owners and operators of facilities with internal combustion engines that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines. **[40CFR§60.4230(f)]**

11.2. Emission Standards for Owners and Operators

11.2.1. 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. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified. **[40CFR§60.4233(e)]**

11.2.2. Owners and operators of stationary SI ICE that are required to meet standards that reference 40 CFR 1048.101 must, if testing their engines in use, meet the standards in that section applicable to field testing, except as indicated in paragraph (e) of this section. **[40CFR§60.4233(h)]**

11.2.3. Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine. **[40CFR§60.4234]**

11.3. Other Requirements for Owners and Operators

11.3.1. After July 1, 2009, owners and operators may not install stationary SI ICE with a maximum engine power of greater than or equal to 500 HP that do not meet the applicable requirements in §60.4233, except that lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP that do not meet the applicable requirements in §60.4233 may not be installed after January 1, 2010. **[40CFR§60.4236(b)]**

11.3.2. The requirements of this section do not apply to owners and operators of stationary SI ICE that have been modified or reconstructed, and they do not apply to engines that were removed from one existing location and reinstalled at a new location. **[40CFR§60.4236(e)]**

11.4. Compliance Requirements for Owners and Operators

11.4.1. 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.

a. Purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a) of this section.

b. 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 1 and 2 below:

1. If you are an owner or operator of a stationary SI internal combustion engine greater than 25 HP and less than or equal to 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 to demonstrate compliance.
2. 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.

[40CFR§60.4243(b)]

11.4.2. Owners and operators of stationary SI natural gas fired engines may operate their engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of §60.4233. **[40CFR§60.4243(e)]**

11.4.3. It is expected that air-to-fuel ratio controllers will be used with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller must be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times. **[40CFR§60.4243(g)]**

11.5. Testing Requirements for Owners and Operators

11.5.1. Owners and operators of stationary SI ICE who conduct performance tests must follow the procedures in paragraphs (a) through (f) of this section.

a. Each performance test must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and according to the requirements in §60.8 and under the specific conditions that are specified by Table 2 to this subpart. **[40CFR§60.4244(a)]**

b. You may not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in §60.8(c). If your stationary SI internal combustion engine is non-operational, you do not need to startup the engine solely to conduct a performance test; however, you must conduct the performance test immediately upon startup of the engine. **[40CFR§60.4244(b)]**

c. You must conduct three separate test runs for each performance test required in this section, as specified in §60.8(f). Each test run must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour. **[40CFR§60.4244(c)]**

d. To determine compliance with the NO_X mass per unit output emission limitation, convert the concentration of NO_X in the engine exhaust using Equation 1 of this section:

$$ER = \frac{C_d \times 1.912 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 1)}$$

Where:
ER = Emission rate of NO_X in g/HP-hr.

C_d= Measured NO_X concentration in parts per million by volume (ppmv).

1.912×10^{-3} = Conversion constant for ppm NO_X to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, horsepower-hour (HP-hr).

[40 C.F.R. §60.4244(d)]

e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 of this section:

$$ER = \frac{C_d \times 1.164 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 2)}$$

Where:
ER = Emission rate of CO in g/HP-hr.

C_d= Measured CO concentration in ppmv.

1.164×10^{-3} = Conversion constant for ppm CO to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

[40CFR§60.4244(e)]

f. For purposes of this subpart, when calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 of this section:

$$ER = \frac{C_d \times 1.833 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 3)}$$

Where:
ER = Emission rate of VOC in g/HP-hr.

C_d= VOC concentration measured as propane in ppmv.

1.833×10^{-3} = Conversion constant for ppm VOC measured as propane, to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

[40CFR§60.4244(f)]

g. If the owner/operator chooses to measure VOC emissions using either Method 18 of 40 CFR part 60, appendix A, or Method 320 of 40 CFR part 63, appendix A, then it has the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 of this section. The corrected VOC concentration can then be placed on a propane basis using Equation 6 of this section.

$$RF_i = \frac{C_{Mi}}{C_{Ai}} \qquad \text{(Eq. 4)}$$

Where:
RF_i= Response factor of compound i when measured with EPA Method 25A.

C_{Mi}= Measured concentration of compound i in ppmv as carbon.

C_{Ai}= True concentration of compound i in ppmv as carbon.

$$C_{icorr} = RF_i \times C_{imeas} \qquad \text{(Eq. 5)}$$

Where:
C_{icorr}= Concentration of compound i corrected to the value that would have been measured by EPA Method 25A, ppmv as carbon.

C_{imeas}= Concentration of compound i measured by EPA Method 320, ppmv as carbon.

$$C_{Peq} = 0.6098 \times C_{icorr} \qquad \text{(Eq. 6)}$$

Where:
C_{Peq}= Concentration of compound i in mg of propane equivalent per DSCM.

[40CFR§60.4244(g)]

11.6. Notification, Reports, and Records for Owners and Operators

11.6.1. Owners or operators of stationary SI ICE must meet the following notification, reporting and recordkeeping requirements.

a. Owners and operators of all stationary SI ICE must keep records of the information in paragraphs (a)(1) through (4) of this section.

1. All notifications submitted to comply with this subpart and all documentation supporting any notification.
2. Maintenance conducted on the engine.
3. If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90 and 1048.
4. If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to §60.4243(a)(2), documentation that the engine meets the emission standards.

[40CFR§60.4245(a)]

b. For all stationary SI emergency ICE greater than or equal to 500 HP manufactured on or after July 1, 2010, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than 25 HP and less than 130 HP manufactured on or after July 1, 2008, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. **[40CFR§60.4245(b)]**

c. Owners and operators of stationary SI ICE greater than or equal to 500 HP that have not been certified by an engine manufacturer to meet the emission standards in §60.4231 must submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (c)(1) through (5) of this section.

1. Name and address of the owner or operator;

2. The address of the affected source;
3. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;
4. Emission control equipment; and
5. Fuel used.

[40CFR§60.4245(c)]

d. Owners and operators of stationary SI ICE that are subject to performance testing must submit a copy of each performance test as conducted in §60.4244 within 60 days after the test has been completed. **[40CFR§60.4245(d)]**

12.0. Source-Specific Requirements (40CFR60 Subpart OOOOa Requirements, Reciprocating Compressor Engines (C-100 to C-1200))

12.1. Limitations and Standards

12.1.1. You must comply with the standards in paragraphs (a) through (d) of this section for each reciprocating compressor affected facility.

a. 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.

1. 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.

2. 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.

3. 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).

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

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

d. 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.

[40CFR§60.5385a]

12.2. Initial Compliance Demonstration

12.2.1. You must determine initial compliance with the standards for each affected facility using the requirements in paragraph (c) of this section. The initial compliance period begins on August 2, 2016 or upon initial startup, whichever is later, and ends no later than one year after the initial startup date for your affected facility or no later than one year after August 2, 2016. The initial compliance period may be less than one full year.

a. *NA.*

b. *NA.*

c. To achieve initial compliance with the standards for each reciprocating compressor affected facility you must comply with paragraphs (c)(1) through (4) of this section.

1. If complying with §60.5385a(a)(1) or (2), during the initial compliance period, you must continuously monitor the number of hours of operation or track the number of months since the last rod packing replacement.

2. If complying with §60.5385a(a)(3), you must operate the rod packing emissions collection system under negative pressure and route emissions to a process through a closed vent system that meets the requirements of §60.5411a(a) and (d).

3. You must submit the initial annual report for your reciprocating compressor as required in §60.5420a(b)(1) and (4).

4. You must maintain the records as specified in §60.5420a(c)(3) for each reciprocating compressor affected facility.

[40CFR§60.5410a]

12.3. Continuous Compliance Demonstration

12.3.1. For each reciprocating compressor affected facility complying with §60.5385a(a)(1) or (2), you must demonstrate continuous compliance according to paragraphs (1) through (3) of this section. For each reciprocating compressor affected facility complying with §60.5385a(a)(3), you must demonstrate continuous compliance according to paragraph (4) of this section.

1. You must continuously monitor the number of hours of operation for each reciprocating compressor affected facility or track the number of months since initial startup or the date of the most recent reciprocating compressor rod packing replacement, whichever is later.

2. You must submit the annual reports as required in §60.5420a(b)(1) and (4) and maintain records as required in §60.5420a(c)(3).

3. You must replace the reciprocating compressor rod packing on or before the total number of hours of operation reaches 26,000 hours or the number of months since the most recent rod packing replacement reaches 36 months.

4. You must operate the rod packing emissions collection system under negative pressure and continuously comply with the cover and closed vent requirements in §60.5416a(a) and (b). **[40CFR §60.5415a]**

12.4. Notification, Recordkeeping and Reporting Requirements

12.4.1. You must submit the notifications according to paragraphs (a)(1) and (2) of this section if you own or operate one or more of the affected facilities specified in §60.5365a that was constructed, modified or reconstructed during the reporting period.
[40CFR§60.5420a(a)]

12.4.2. Reporting requirements. You must submit annual reports containing the information specified in paragraphs (b)(1) and (4) of this section to the Administrator and performance test reports as specified in paragraph (b)(9) of this section. You must submit annual reports following the procedure specified in paragraph (b)(11) of this section. The initial annual report is due no later than 90 days after the end of the initial compliance period as determined according to §60.5410a.

Subsequent annual reports are due no later than same date each year as the initial annual report. If you own or operate more than one affected facility, you may submit one report for multiple affected facilities provided the report contains all of the information required as specified in paragraphs (b)(1) and (4) of this section. Annual reports may coincide with title V reports as long as all the required elements of the annual report are included. You may arrange with the Administrator a common schedule on which reports required by this part may be submitted as long as the schedule does not extend the reporting period.

(1) The general information specified in paragraphs (1)(i) through (iv) of this section.

(i) The company name, facility site name associated with the affected facility, US Well ID or US Well ID associated with the affected facility, if applicable, and address of the affected facility. If an address is not available for the site, include a description of the site location and provide the latitude and longitude coordinates of the site in decimal degrees to an accuracy and precision of five (5) decimals of a degree using the North American Datum of 1983.

(ii) An identification of each affected facility being included in the annual report.

(iii) Beginning and ending dates of the reporting period.

(iv) A certification by a certifying official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(4) For each reciprocating compressor affected facility, the information specified in paragraphs (i) through (ii) of this section.

(i) The cumulative number of hours of operation or the number of months since initial startup or since the previous reciprocating compressor rod packing replacement, whichever is later. Alternatively, a statement that emissions from the rod packing are being routed to a process through a closed vent system under negative pressure.

(ii) Records of deviations specified in paragraph (c)(3)(iii) of this section that occurred during the reporting period.

[40CFR§60.5420a]

12.4.3. To demonstrate compliance with permit condition 11.1.1.d, the permittee shall maintain the reporting as 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.

13.0. Source-Specific Requirements (40CFR60 Subpart OOOOa Requirements, Fugitive Emission Components)

13.1. Limitations and Standards

13.1.1. For each affected facility under §60.5365a(j), you must reduce GHG (in the form of a limitation on emissions of methane) and VOC emissions by complying with the requirements of paragraphs (a) through (j) of this section. These requirements are independent of the closed vent system and cover requirements in §60.5411a.

(a) You must monitor all fugitive emission components, as defined in §60.5430a, in accordance with paragraphs (b) through (g) of this section. You must repair all sources of fugitive emissions in accordance with paragraph (h) of this section. You must keep records in accordance with paragraph (i) of this section and report in accordance with paragraph (j) of this section. For

purposes of this section, fugitive emissions are defined as: Any visible emission from a fugitive emissions component observed using optical gas imaging or an instrument reading of 500 ppm or greater using Method 21.

(b) You must develop an emissions monitoring plan that covers the collection of fugitive emissions components at well sites and compressor stations within each company-defined area in accordance with paragraphs (c) and (d) of this section.

(c) Fugitive emissions monitoring plans must include the elements specified in paragraphs (c)(1) through (8) of this section, at a minimum.

(1) Frequency for conducting surveys. Surveys must be conducted at least as frequently as required by paragraphs (f) and (g) of this section.

(2) Technique for determining fugitive emissions (i.e., Method 21 at 40 CFR part 60, appendix A-7, or optical gas imaging).

(3) Manufacturer and model number of fugitive emissions detection equipment to be used.

(4) Procedures and timeframes for identifying and repairing fugitive emissions components from which fugitive emissions are detected, including timeframes for fugitive emission components that are unsafe to repair. Your repair schedule must meet the requirements of paragraph (h) of this section at a minimum.

(5) Procedures and timeframes for verifying fugitive emission component repairs.

(6) Records that will be kept and the length of time records will be kept.

(7) If you are using optical gas imaging, your plan must also include the elements specified in paragraphs (c)(7)(i) through (vii) of this section.

(i) Verification that your optical gas imaging equipment meets the specifications of paragraphs (c)(7)(i)(A) and (B) of this section. This verification is an initial verification and may either be performed by the facility, by the manufacturer, or by a third party. For the purposes of complying with the fugitives emissions monitoring program with optical gas imaging, a fugitive emission is defined as any visible emissions observed using optical gas imaging.

(A) Your optical gas imaging equipment must be capable of imaging gases in the spectral range for the compound of highest concentration in the potential fugitive emissions.
(B) Your optical gas imaging equipment must be capable of imaging a gas that is half methane, half propane at a concentration of 10,000 ppm at a flow rate of ≤60g/hr from a quarter inch diameter orifice.

(ii) Procedure for a daily verification check.

(iii) Procedure for determining the operator's maximum viewing distance from the equipment and how the operator will ensure that this distance is maintained.

(iv) Procedure for determining maximum wind speed during which monitoring can be performed and how the operator will ensure monitoring occurs only at wind speeds below this threshold.

(v) Procedures for conducting surveys, including the items specified in paragraphs (c)(7)(v)(A) through (C) of this section.

(A) How the operator will ensure an adequate thermal background is present in order to view potential fugitive emissions.

(B) How the operator will deal with adverse monitoring conditions, such as wind.

(C) How the operator will deal with interferences (e.g., steam).

(vi) Training and experience needed prior to performing surveys.

(vii) Procedures for calibration and maintenance. At a minimum, procedures must comply with those recommended by the manufacturer.

(8) If you are using Method 21 of appendix A-7 of this part, your plan must also include the elements specified in paragraphs (c)(8)(i) and (ii) of this section. For the purposes of complying with the fugitive emissions monitoring program using Method 21 a fugitive emission is defined as an instrument reading of 500 ppm or greater.

(i) Verification that your monitoring equipment meets the requirements specified in Section 6.0 of Method 21 at 40 CFR part 60, appendix A-7. For purposes of instrument capability, the fugitive emissions definition shall be 500 ppm or greater methane using a FID-based instrument. If you wish to use an analyzer other than a FID-based instrument, you must develop a site-specific fugitive emission definition that would be equivalent to 500 ppm methane using a FID-based instrument (e.g., 10.6 eV PID with a specified isobutylene concentration as the fugitive emission definition would provide equivalent response to your compound of interest).

(ii) Procedures for conducting surveys. At a minimum, the procedures shall ensure that the surveys comply with the relevant sections of Method 21 at 40 CFR part 60, appendix A-7, including Section 8.3.1.

(d) Each fugitive emissions monitoring plan must include the elements specified in paragraphs (d)(1) through (4) of this section, at a minimum, as applicable.

(1) Sitemap.

(2) A defined observation path that ensures that all fugitive emissions components are within sight of the path. The observation path must account for interferences.

(3) If you are using Method 21, your plan must also include a list of fugitive emissions components to be monitored and method for determining location of fugitive emissions components to be monitored in the field (e.g. tagging, identification on a process and instrumentation diagram, etc.).

(4) Your plan must also include the written plan developed for all of the fugitive emission components designated as difficult-to-monitor in accordance with paragraph (g)(3)(i) of this section, and the written plan for fugitive emission components designated as unsafe-to-monitor in accordance with paragraph (g)(3)(ii) of this section.

(e) Each monitoring survey shall observe each fugitive emissions component, as defined in §60.5430a, for fugitive emissions.

(f)(1) You must conduct an initial monitoring survey within 60 days of the startup of production, as defined in §60.5430a, for each collection of fugitive emissions components at a new well site or by June 3, 2017, whichever is later. For a modified collection of fugitive emissions components at a well site, the initial monitoring survey must be conducted within

60 days of the first day of production for each collection of fugitive emission components after the modification or by June 3, 2017, whichever is later.

(2) You must conduct an initial monitoring survey within 60 days of the startup of a new compressor station for each new collection of fugitive emissions components at the new compressor station or by June 3, 2017, whichever is later. For a modified collection of fugitive components at a compressor station, the initial monitoring survey must be conducted within 60 days of the modification or by June 3, 2017, whichever is later.

(g) A monitoring survey of each collection of fugitive emissions components at a well site or at a compressor station must be performed at the frequencies specified in paragraphs (g)(1) and (2) of this section, with the exceptions noted in paragraphs (g)(3) and (4) of this section.

(1) A monitoring survey of each collection of fugitive emissions components at a well site within a company-defined area must be conducted at least semiannually after the initial survey. Consecutive semiannual monitoring surveys must be conducted at least 4 months apart.

(2) A monitoring survey of the collection of fugitive emissions components at a compressor station within a company-defined area must be conducted at least quarterly after the initial survey. Consecutive quarterly monitoring surveys must be conducted at least 60 days apart.

(3) Fugitive emissions components that cannot be monitored without elevating the monitoring personnel more than 2 meters above the surface may be designated as difficult-to-monitor. Fugitive emissions components that are designated difficult-to-monitor must meet the specifications of paragraphs (g)(3)(i) through (iv) of this section.

(i) A written plan must be developed for all of the fugitive emissions components designated difficult-to-monitor. This written plan must be incorporated into the fugitive emissions monitoring plan required by paragraphs (b), (c), and (d) of this section.

(ii) The plan must include the identification and location of each fugitive emissions component designated as difficult-to-monitor.

(iii) The plan must include an explanation of why each fugitive emissions component designated as difficult-to-monitor is difficult-to-monitor.

(iv) The plan must include a schedule for monitoring the difficult-to-monitor fugitive emissions components at least once per calendar year.

(4) Fugitive emissions components that cannot be monitored because monitoring personnel would be exposed to immediate danger while conducting a monitoring survey may be designated as unsafe-to-monitor. Fugitive emissions components that are designated unsafe-to-monitor must meet the specifications of paragraphs (g)(4)(i) through (iv) of this section.

(i) A written plan must be developed for all of the fugitive emissions components designated unsafe-to-monitor. This written plan must be incorporated into the fugitive emissions monitoring plan required by paragraphs (b), (c), and (d) of this section.

(ii) The plan must include the identification and location of each fugitive emissions component designated as unsafe-to-monitor.

(iii) The plan must include an explanation of why each fugitive emissions component designated as unsafe-to-monitor is unsafe-to-monitor.

(iv) The plan must include a schedule for monitoring the fugitive emissions components designated as unsafe-to-monitor.

(5) The requirements of paragraph (g)(2) of this section are waived for any collection of fugitive emissions components at a compressor station located within an area that has an average calendar month temperature below 0°Fahrenheit for two of three consecutive calendar months of a quarterly monitoring period. The calendar month temperature average for each month within the quarterly monitoring period must be determined using historical monthly average temperatures over the previous three years as reported by a National Oceanic and Atmospheric Administration source or other source approved by the Administrator. The requirements of paragraph (g)(2) of this section shall not be waived for two consecutive quarterly monitoring periods.

(h) Each identified source of fugitive emissions shall be repaired or replaced in accordance with paragraphs (h)(1) and (2) of this section. For fugitive emissions components also subject to the repair provisions of §§60.5416a(b)(9) through (12) and (c)(4) through (7), those provisions apply instead to those closed vent system and covers, and the repair provisions of paragraphs (h)(1) and (2) of this section do not apply to those closed vent systems and covers.

(1) Each identified source of fugitive emissions shall be repaired or replaced as soon as practicable, but no later than 30 calendar days after detection of the fugitive emissions.

(2) If the repair or replacement is technically infeasible, would require a vent blowdown, a compressor station shutdown, a well shutdown or well shut-in, or would be unsafe to repair during operation of the unit, the repair or replacement must be completed during the next compressor station shutdown, well shutdown, well shut-in, after an unscheduled, planned or emergency vent blowdown or within 2 years, whichever is earlier.

(3) Each repaired or replaced fugitive emissions component must be resurveyed as soon as practicable, but no later than 30 days after being repaired, to ensure that there are no fugitive emissions.

(i) For repairs that cannot be made during the monitoring survey when the fugitive emissions are initially found, the operator may resurvey the repaired fugitive emissions components using either Method 21 or optical gas imaging within 30 days of finding such fugitive emissions.

(ii) For each repair that cannot be made during the monitoring survey when the fugitive emissions are initially found, a digital photograph must be taken of that component or the component must be tagged for identification purposes. The digital photograph must include the date that the photograph was taken, must clearly identify the component by location within the site (e.g., the latitude and longitude of the component or by other descriptive landmarks visible in the picture).

(iii) Operators that use Method 21 to resurvey the repaired fugitive emissions components are subject to the resurvey provisions specified in paragraphs (h)(3)(iii)(A) and (B) of this section.

(A) A fugitive emissions component is repaired when the Method 21 instrument indicates a concentration of less than 500 ppm above background or when no soap bubbles are observed when the alternative screening procedures specified in section 8.3.3 of Method 21 are used.

(B) Operators must use the Method 21 monitoring requirements specified in paragraph (c)(8)(ii) of this section or the alternative screening procedures specified in section 8.3.3 of Method 21.

(iv) Operators that use optical gas imaging to resurvey the repaired fugitive emissions components, are subject to the resurvey provisions specified in paragraphs (h)(3)(iv)(A) and (B) of this section.

(A) A fugitive emissions component is repaired when the optical gas imaging instrument shows no indication of visible emissions.

(B) Operators must use the optical gas imaging monitoring requirements specified in paragraph (c)(7) of this section.

(i) Records for each monitoring survey shall be maintained as specified §60.5420a(c)(15).

(j) Annual reports shall be submitted for each collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station that include the information specified in §60.5420a(b)(7). Multiple collection of fugitive emissions components at a well site or at a compressor station may be included in a single annual report.

13.2. Initial Compliance Demonstration

13.2.1. You must determine initial compliance with the standards for each affected facility using the requirements in paragraphs (a) through (j) of this section. The initial compliance period begins on August 2, 2016, or upon initial startup, whichever is later, and ends no later than 1 year after the initial startup date for your affected facility or no later than 1 year after August 2, 2016. The initial compliance period may be less than one full year.
[40CFR§60.5410a]

13.2.2. To achieve initial compliance with the fugitive emission standards for each collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station, you must comply with paragraphs (j)(1) through (5) of this section.

(1) You must develop a fugitive emissions monitoring plan as required in §60.5397a(b)(c), and (d).

(2) You must conduct an initial monitoring survey as required in §60.5397a(f).

(3) You must maintain the records specified in §60.5420a(c)(15).

(4) You must repair each identified source of fugitive emissions for each affected facility as required in §60.5397a(h).

(5) You must submit the initial annual report for each collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station compressor station as required in §60.5420a(b)(1) and (7).
[40CFR§60.5410a(j)]

13.3. Continuous Compliance Demonstration

13.3.1. For each collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station, you must demonstrate continuous compliance with the fugitive emission standards specified in §60.5397a according to paragraphs (h)(1) through (4) of this section.

(1) You must conduct periodic monitoring surveys as required in §60.5397a(g).

(2) You must repair or replace each identified source of fugitive emissions as required in §60.5397a(h).

(3) You must maintain records as specified in §60.5420a(c)(15).

(4) You must submit annual reports for collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station as required in §60.5420a(b)(1) and (7).

[40CFR§60.5415a(h)]

13.4. Notification, Recordkeeping and Reporting Requirements

13.4.1. You must submit the notifications according to paragraphs (a)(1) and (2) of this section if you own or operate one or more of the affected facilities specified in §60.5365a that was constructed, modified or reconstructed during the reporting period.

(1) If you own or operate an affected facility that is the group of all equipment within a process unit at an onshore natural gas processing plant, or a sweetening unit at an onshore natural gas processing plant, you must submit the notifications required in §60.7(a)(1), (3), and (4). If you own or operate a well, centrifugal compressor, reciprocating compressor, pneumatic controller, pneumatic pump, storage vessel, or collection of fugitive emissions components at a well site or collection of fugitive emissions components at a compressor station, you are not required to submit the notifications required in §60.7(a)(1), (3), and (4).

[40CFR§60.5420a(a)]

13.4.2. *Reporting requirements.* You must submit annual reports containing the information specified in paragraphs (b)(1) through (8) and (12) of this section and performance test reports as specified in paragraph (b)(9) or (10) of this section, if applicable. You must submit annual reports following the procedure specified in paragraph (b)(11) of this section. The initial annual report is due no later than 90 days after the end of the initial compliance period as determined according to §60.5410a. Subsequent annual reports are due no later than same date each year as the initial annual report. If you own or operate more than one affected facility, you may submit one report for multiple affected facilities provided the report contains all of the information required as specified in paragraphs (b)(1) through (8) of this section. Annual reports may coincide with title V reports as long as all the required elements of the annual report are included. You may arrange with the Administrator a common schedule on which reports required by this part may be submitted as long as the schedule does not extend the reporting period.

(1) The general information specified in paragraphs (b)(1)(i) through (iv) of this section for all reports.

(i) The company name, facility site name associated with the affected facility, US Well ID or US Well ID associated with the affected facility, if applicable, and address of the affected facility. If an address is not available for the site, include a description of the site location and provide the latitude and longitude coordinates of the site in decimal degrees to an accuracy and precision of five (5) decimals of a degree using the North American Datum of 1983.

(ii) An identification of each affected facility being included in the annual report.

(iii) Beginning and ending dates of the reporting period.

(iv) A certification by a certifying official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(7) For the collection of fugitive emissions components at each well site and the collection of fugitive emissions components at each compressor station within the company-defined area, the records of each monitoring survey including the information specified in paragraphs

(b)(7)(i) through (xii) of this section. For the collection of fugitive emissions components at a compressor station, if a monitoring survey is waived under §60.5397a(g)(5), you must include in your annual report the fact that a monitoring survey was waived and the calendar months that make up the quarterly monitoring period for which the monitoring survey was waived.

(i) Date of the survey.
(ii) Beginning and end time of the survey.
(iii) Name of operator(s) performing survey. If the survey is performed by optical gas imaging, you must note the training and experience of the operator.
(iv) Ambient temperature, sky conditions, and maximum wind speed at the time of the survey.
(v) Monitoring instrument used.
(vi) Any deviations from the monitoring plan or a statement that there were no deviations from the monitoring plan.
(vii) Number and type of components for which fugitive emissions were detected.
(viii) Number and type of fugitive emissions components that were not repaired as required in §60.5397a(h).
(ix) Number and type of difficult-to-monitor and unsafe-to-monitor fugitive emission components monitored.
(x) The date of successful repair of the fugitive emissions component.
(xi) Number and type of fugitive emission components placed on delay of repair and explanation for each delay of repair.
(xii) Type of instrument used to resurvey a repaired fugitive emissions component that could not be repaired during the initial fugitive emissions finding.

[40CFR§60.5420a(b)]

13.4.3. *Recordkeeping requirements.* You must maintain the records identified as specified in §60.7(f) and in paragraphs (c)(1) through (16) of this section. All records required by this subpart must be maintained either onsite or at the nearest local field office for at least 5 years. Any records required to be maintained by this subpart that are submitted electronically via the EPA's CDX may be maintained in electronic format.

(15) For each collection of fugitive emissions components at a well site and each collection of fugitive emissions components at a compressor station, the records identified in paragraphs (c)(15)(i) through (iii) of this section.

(i) The fugitive emissions monitoring plan as required in §60.5397a(b), (c), and (d).

(ii) The records of each monitoring survey as specified in paragraphs (c)(15)(ii)(A) through (I) of this section.

(A) Date of the survey.

(B) Beginning and end time of the survey.

(C) Name of operator(s) performing survey. You must note the training and experience of the operator.

(D) Monitoring instrument used.

(E) When optical gas imaging is used to perform the survey, one or more digital photographs or videos, captured from the optical gas imaging instrument used for conduct of monitoring, of each required monitoring survey being performed. The digital photograph must include the date the photograph was taken and the latitude and longitude of the collection of fugitive emissions components at a well site or collection of fugitive emissions components at a compressor station imbedded within or stored with the digital file. As an alternative to imbedded latitude and longitude within the digital file, the digital photograph or video may consist of an image of the monitoring survey being performed

with a separately operating GPS device within the same digital picture or video, provided the latitude and longitude output of the GPS unit can be clearly read in the digital image.

(F) Fugitive emissions component identification when Method 21 is used to perform the monitoring survey.

(G) Ambient temperature, sky conditions, and maximum wind speed at the time of the survey.

(H) Any deviations from the monitoring plan or a statement that there were no deviations from the monitoring plan.

(I) Documentation of each fugitive emission, including the information specified in paragraphs (c)(15)(ii)(I)(1) through (12) of this section.

(1) Location.

(2) Any deviations from the monitoring plan or a statement that there were no deviations from the monitoring plan.

(3) Number and type of components for which fugitive emissions were detected.

(4) Number and type of difficult-to-monitor and unsafe-to-monitor fugitive emission components monitored.

(5) Instrument reading of each fugitive emissions component that requires repair when Method 21 is used for monitoring.

(6) Number and type of fugitive emissions components that were not repaired as required in §60.5397a(h).

(7) Number and type of components that were tagged as a result of not being repaired during the monitoring survey when the fugitive emissions were initially found as required in §60.5397a(h)(3)(ii).

(8) If a fugitive emissions component is not tagged, a digital photograph or video of each fugitive emissions component that could not be repaired during the monitoring survey when the fugitive emissions were initially found as required in §60.5397a(h)(3)(ii). The digital photograph or video must clearly identify the location of the component that must be repaired. Any digital photograph or video required under this paragraph can also be used to meet the requirements under paragraph (c)(15)(ii)(E) of this section, as long as the photograph or video is taken with the optical gas imaging instrument, includes the date and the latitude and longitude are either imbedded or visible in the picture.

(9) Repair methods applied in each attempt to repair the fugitive emissions components.

(10) Number and type of fugitive emission components placed on delay of repair and explanation for each delay of repair.

(11) The date of successful repair of the fugitive emissions component.

(12) Instrumentation used to resurvey a repaired fugitive emissions component that could not be repaired during the initial fugitive emissions finding.

(iii) For the collection of fugitive emissions components at a compressor station, if a monitoring survey is waived under §60.5397a(g)(5), you must maintain records of the average calendar

month temperature, including the source of the information, for each calendar month of the quarterly monitoring period for which the monitoring survey was waived.
[40CFR§60.5420a(c)]

14.0. Source-Specific Requirements (40CFR63 Subpart ZZZZ Requirements, C-100 to C-1200)

14.1. Limitations and Standards

14.1.1. The permittee must comply with the applicable operating limitations in this section no later than October 19, 2013.
[40CFR§63.6595(a)]

14.1.2. *Stationary RICE subject to Regulation under 40 CFR Part 60.* 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 JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

The permittee meets the criteria of paragraph (c)(1), which is for a new or reconstructed stationary RICE located at an area source. The permittee must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart JJJJ.
[40CFR§63.6590(c)]

15.0. Source-Specific Requirements (Compressor Blowdowns, Compressor Startups, Pigging Operations, and Plant Shutdowns)

15.1. Limitations and Standards

15.1.1 The maximum number of compressor blowdown events per year shall not exceed 936 events, with an estimated 2,184 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the compressor blowdown events at any given time during the previous twelve consecutive calendar months.

15.1.2 The maximum number of compressor startup events per year shall not exceed 936 events, with an estimated 1,050 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the compressor startup events at any given time during the previous twelve consecutive calendar months.

15.1.3. The maximum number of pigging events per year shall not exceed 593 low pressure events, with an estimated 516 scf per event and 520 high pressure events, with an estimated 2,801 scf/event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the low pressure and high pressure pigging events at any given time during the previous twelve consecutive calendar months.

15.1.4 The maximum number of plant shutdown events per year shall not exceed 2 events, with an estimated 100,000 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the plant shut downs at any given time during the previous twelve consecutive calendar months. Unscheduled emergency shutdowns shall not be counted as plant shutdown events.

15.2. Recordkeeping Requirements

15.2.1. All records required under section 15.2 of this permit shall be shall be kept in accordance with permit condition 3.4.1.

15.2.2. To demonstrate compliance with permit condition 15.1.1 of this permit, the permittee shall maintain a record of the compressor blowdown events and estimated volume per event (scf) on a monthly and rolling twelve month total.

15.2.3. To demonstrate compliance with permit condition 15.1.2 of this permit, the permittee shall maintain a record of the compressor startup events and estimated volume per event (scf) on a monthly and rolling twelve month total.

15.2.4. To demonstrate compliance with permit condition 15.1.3 of this permit, the permittee shall maintain a record of the low pressure and high pressure pigging events and estimated volume per event (scf) on a monthly and rolling twelve month total.

15.2.5. To demonstrate compliance with permit condition 15.1.4 of this permit, the permittee shall maintain a record of the pigging events and estimated volume per event (scf) on a monthly and rolling twelve month total.

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. _____

---

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.

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

Company:	Antero Midstream LLC	**Facility:**	Middlebourne III
Region:	**Plant ID:** 095-00074	**Application #:**	13-3347
Engineer:	Carney, Jonathan	**Category:**	
Physical Address:	Wick Road Wick WV 26185	**SIC:** [4923] ELECTRIC, GAS AND SANITARY SERVICES - GAS TRANSMISSION AND DISTRIBUTION **NAICS:** [221210] Natural Gas Distribution	
County:			
Other Parties:	VICE PRES - McNeilly, Ward 303-357-6822 ENV_MGR - Schatz, Barry 303-357-7276 Consultant - Steyskal, Michele 719-632-3593		

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

Regulated Pollutants

Summary from this Permit 13-3347

Air Programs		**Applicable Regulations**
Fee Program	**Fee**	**Application Type**
	$4,500.00	CONSTRUCTION

Notes from Database

Activity Dates

APPLICATION RECIEVED	10/25/2016
APPLICATION FEE PAID	10/27/2016
ASSIGNED DATE	10/27/2016

NON-CONFIDENTIAL

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

Company ID: 095-00074
Company: Antero Midstream LLC
Printed: 10/27/2016
Engineer: Carney, Jonathan

Adkins, Sandra K

From: Adkins, Sandra K
Sent: Thursday, October 27, 2016 1:27 PM
To: 'wmcneilly@anteroresources.com'; 'bschatz@anteroresources.com'; 'kmeszaros@kleinfelder.com'
Cc: McKeone, Beverly D; Carney, Jonathan W
Subject: WV DAQ Permit Application Status for Antero Midstream LLC; Middlebourne III

RE: Application Status
Antero Midstream LLC
Middlebourne III
Facility ID No. 095-00074
Application No. R13-3347

Mr. McNeilly,

Your application for a construction permit for the Middlebourne III Compressor Station was received by this Division on October 25, 2016, and was assigned to Jon Carney. The following item was not included in the initial application submittal:

Original affidavit for Class I legal advertisement not submitted.

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

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

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

Should you have any questions, please contact the assigned engineer, Jon Carney, at 304-926-0499, extension 1203.

Carney, Jonathan W

From: Carney, Jonathan W
Sent: Friday, November 18, 2016 12:20 PM
To: 'wmcneilly@anteroresources.com'; 'bschatz@anteroresources.com'
Cc: McKeone, Beverly D; 'emclaughlin@anteroresources.com'; 'kmeszaros@kleinfelder.com'
Subject: WV DAQ NSR Permit Application Complete for Antero Midstream LLC - Middlebourne III Compressor Station

RE: Application Status: Complete
Antero Midstream LLC
Permit Application R13-3347
Plant ID No. 095-00074

Mr. McNeilly,

Your application for a Construction permit for a Natural Gas Compressor Station was received by this Division on October 25, 2016 and assigned to the writer for review. Upon review of said application, it has been determined that the application is complete and, therefore, the statutory review period commenced on November 18, 2016.

In the case of this application, the agency believes it will take approximately 90 days to make a final permit determination.

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

Should you have any questions, please contact Jonathan Carney at (304) 926-0499 ext. 1203 or reply to this email.

Jonathan Carney, P.E.
Environmental Protection
NSR Air Permitting

(304) 926-0499 ext. 1203
Jonathan.W.Carney@wv.gov
601 57th St SE
Charleston, WV 25304

Carney, Jonathan W

From: Ward, Beth A
Sent: Monday, October 31, 2016 12:17 PM
To: Carney, Jonathan W
Subject: ANTERO MIDSTREAM LLC PERMIT APPLICATION FEE

This is the receipt for payment received from:

ANTERO MIDSTREAM LLC, MIDDLEBOURNE III, CK# 1515, CK DATE 10/19/16, $4,500.00
R13-3347 ID 095-00074

OASIS Deposit CR 1700047678

Thank You!

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

February 5, 2016

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

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

Dear Mr. Carney:

Re: Original Affidavit of Publication
Middlebourne III Compressor Station – Permit No. R13-~~3184A~~ 3347

Antero Midstream would like to submit the Original Affidavit of Publication from *The Tyler Star News*. This is being submitted in accordance with a permit application requirement for an oil and gas compressor station.

Sincerely,

Barry Schatz

Barry Schatz
Senior Environmental & Regulatory Manager

Encl.

TYLER STAR NEWS

AIR QUALITY PERMIT NOTICE
Notice of Application – Middlebourne III Compressor Station

Notice is given that Antero Midstream LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for an initial 45CSR13 construction permit application for a natural gas compressor station located north of Wick Road northeast of Wick, in Tyler County, West Virginia. The latitude and longitude coordinates are: 39.41656N, 80.96358W.

The facility will be built in two phases. The full buildout of the facility will occur 9 to 12 months after Phase I operation begins. The applicant estimates the potential to discharge of the full buildout of the facility will be:

Regulated Pollutant	Potential Emissions (tpy)
Nitrogen Oxides (NOx)	91.89
Carbon Monoxide (CO)	59.79
Volatile Organic Compounds (VOC)	177.47
Sulfur Dioxide (SO2)	0.66
Particulate Matter less than 10 micrometers (PM10)	10.00
Particulate Matter less than 2.5 micrometers (PM2.5)	9.45
Total Hazardous Air Pollutants (HAPs)	20.97
Benzene	0.52
Toluene	0.98
Ethylbenzene	0.079
Xylenes	0.32
Formaldehyde	5.82
n-Hexane	2.90
Acetaldehyde	4.96
Acrolein	3.05
Methanol	1.48
Carbon Dioxide Equivalent (CO2e)	160,730

Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.
Dated the 21st day of October 2016.

By: Antero Midstream LLC
Barry Schatz
Senior Environmental & Regulatory Manager
1615 Wynkoop Street
Denver, CO 80202
TSN 2399 11/2

ersville, WV November 2, 2016

of West Virginia, County of Tyler:

onally appeared before the undersigned, a Notary Public,

Brian Clutter who, being duly sworn,

that he is the manager of the Tyler Star News, a weekly

aper of general circulation, published at Sistersville,

of Tyler, State of West Virginia, and that a copy of the

attached hereto was published for 1 successive

in the Tyler Star News, beginning on the 2 day

November, 2016 and ending on the 2 day

ovember, 2016.

Manager, Tyler Star News

Subscribed and sworn to before me, a Notary Public of said

County, on this 2 day of November, 2016.

Notary Public

My commission expires on the 5th day of January, 2021.

Printers Fee.....

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Diann S. Wright
218 South 2nd Ave
Paden City, WV 26159
My Commission Expires January 05, 2021