

Engineer	Jerry Williams, P.E.
Email Address	jerry.williams@wv.gov
Company Name	Ascent Resources - Marcellus, LLC
Company ID	103-00111
Facility Name	Mason Hill
Permit Number	R13-3287
County	Wetzel
Newspaper	Wetzel Chronicle 455-3300
Company Email and "Attention To:"	Tim Cummings tim.cummings@ascentresources.com
Environmental Contact Email Address	Evan Foster evan.foster@ascentresources.com
Regional Office (if applicable)	NA
New or Modified Source?	new
Construction, Modification, or Relocation?	construction
Type of Facility	Pigging Operations
"Located" or "To Be Located"?	to be located
Place where I can find electronic versions of your notice, engineering evaluation, and draft permit	Q:\AIR_QUALITY\Willi\Permit Applications Under Review\Ascent Resources-Marcellus LLC\R13-3287 Mason Hill

publish wed ~~Feb 10 2016~~ Feb 17, 2016
30 days Fri ~~Mar 11, 2016~~ March 18, 2016

INTERNAL PERMITTING DOCUMENT TRACKING MANIFEST

Company Name Ascent Resources - Mason Hill

Permitting Action Number R13-3287 Total Days 40 DAQ Days 24

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
2/1/2016	Jerry 	Bev	Please review and approve to go to notice.
2/5	BW	Jerry	Go to notice
2/5	JERRY	SANDIE	APPROVED FOR NOTICE

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



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

Company:	Ascent Resources - Marcellus, LLC		Facility:	Mason Hill
Region:	2	Plant ID:	103-00111	Application #: 13-3287
Engineer:	Williams, Jerry		Category:	
Physical Address:	1842 McKimmie Ridge Rd Reader WV 26167		SIC: [1311] OIL AND GAS EXTRACTION - CRUDE PETROLEUM & NATURAL GAS NAICS: [211111] Crude Petroleum and Natural Gas Extraction	
County:	Wetzel			
Other Parties:	VICE PRES - Foster, Evan 405-608-5491 ENV_CONT - Foster, Evan 405-252-7753			

Information Needed for Database and AIRS
 1. Need valid physical West Virginia address with zip

Regulated Pollutants

Summary from this Permit 13-3287		
Air Programs	Applicable Regulations	
NSPS	06 13 16 22	
SIP		
Fee Program	Fee	Application Type
9M	\$1,000.00	CONSTRUCTION

Notes from Database
 Permit MM Note: Installation and operation of a natural gas pigging facility.

Activity Dates

APPLICATION RECEIVED	12/23/2015
APPLICATION FEE PAID	12/29/2015
ASSIGNED DATE	12/29/2015
ADDITIONAL INFO REQUESTED	12/30/2015
APPLICANT PUBLISHED LEGAL AD	12/30/2015
ADDITIONAL INFO RECEIVED	01/05/2016
ADDITIONAL INFO RECEIVED	01/06/2016
APPLICATION DEEMED COMPLETE	01/08/2016

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

Company ID: 103-00111
 Company: Ascent Resources - Marcellus
 Printed: 02/01/2016
 Engineer: Williams, Jerry

Engineer	Jerry Williams, P.E.
Email Address	jerry.williams@wv.gov
Company Name	Ascent Resources - Marcellus, LLC
Company ID	103-00111
Facility Name	Mason Hill
Permit Number	R13-3287
County	Wetzel
Newspaper	<i>Wetzel Chronicle</i>
Company Email and "Attention To:"	Tim Cummings
Environmental Contact Email Address	Evan Foster evan.foster@ascentresources.com
Regional Office (if applicable)	NA
New or Modified Source?	new
Construction, Modification, or Relocation?	construction
Type of Facility	Pigging Operations
"Located" or "To Be Located"?	to be located
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AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On December 23, 2015, Ascent Resources – Marcellus, LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct and operate a natural gas pigging facility located on McKimmie Ridge Road, Reader, Wetzel County, WV at latitude 39.5732 and longitude -80.7108. 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 R13-3287.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 10 microns, 0.27 tons per year (TPY); Sulfur Dioxide, <0.01 TPY; Oxides of Nitrogen, 2.38 TPY; Carbon Monoxide, 10.86 TPY; Volatile Organic Compounds, 5.27 TPY; Total Hazardous Air Pollutants, 0.18 TPY.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on (Day of Week, Month, Day, Year). 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 construction 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.

Jerry Williams, P.E.
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1223
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

ID # 103-00111
Reg R13-3287
Company ASCENT RESOURCES
Facility MASON HILL Initials JW

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west virginia department of environmental protection

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

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

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3287
Plant ID No.: 103-00111
Applicant: Ascent Resources – Marcellus, LLC (Ascent)
Facility Name: Mason Hill
Location: Reader, Wetzel County
NAICS Code: 211111 (Crude Petroleum and Natural Gas Extraction)
Application Type: Construction
Received Date: December 23, 2015
Engineer Assigned: Jerry Williams, P.E.
Fee Amount: \$1,000.00
Date Received: December 23, 2015
Complete Date: January 8, 2016
Due Date: April 7, 2016
Applicant Ad Date: December 30, 2015
Newspaper: *Wetzel Chronicle*
UTM's: Easting: 524.839 km Northing: 4,380.436 km Zone: 17
Description: Installation and operation of a natural gas pigging facility.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3287:

The process begins when wet production gas flows through a 16" pipeline to Mason Hill. It passes through a pig receiver and then into a slug catcher. Most free flowing pipeline liquids fall out in the slug catcher due to velocity reduction. The gas stream then passes through a filter separator where solid particles are removed and any remaining free liquid is removed in a coalescing filter. The fluids collected in the slug catcher and coalescing filter are periodically dumped into atmospheric stock tanks (2 –210 barrel (bbl) and 1 - 100 bbl tank). The fluid drains from the slug catcher at 450 psi to the atmospheric tanks over a period of 12 hours following each pig run.

Promoting a healthy environment

Vapors are released by this pressure reduction and these vapors are consumed by the combustor. The enclosed combustor only operates during pigging events. The typical pigging frequency results in the use of the enclosed combustor approximately one day a week in the summer and three days a week in the winter.

SITE INSPECTION

A site inspection was conducted on January 13, 2016 by Doug Hammell of the DAQ Enforcement Section. According to Mr. Hammell, the site location is appropriate for the proposed facility. The closest residence is approximately 1,400 feet from the proposed facility.

Latitude: 39.5732
Longitude: -80.7108

Directions to the facility are as follows:

From Reader, WV: Go east 0.3 miles on WV-20 S. Go northeast 2.8 miles on McKimmie Ridge Road. Go south 0.5 miles on lease road to facility.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the combustion emissions from one (1) vapor combustor that controls three (3) tanks, condensate loading, maintenance/startup/shutdown (MSS) pigging activities, fugitive emissions and haul road emissions. The following table indicates which methodology was used in the emissions determination:

Emission Unit ID#	Process Equipment	Calculation Methodology
COMB-1	8 MMBTU/hr MRW Vapor Combustor	E&P Tanks, EPA AP-42 Emission Factors
FUG	Site-wide Fugitive Emissions (flanges, valves, relief valves, pump seals)	TCEQ oil and gas production operation emission factors
C LOAD	Condensate Loading (358,722 gal/yr)	EPA AP-42 Emission Factors
MSS	MSS Activities/Pigging Operations	Engineering Estimate
HR	Unpaved Haul Road Emissions	EPA AP-42 Emission Factors

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

Emission Unit	Pollutant	Control Device	Control Efficiency
Product Storage Tanks (Tank 1, 2, 3)	Volatile Organic Compounds	MRW Vapor Combustor (COMB 1)	98 %
	Hazardous Air Pollutants		98 %

The total facility PTE for the Mason Hill is shown in the following table:

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	2.38
Carbon Monoxide	10.86
Volatile Organic Compounds	5.27
Particulate Matter-10/2.5	0.27
Sulfur Dioxide	<0.01
Total HAPs	0.18
Carbon Dioxide Equivalent	12,122

Maximum detailed controlled point source emissions were calculated by Ascent and checked for accuracy by the writer and are summarized in the table on the next page.

Ascent Resources – Marcellus, LLC – Mason Hill (R13-3287)

Emission Point ID#	Source	NO _x		CO		VOC		PM-10/2.5		SO ₂		Total HAPs		CO ₂ e ton/year
		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	
COMB 1	Vapor Combustor (Tanks 1-3)	0.54	2.38	2.48	10.86	0.33	1.42	0.06	0.26	<0.01	<0.01	0.01	0.05	12095
C LOAD	Condensate Loading	0	0	0	0	46.56	0.84	0	0	0	0	4.88	0.09	1
MSS	MSS Activities/Pigging Operation	0	0	0	0	2.84	0.14	0	0	0	0	0.04	<0.01	1
Total Point Source		0.54	2.38	2.48	10.86	49.73	2.40	0.06	0.26	<0.01	<0.01	4.93	0.14	12097
FUG	Site-wide Fugitives	0	0	0	0	0.66	2.87	0	0	0	0	0.01	0.04	25
HR	Haul Road Fugitives	0	0	0	0	0	0	<0.01	0.01	0	0	0	0	0
Total Fugitive		0.00	0.00	0.00	0.00	0.66	2.87	0.00	0.01	0.00	0.00	0.01	0.04	25
Total Site-wide		0.54	2.38	2.48	10.86	50.39	5.27	0.06	0.27	<0.01	<0.01	4.94	0.18	12122

REGULATORY APPLICABILITY

The following rules apply to the facility:

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

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

Ascent has proposed one (1) vapor combustor at the facility. The vapor combustor is subject to section 4, emission standards for incinerators. The vapor combustor has negligible hourly particulate matter emissions. Therefore, the facility's vapor combustor should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the vapor combustor and the hours of operation. The facility will also monitor the flame of the vapor combustor and record any malfunctions that may cause no flame to be present during operation.

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)

45CSR13 applies to this source due to the fact that Ascent exceeds the regulatory emission threshold for criteria pollutants of 6 lb/hr and 10 ton/year, and they are also subject to a substantive requirement of an emission control rule promulgated by the Secretary (45CSR6, 40CFR60 Subpart OOOO).

Ascent paid the appropriate application fee and published the required legal advertisement for a construction permit application.

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

45CSR16 applies to this source by reference of 40CFR60, Subpart OOOO. These requirements are discussed under that rule below.

45CSR22 (Air Quality Management Fee Program)

Ascent is not subject to 45CSR30. The Mason Hill pigging facility is subject to 40CFR60 Subpart OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

Ascent is required to pay the appropriate annual fees and keep their Certificate to Operate current.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart: Each gas well affected facility, which is a single natural gas well.

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

- a. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the Mason Hill pigging facility. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- b. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no reciprocating compressors at the Mason Hill pigging facility. Therefore, all requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would not apply.

- c. Pneumatic Controllers
 - Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction after August 23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

There are no applicable pneumatic controllers which commenced construction after August 23, 2011. Therefore, all requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO would not apply.

- d. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

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

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.
- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the Mason Hill pigging facility will be controlled by a vapor combustor which will reduce the potential to emit to less than 6 tpy of VOC. Therefore, Ascent is not required by this section to further reduce VOC emissions by 95%. Ascent is claiming a control efficiency of 98% for the vapor combustor.

- e. The group of all equipment, except compressors, within a process unit is an affected facility.
- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
 - Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.
 - The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The Mason Hill pigging facility not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- f. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.
- Each sweetening unit that processes natural gas is an affected facility; and
 - Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.
 - Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.
 - Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the Mason Hill pigging facility. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

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 Mason Hill pigging facility is located in Wetzel County, which is an unclassified county for all criteria pollutants, therefore the Mason Hill pigging facility is not applicable to 45CSR19.

As shown in the following table, Ascent 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)	Mason Hill PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	10.86	No
Nitrogen Oxides	250	NA	2.38	No
Sulfur Dioxide	250	NA	<0.01	No
Particulate Matter 2.5	250	NA	0.26	No
Ozone (VOC)	250	NA	2.40	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. All tanks at this facility are smaller than 75 cubic meters. The largest storage tank proposed at this facility is 33.39 cubic meters. Therefore, Ascent 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 following HAPs are common to this industry. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC	No	Inadequate Data
Toluene	VOC	No	Inadequate Data
Xylenes	VOC	No	Inadequate Data

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 shown 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 Mason Hill pigging facility is located in Wetzel County and will be operated by Ascent. Because there are no other facilities that are considered to be on contiguous or adjacent properties, the emissions from the Mason Hill pigging facility should not be aggregated with other facilities in determining major source or PSD status.

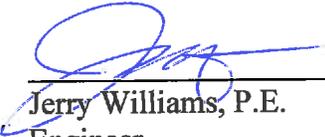
MONITORING OF OPERATIONS

Ascent will be required to perform the following monitoring and recordkeeping:

- Monitor and record quantity of condensate throughput for all storage tanks and loadout.
- Monitor all applicable requirements of 40CFR60 Subpart OOOO.
- Monitor the presence of the vapor combustor pilot flame with a thermocouple or equivalent.
- Monitor LDAR in accordance with permit conditions.
- 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 the vapor combustor design evaluation.
- The records shall be maintained on site or in a readily available off-site location maintained by Ascent for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that Ascent meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Mason Hill facility should be granted a 45CSR13 construction permit for their facility.



Jerry Williams, P.E.
Engineer

FEB 1, 2016

Date

Permit to Construct



R13- 3287

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:

Ascent Resources - Marcellus, LLC
Mason Hill
103-00111

William F. Durham
Director

Issued: Draft • Effective: Draft

NON-CONFIDENTIAL

Facility Location: Reader, Wetzel County, West Virginia
Mailing Address: PO Box 13678, Oklahoma City, OK 73113
Facility Description: Natural gas pigging facility
NAICS Codes: 211111
UTM Coordinates: 524.839 km Easting • 4,380.436 km Northing • Zone 17
Permit Type: Construction
Description of Change: Construction and operation of a natural gas pigging facility.

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

The source is not subject to 45CSR30.

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1.0. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
TANK 1	COMB 1	Condensate Storage Tank	2012	210 bbl	COMB 1
TANK 2	COMB 1	Condensate Storage Tank	2012	210 bbl	COMB 1
TANK 3	COMB 1	Condensate Storage Tank	2012	100 bbl	COMB 1
COMB 1	COMB 1	Vapor Combustor	2015	8 MMBTU/hr	NA
C LOAD	C LOAD	Condensate Loading	2012	358,722 gal/yr	None
MSS	MSS	MSS Activities/Pigging Operations	2012	NA	None

1.1. Control Devices

Emission Unit	Pollutant	Control Device	Control Efficiency
Product Storage Tanks (Tank 1, 2, 3)	Volatile Organic Compounds	MRW Vapor Combustor (COMB 1)	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	PM₁₀	Particulate Matter less than 10μm in diameter
CO	Carbon Monoxide	Ppb	Pounds per Batch
C.S.R. or CSR	Codes of State Rules	Pph	Pounds per Hour
DAQ	Division of Air Quality	Ppm	Parts per Million
DEP	Department of Environmental Protection	Ppmv or ppmv	Parts per Million by Volume
dscm	Dry Standard Cubic Meter	PSD	Prevention of Significant Deterioration
FOIA	Freedom of Information Act	Psi	Pounds per Square Inch
HAP	Hazardous Air Pollutant	SIC	Standard Industrial Classification
HON	Hazardous Organic NESHAP	SIP	State Implementation Plan
HP	Horsepower	SO₂	Sulfur Dioxide
lbs/hr	Pounds per Hour	TAP	Toxic Air Pollutant
LDAR	Leak Detection and Repair	TPY	Tons per Year
M	Thousand	TRS	Total Reduced Sulfur
MACT	Maximum Achievable Control Technology	TSP	Total Suspended Particulate
MDHI	Maximum Design Heat Input	USEPA	United States Environmental Protection Agency
MM	Million	UTM	Universal Transverse Mercator
MMBtu/hr or mmbtu/hr	Million British Thermal Units per Hour	VEE	Visual Emissions Evaluation
MMCF/hr or mmcf/hr	Million Cubic Feet per Hour	VOC	Volatile Organic Compounds
NA	Not Applicable	VOL	Volatile Organic Liquids
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		

2.3. Authority

This permit is issued in accordance with West Virginia air pollution control law W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

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

2.4. Term and Renewal

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

2.5. Duty to Comply

- 2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R13-3287 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and -10.3.]
- 2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;
- 2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;
- 2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

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

2.7. Duty to Supplement and Correct Information

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

2.8. Administrative Update

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

2.9. Permit Modification

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

2.10 Major Permit Modification

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

2.11. Inspection and Entry

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

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

2.12. Emergency

- 2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by

improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- 2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.
- 2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
- a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;
 - b. The permitted facility was at the time being properly operated;
 - c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
 - d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.
- 2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
- 2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

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

2.14. Suspension of Activities

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

2.15. Property Rights

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

2.16. Severability

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

2.17. Transferability

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

2.18. Notification Requirements

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

2.19. Credible Evidence

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

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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 SE
Charleston, WV 25304-2345

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 45CSR22 – Air Quality Management Fee Program, the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a

Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

- 3.5.4.2. In accordance with 45CSR22 – Air Quality Management Fee Program, enclosed with this permit is an Application for a Certificate to Operate (CTO). The CTO will cover the time period beginning with the date of initial startup through the following June 30. Said application and the appropriate fee shall be submitted to this office 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 on the reverse side of the CTO application.
- 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:
- The date, place as defined in this permit, and time of sampling or measurements;
 - The date(s) analyses were performed;
 - The company or entity that performed the analyses;
 - The analytical techniques or methods used;
 - The results of the analyses; and
 - 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:
- The equipment involved.
 - Steps taken to minimize emissions during the event.
 - The duration of the event.
 - The estimated increase in emissions during the event.
- For each such case associated with an equipment malfunction, the additional information shall also be recorded:
- The cause of the malfunction.
 - Steps taken to correct the malfunction.
 - Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 4.1.5. 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 minimize any fugitive escape of regulated air pollutants (leak). Any above-ground piping, valves, pumps, etc. that shows signs of excess wear and that have a reasonable potential for fugitive emissions of regulated air pollutants shall be replaced.
- 4.1.6. The permittee shall monitor and maintain quarterly records (calendar year) for each facility component that was inspected for fugitive escape of regulated air pollutants. Each component shall operate with no detectable emissions, as determined using audio-visual-olfactory (AVO) inspections, USEPA 40CFR60 Method 21, USEPA alternative work practice to detect leaks from

equipment using optical gas imaging (OGI) camera (ex. FLIR camera), or some combination thereof. AVO inspections shall include, but not limited to, defects as visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices. If permittee uses USEPA Method 21, then no detectable emissions is defined as less than 500 ppm in accordance with Method 21. If permittee uses an OGI camera, then no detectable emissions is defined as no visible leaks detected in accordance with USEPA alternative OGI work practices.

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

Delay of repair of a closed vent system for which leaks or defects have been detected is allowed if the repair is technically infeasible without a shutdown, or if you determine that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. You must complete repair of such equipment by the end of the next shutdown.
[45CSR§13-5.11.]

5.0. Source-Specific Requirements (Storage Tanks (TANK 1, TANK 2, TANK 3) being controlled by a Vapor Combustor (COMB-1))

5.1. Limitations and Standards

5.1.1. **Maximum Throughput Limitation.** The maximum condensate throughput to the storage tanks (TANK 1, TANK 2, TANK 3) shall not exceed the following limits. Compliance with the Maximum Throughput Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the monthly throughput at any given time during the previous twelve consecutive calendar months.

Emission Unit ID	Storage Tank Description	Maximum Annual Throughput (gal/yr)
TANK 1	210 bbl Condensate	119,574
TANK 2	210 bbl Condensate	119,574
TANK 3	100 bbl Condensate	119,574

5.1.2. Maximum emissions from the vapor combustor shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Volatile Organic Compounds	0.33	1.42

5.1.3. *Enclosed Vapor Combustor (COMB 1)*

- i. Vapors that are being controlled by the vapor combustor (COMB 1) shall be routed to the enclosed combustion device at all times.
- ii. The enclosed vapor combustor (COMB 1) shall be operated with a flame present at all times, as determined by the methods specified in sections 5.2.1 and 5.2.3 of this permit.
- iii. The enclosed vapor combustor (COMB 1) shall be designed for and operated with no visible emissions as determined by the methods specified in section 5.3.1 of this permit except for either (a) or (b):
 - a. periods not to exceed a total of one minute during any 15 minute period, determined on a monthly basis; or
 - b. periods not to exceed a total of two (2) minutes during any hour, determined on a quarterly basis if the enclosed combustion device installed was a model tested under § 60.5413(d) which meets the criteria in § 60.5413(d)(11).
- iv. The enclosed vapor combustor (COMB 1) shall be operated at all times when emissions are vented to them.
- v. To ensure compliance with 5.1.3(iv) above, the permittee shall monitor in accordance with section 5.2.3 of this permit.
- vi. The permittee shall operate and maintain the enclosed vapor combustor (COMB 1) according to the manufacturer's specifications for operating and maintenance requirements to maintain the guaranteed control efficiency listed in the permit.

- 5.1.4. *Closed Vent System.* The permittee shall comply with the closed vent system requirements in section 5.1.7.
- 5.1.5. *Maximum Design Heat Input.* The maximum design heat input for the enclosed vapor combustor (COMB 1) shall not exceed 8 MMBTU/hr.
- 5.1.6. The enclosed vapor combustor (COMB 1) is subject to the applicable requirements specified in 45CSR6.
- 5.1.7. *Closed Vent Systems.*
1. You must design the closed vent system to route all gases, vapors, and fumes emitted from the material in the storage vessel to the enclosed vapor combustor (COMB 1). The permittee shall perform an initial LDAR evaluation within thirty (30) days of start-up and follow the procedures in section 4.1.6 for ongoing compliance.
 2. You must design and operate a closed vent system with no detectable emissions, as determined using audio-visual-olfactory (AVO) inspections, USEPA 40CFR60 Method 21, USEPA alternative work practice to detect leaks from equipment using optical gas imaging (OGI) camera (e.g. FLIR camera), or some combination thereof. AVO inspections shall include, but not limited to, defects as visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices. If permittee uses USEPA Method 21, then no detectable emissions is defined as less than 500 ppm in accordance with Method 21. If permittee uses an OGI camera, then no detectable emissions is defined as no visible leaks detected in accordance with USEPA alternative OGI work practices.
 3. You must meet the requirements specified in (1) and (2) of this section if the closed vent system contains one or more bypass devices that could be used to divert all or a portion of the gases, vapors, or fumes from entering the control device or to a process.
 - i. Except as provided in paragraph (2) of this section, you must comply with either paragraph (A) or (B) of this section for each bypass device.
 - A. You must properly install, calibrate, maintain, and operate a flow indicator at the inlet to the bypass device that could divert the stream away from the control device or process to the atmosphere that sounds an alarm, or initiates notification via remote alarm to the nearest field office, when the bypass device is open such that the stream is being, or could be, diverted away from the control device or process to the atmosphere.
 - B. You must secure the bypass device valve installed at the inlet to the bypass device in the non-diverting position using a car-seal or a lock-and-key type configuration.
 - ii. Low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and safety devices are not subject to the requirements of paragraph (i) of this section.

[45CSR§13-5.11.]

5.2. Monitoring Requirements

5.2.1. To demonstrate compliance with the pilot flame requirements of section 5.1.3 of this permit, the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the nearest field office, when the pilot light is out.

5.2.2. To demonstrate compliance with the closed vent system requirements of section 5.1.7 of this permit, the permittee shall:

a. *Initial requirements.* Conduct an initial AVO inspection or those methods listed in section 4.1.6 of this permit for defects that could result in air emissions within thirty (30) days of start-up. Defects include, but are not limited to, visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices.

i. The initial inspection shall include the bypass inspection, conducted according to paragraph (c) of this section.

ii. In the event that a leak or defect is detected, you must repair the leak or defect as soon as practicable. Grease or another applicable substance must be applied to deteriorating or cracked gaskets to improve the seal while awaiting repair.

iii. Delay of repair of a closed vent system for which leaks or defects have been detected is allowed if the repair is technically infeasible without a shutdown, or if you determine that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. You must complete repair of such equipment by the end of the next shutdown.

b. *Continuous requirements.* The permittee shall monitor and maintain quarterly records for each component that was inspected for fugitive escape of regulated air pollutants. Each component shall operate with no detectable emissions, as determined using AVO inspections, USEPA 40CFR60 Method 21, USEPA alternative work practice to detect leaks from equipment using optical gas imaging (OGI) camera (ex. FLIR camera), or some combination thereof. AVO inspections shall include, but not limited to, defects as visible cracks, holes, or gaps in piping; loose connections; liquid leaks; or broken or missing caps or other closure devices. If permittee uses USEPA Method 21, then no detectable emissions is defined as less than 500 ppm in accordance with Method 21. If permittee uses an OGI camera, then no detectable emissions is defined as no visible leaks detected in accordance with USEPA alternative OGI work practices.

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

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

c. *Bypass inspection.* Visually inspect the bypass valve during the initial inspection for the presence of the car seal or lock-and-key type configuration to verify that the valve is maintained in the non-diverting position to ensure that the vent stream is not diverted through the bypass device. If an alternative method is used, conduct the inspection of the bypass as described in the operating procedures.

- d. *Unsafe to inspect requirements.* You may designate any parts of the closed vent system as unsafe to inspect if the requirements in paragraphs (i) and (ii) of this section are met. Unsafe to inspect parts are exempt from the inspection requirements of paragraphs (a) and (b) of this section.
 - i. You determine that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with the requirements.
 - ii. You have a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.

[45CSR§13-5.11.]

- 5.2.3. To demonstrate compliance with the pilot flame requirements of sections 5.1.3 of this permit, the permittee shall follow (i).
 - i. For any absence of pilot flame, or other indication of smoking or improper equipment operation, you must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, you must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the combustor.
 - ii. The permittee is exempt from the pilot flame requirements of permit condition 5.1.3 of this section if the permittee installed an enclosed combustion device model that was tested under § 60.5413(d) which meets the criteria in § 60.5413(d)(11).

5.3. Testing Requirements

- 5.3.1. To demonstrate compliance with the visible emissions requirements of section 5.1.3 and 5.1.6 of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for all emission sources subject to an opacity limit.
 - i. The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course. The observation period shall be:
 - a. a minimum of 15 minutes if demonstrating compliance with 5.1.3(iii)(a); or
 - b. a minimum of 1 hour if demonstrating compliance with 5.1.3 (iii)(b)
 - ii. The visible emission check shall be conducted initially within 180 days of start-up to demonstrate compliance while vapors are being sent to the control device.
 - iii. If during this visible emission check or at any other time visible emissions are observed, compliance with section 5.1.6 of this permit shall be determined by conducting opacity tests in accordance with Method 9 or 40 CFR 60, Appendix A.
- 5.3.2. At such reasonable times as the Secretary may designate, the operator of any incinerator shall be required to conduct or have conducted stack tests to determine the particulate matter loading, by using 40 CFR Part 60, Appendix A, Method 5, and volatile organic compound loading, by using Methods 18 and 25A of 40 CFR Part 60, Appendix A, Method 320 of 40 CFR Part 63, Appendix A, or ASTM D 6348-03 or other equivalent U.S.EPA approved method approved by the Secretary,

in exhaust gases. Such tests shall be conducted in such manner as the Secretary may specify and be filed on forms and in a manner acceptable to the Secretary. The Secretary may, at the Secretary's option, witness or conduct such stack tests. Should the Secretary exercise his or her option to conduct such tests, the operator will provide all the necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices. The Secretary may conduct such other tests as the Secretary may deem necessary to evaluate air pollution emissions other than those noted above. [45CSR6 §§7.1 and 7.2]

5.4. Recordkeeping Requirements

- 5.4.1. For the purpose of demonstrating compliance with the continuous pilot flame requirements in section 5.1.3 of this permit, the permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device.
- i. If the permittee is demonstrating compliance to 5.1.3 of this permit with visual inspections, the permittee shall maintain records of the inspections.
 - ii. If the permittee is demonstrating compliance to 5.1.3 of this permit with an enclosed combustion device model that was tested under the conditions of § 60.5413(d), a record shall be maintained of the performance test results.
- 5.4.2 For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by section 5.3.1 of this permit documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent.
- 5.4.3 To demonstrate compliance with section 5.1.3.vi of this permit, the permittee shall maintain records of the manufacturer's specifications for operating and maintenance requirements to maintain the control efficiency.
- 5.4.4. To demonstrate compliance with the closed vent monitoring requirements in section 5.2.2 of this permit, records shall be maintained of:
- i. The initial compliance requirements;
 - ii. Each AVO inspection, Method 21, infrared camera or some combination thereof conducted to demonstrate continuous compliance, including records of any repairs that were made as a result of the inspection;
 - iii. If you are subject to the bypass requirements, the following records shall also be maintained:
 - (a) Each inspection or each time the key is checked out or a record of each time the alarm is sounded;
 - (b) Each occurrence that the control device was bypassed. If the device was bypassed, the records shall include the date, time, and duration of the event and shall provide the

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

- iv. Any part of the system that has been designated as “unsafe to inspect” in accordance with 5.2.2(d).

[45CSR§13-5.11.]

- 5.4.5. The permittee shall maintain records of any testing that is conducted according to section 5.3 of this permit.
- 5.4.6. All records required under Section 5.4 shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.5. Reporting Requirements

- 5.5.1 Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 per section 5.3.1(iii) of this permit must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.
- 5.5.2. Any bypass event of the registered control device must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the date of the bypass, the estimate of VOC emissions released to the atmosphere as a result of the bypass, the cause or suspected cause of the bypass, and any corrective measures taken or planned.
- 5.5.3. Any time the air pollution control device is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

6.0. Source-Specific Requirements (Condensate Loading (C LOAD))

6.1. Limitations and Standards

- 6.1.1. The maximum quantity of condensate that shall be loaded shall not exceed 358,722 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 condensate loaded at any given time during the previous twelve consecutive calendar months.
- 6.1.2. The Condensate Truck Loading shall be operated in accordance with the plans and specifications filed in Permit Application R13-3287.

6.2. Recordkeeping Requirements

- 6.2.1. All records required under section 6.2 of this permit shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.
- 6.2.2. To demonstrate compliance with section 6.1.1 of this permit, the permittee shall maintain a record of the aggregate throughput for the condensate loading (C LOAD) on a monthly and rolling twelve month total. Said records shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

7.0. Source-Specific Requirements (Pigging Operations (MSS))

7.1. Limitations and Standards

- 7.1.1. The maximum number of pigging events per year shall not exceed 96, with an estimated 50 scf per event. Compliance shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the pigging events at any given time during the previous twelve consecutive calendar months.
- 7.1.2. The pigging operations (MSS) shall be operated in accordance with the plans and specifications filed in Permit Application R13-3287.

7.2. Recordkeeping Requirements

- 7.2.1. All records required under section 7.2 of this permit shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.
- 7.2.2. To demonstrate compliance with section 7.1.1 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. Said records shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

CERTIFICATION OF DATA ACCURACY

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

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

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

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:	Ascent Resources - Marcellus, LLC	Facility:	Mason Hill
Region:		Plant ID:	103-00111
Engineer:	Williams, Jerry	Application #:	13-3287
Physical Address:	1842 McKimmie Ridge Rd Reader WV 26167	Category:	SIC: [1311] OIL AND GAS EXTRACTION - CRUDE PETROLEUM & NATURAL GAS NAICS: [211111] Crude Petroleum and Natural Gas Extraction
County:			
Other Parties:	VICE PRES - Foster, Evan 405-608-5491 ENV_CONT - Foster, Evan 405-252-7753		

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 13-3287		
Air Programs	Fee	Applicable Regulations
Fee Program	\$1,000.00	CONSTRUCTION

Notes from Database

Activity Dates
 APPLICATION RECIEVED 12/23/2015
 APPLICATION FEE PAID 12/29/2015
 ASSIGNED DATE 12/29/2015

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: 103-00111
 Company: Ascent Resources - Marcellus,
 Printed: 12/29/2015
 Engineer: Williams, Jerry

Williams, Jerry

From: Evan Foster <evan.foster@ascentresources.com>
Sent: Wednesday, February 03, 2016 1:07 PM
To: Williams, Jerry
Cc: Shannon Buckley
Subject: RE: Mason Hill
Attachments: MasonHill_Updates_020316.pdf

Hi Jerry,

Per our conversation this morning, please find the attached updated Mason Hill calculations.

Please let me know, if you have questions.

Thanks again,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Wednesday, February 03, 2016 6:25 AM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: Mason Hill

Evan,

In response to your voice mail, I have already completed my review of Mason Hill and submitted a draft permit to management for approval to go to notice. If you need to make changes, you need to contact me quickly. These "after the fact" changes could result in a delay due to a possible re-publish of the public notice.

Please let me know.

Thanks,
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov

ID # 103-20111
Reg PC15-3287
Company ASCENT RESOURCES
Facility Mason Hill Initials J



Please consider the environment before printing this email.

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
FUG	Fugitive	FUG	FUG	N/A	N/A	C	8760	VOC	0.67	2.93	0.67	2.93	Gas/Vapor	EE	
TANK 1	Vent / Combustor Vertical Stack	COMB 1	COMB 1	COMB 1	Combustor	C	8760	VOC	2.48	10.88	0.05	0.22	Gas/Vapor	O (EP Tank v2.0)	
TANK 2	Vent / Combustor Vertical Stack	COMB 1	COMB 1	COMB 1	Combustor	C	8760	VOC	2.48	10.88	0.05	0.22	Gas/Vapor	O (EP Tank v2.0)	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

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		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
TANK 3	Vent / Combustor Vertical Stack	COMB 1	COMB 1	COMB 1	Combustor	C	8760	VOC	2.47	10.82	0.05	0.22	Gas/Vapor	O (EP Tank v2.0)	
COMB 1	Vertical Stack	COMB 1	COMB 1	N/A	N/A	C	8760	NOx CO VOC PM10 SO2	0.78 0.66 0.17 0.06 <0.01	3.42 2.89 0.76 0.26 <0.01	0.78 0.66 0.17 0.06 <0.01	3.42 2.89 0.76 0.26 <0.01	Gas/Vapor	EE	
C LOAD	Truck Vent	C LOAD	C LOAD	N/A	N/A	C	8760	VOC	46.56	0.84	46.56	0.84	Gas/Vapor	EE	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, relief vent, rain cap, etc.

² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

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		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
MSS Activities/Pigging Operations	Fugitive	MSS	MSS	N/A	N/A	Summer-1x/wk Winter-3x/wk	8760	VOC	2.84	0.14	2.84	0.14	Gas/Vapor	EE	
ROADS	Fugitive	ROADS	ROADS	N/A	N/A	C	8760	PM ₁₀ PM _{TOTAL}	0.002 0.01	0.01 0.02	0.002 0.01	0.01 0.02	Solid (PM)	EE	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

- Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
- List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.
- Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
- Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)			UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)	Northing	Easting	
FUG	N/A	N/A	N/A	N/A	1149	N/A	4380436	524836	
TANK 1	N/A	N/A	N/A	N/A	1149	15	4380441	524841	
TANK 2	N/A	N/A	N/A	N/A	1149	15	4380446	524846	
TANK 3	N/A	N/A	N/A	N/A	1149	7.5	4380451	524851	
COMB 1	4	Not to exceed 1800	N/A	N/A	1149	25	4380456	524856	
C LOAD	N/A	N/A	N/A	N/A	1149	N/A	4380461	524861	
MSS Activities/ Pigging Operations	N/A	N/A	N/A	N/A	1149	N/A	4380466	524866	
ROADS	N/A	N/A	N/A	N/A	1149	N/A	4380471	524871	

¹ Give at operating conditions. Include inerts.

² Release height of emissions above ground level.

TABLE N-1
EMISSIONS SUMMARY
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA

FIN/EPN Number	Description	NO _x (TPY)	PM ₁₀ (TPY)	PM _{TOT} (TPY)	SO ₂ (TPY)	CO (TPY)	VOC (TPY)	Benzene (TPY)	Toluene (TPY)	Ethyl-Benzene (TPY)	Xylenes (TPY)	n-Hexane (TPY)	Total HAPs (TPY)	GHG (TPY CO _{2e})
FUG	Sitewide Fugitive	--	--	--	--	--	2.87	0.001	0.002	--	0.001	0.04	0.04	24.92
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.22	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.22	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	0.22	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
COMB 1	Combustor (8 MMBtu/hr)	2.38	0.26	0.26	<0.01	10.86	0.76	0.002	0.002	0.0001	0.001	0.02	0.02	12,102.18
C LOAD	Condensate Loading	--	--	--	--	--	0.84	0.004	0.02	0.002	0.02	0.04	0.09	1.08
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	0.14	0.00003	0.0001	--	0.0001	0.002	0.002	0.86
ROADS	Unpaved Road Sources	--	0.01	0.02	--	--	--	--	--	--	--	--	--	--
Total		2.38	0.27	0.28	<0.01	10.86	5.26	0.01	0.03	0.002	0.03	0.12	0.18	12,157.89

FIN/EPN Number	Description	NO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{TOT} (lb/hr)	SO ₂ (lb/hr)	CO (lb/hr)	VOC (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl-Benzene (lb/hr)	Xylenes (lb/hr)	n-Hexane (lb/hr)	Total HAPs (lb/hr)
FUG	Sitewide Fugitive	--	--	--	--	--	0.66	0.0002	0.0004	--	0.0002	0.01	0.01
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.05	0.0002	0.0002	0.00001	0.0001	0.002	0.002
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.05	0.0002	0.0002	0.00001	0.0001	0.002	0.002
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	0.05	0.0001	0.0002	0.00001	0.0001	0.001	0.002
COMB 1	Combustor (8 MMBtu/hr)	0.54	0.06	0.06	<0.01	2.48	0.17	0.0004	0.001	0.00002	0.0002	0.004	0.01
C LOAD	Condensate Loading	--	--	--	--	--	46.59	0.24	1.02	0.10	1.36	2.15	4.87
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	2.83	0.001	0.002	--	0.001	0.04	0.04
ROADS	Unpaved Road Sources	--	0.002	0.004	--	--	--	--	--	--	--	--	--
Total		0.54	0.06	0.06	<0.01	2.48	50.40	0.24	1.02	0.10	1.36	2.21	4.94

TABLE N-4
ESTIMATED EMISSIONS FROM STORAGE TANKS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA

Identification - Pressurized Bullet Tank		
Tank ID	TANK 1-2 - Condensate/Water	TANK 3 - Condensate/Water
State	West Virginia	West Virginia
Description	210 BBL Tanks	100 BBL Tank
Throughput (Total Annual Barrels)	2860	2860
Tank Dimensions		
Shell Height (ft)	15	7.5
Diameter (ft)	10	10
Volume (gal)	8,820	4,200
Turnovers	13.62	28.60
Net Throughput (gal/yr)	120,134	120,134
Other Inputs		
Shell & Roof Color/Shade	White	White
Shell & Roof Condition	Good	Good
Meteorological Data	West Virginia	West Virginia
Tank Contents		
Mixture/Component	Condensate	Condensate
Tank VOC Emissions	<i>Uncontrolled^a</i> <i>Controlled^c</i>	<i>Uncontrolled^a</i> <i>Controlled^c</i>
VOC Losses (TPY)	10.88 0.22	10.82 0.22
VOC Losses (lb/hr)	2.48 0.05	2.47 0.05
Control Device Collection Efficiency (%) ^b	98%	98%
Tank HAP Emissions	<i>Uncontrolled</i> <i>Controlled</i>	<i>Uncontrolled</i> <i>Controlled</i>
Total HAP (%) ^d	3.88%	3.83%
Total HAP Emissions (TPY) ^e	0.42 0.01	0.41 0.01
Total HAP Emissions (lb/hr) ^e	0.10 0.002	0.09 0.002
Benzene Emissions (TPY)	0.03 0.001	0.03 0.001
Benzene Emissions (lb/hr)	0.01 0.0002	0.01 0.0001
Toluene Emissions (TPY)	0.04 0.001	0.04 0.001
Toluene Emissions (lb/hr)	0.01 0.0002	0.01 0.0002
Ethyl-Benzene Emissions (TPY)	0.001 0.00003	0.001 0.00003
Ethyl-Benzene Emissions (lb/hr)	0.0003 0.00001	0.0003 0.00001
Xylenes Emissions (TPY)	0.02 0.0003	0.02 0.0003
Xylenes Emissions (lb/hr)	0.004 0.0001	0.004 0.0001
n-Hexane Emissions (TPY)	0.33 0.01	0.32 0.01
n-Hexane Emissions (lb/hr)	0.08 0.002	0.07 0.001

^a VOC Flashing, Standing & Working Losses were determined using E&P Tanks V2.0 using a representative regional geographical database case, and a maximum throughput.

^b It is estimated that 98% of the tank emissions are captured and sent to the combustor.

^c Controlled VOC Losses = Uncontrolled VOC Losses x (100% - 98%)

^d HAP (%) from E&P Tank v2.0 output.

<u>HAP component</u>	<u>210-bbl tank</u> <u>HAP wt. %</u>	<u>100-bbl tank</u> <u>HAP wt. %</u>
Benzene	0.31%	0.30%
Toluene	0.38%	0.37%
Ethyl-Benzene	0.01%	0.01%
Xylenes	0.15%	0.15%
n-Hexane	3.04%	3.00%
Total	3.88%	3.83%

^e HAP Emissions = VOC Losses x HAP (%)

 * Project Setup Information *

 Project File : C:\Documents and Settings\Owner\My Documents\EP-Tanks\AmericanEnergyPartners\WV\Maso
 Flowsheet Selection : Oil Tank with Separator
 Calculation Method : AP42
 Control Efficiency : 100.0%
 Known Separator Stream : High Pressure Oil
 Entering Air Composition : No

Filed Name : Ascent Resources
 Well Name : Mason Hills- West Virginia
 Well ID : (2) 210-bbl tanks
 Permit Number : Northeast Region Case 5, high pressure
 Date : 2015.12.02

 * Data Input *

 Separator Pressure : 450.00 [psig]
 Separator Temperature : 75.00 [F]
 Ambient Pressure : 14.70 [psia]
 Ambient Temperature : 75.00 [F]
 C10+ SG : 0.8010
 C10+ MW : 196.00

-- High Pressure Oil -----

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0100
4	N2	0.0100
5	C1	4.9300
6	C2	2.5800
7	C3	3.4200
8	i-C4	3.4300
9	n-C4	3.7300
10	i-C5	5.5500
11	n-C5	3.6500
12	C6	8.0700
13	C7	14.6500
14	C8	13.2600
15	C9	7.8000
16	C10+	19.6300
17	Benzene	0.5400
18	Toluene	1.9200
19	E-Benzene	0.1700
20	Xylenes	2.2200
21	n-C6	4.4300
22	224Trimethylp	0.0000

-- Sales Oil -----

Production Rate : 7.8 [bbl/day]
 Days of Annual Operation : 365 [days/year]
 API Gravity : 68.0
 Reid Vapor Pressure : 12.50 [psia]
 Bulk Temperature : 80.00 [F]

-- Tank and Shell Data -----

Diameter : 10.00 [ft]
 Shell Height : 15.00 [ft]
 Cone Roof Slope : 0.06
 Average Liquid Height : 10.50 [ft]
 Vent Pressure Range : 0.06 [psi]

Solar Absorbance : 0.17

```

-- Meteorological Data -----
City           : Charleston, WV
Ambient Pressure : 14.70 [psia]
Ambient Temperature : 75.00 [F]
Min Ambient Temperature : 44.00 [F]
Max Ambient Temperature : 65.50 [F]
Total Solar Insolation : 1123.00 [Btu/ft^2*day]
    
```

 * Calculation Results *

```

-- Emission Summary -----
Item           Uncontrolled   Uncontrolled
              [ton/yr]       [lb/hr]
Total HAPs     0.370           0.084
Total HC       15.664          3.576
VOCs, C2+     13.070           2.984
VOCs, C3+     10.881           2.484
    
```

Uncontrolled Recovery Info.

Vapor	872.8900 x1E-3	[MSCFD]
HC Vapor	871.5500 x1E-3	[MSCFD]
GOR	111.91	[SCF/bbl]

```

-- Emission Composition -----
No Component   Uncontrolled   Uncontrolled
              [ton/yr]       [lb/hr]
1  H2S         0.000           0.000
2  O2          0.000           0.000
3  CO2         0.014           0.003
4  N2          0.009           0.002
5  C1         2.594           0.592
6  C2         2.189           0.500
7  C3         2.902           0.663
8  i-C4       2.209           0.504
9  n-C4       1.839           0.420
10 i-C5       1.503           0.343
11 n-C5       0.745           0.170
12 C6         0.664           0.152
13 C7         0.464           0.106
14 C8         0.150           0.034
15 C9         0.033           0.008
16 C10+       0.001           0.000
17 Benzene    0.030           0.007
18 Toluene    0.035           0.008
19 E-Benzene  0.001           0.000
20 Xylenes    0.013           0.003
21 n-C6       0.292           0.067
22 224Trimethylp 0.000           0.000
    Total     15.687           3.582
    
```

```

-- Stream Data -----
No. Component   MW      LP Oil   Flash Oil   Sale Oil   Flash Gas   W&S Gas   Total Emissions
              mol %    mol %     mol %     mol %     mol %     mol %     mol %
1  H2S         34.80    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
2  O2          32.00    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
3  CO2         44.01    0.0100    0.0012    0.0002    0.0756    0.0165    0.0733
4  N2          28.01    0.0100    0.0001    0.0000    0.0837    0.0001    0.0804
5  C1         16.04    4.9300    0.2253    0.0000    40.0777    0.0001    38.4675
6  C2         30.07    2.5800    0.5800    0.2168    17.5213    12.3984    17.3154
7  C3         44.10    3.4200    1.8345    1.3764    15.2645    24.9869    15.6552
8  i-C4       58.12    3.4300    2.7298    2.4635    8.6609    18.1154    9.0408
9  n-C4       58.12    3.7300    3.2684    3.0602    7.1786    15.9078    7.5293
10 i-C5       72.15    5.5500    5.6658    5.5987    4.6852    11.4320    4.9562
    
```

11	n-C5	72.15	3.6500	3.8284	3.8169	2.3174	5.8087	2.4577
12	C6	86.16	8.0700	8.9141	9.0411	1.7641	4.6943	1.8818
13	C7	100.20	14.6500	16.4689	16.8019	1.0612	2.9782	1.1383
14	C8	114.23	13.2600	14.9950	15.3297	0.2984	0.8812	0.3218
15	C9	128.28	7.8000	8.8361	9.0391	0.0595	0.1842	0.0645
16	C10+	196.00	19.6300	22.2575	22.7767	0.0008	0.0032	0.0009
17	Benzene	78.11	0.5400	0.6010	0.6111	0.0842	0.2271	0.0899
18	Toluene	92.13	1.9200	2.1659	2.2124	0.0830	0.2369	0.0892
19	E-Benzene	106.17	0.1700	0.1924	0.1968	0.0024	0.0071	0.0026
20	Xylenes	106.17	2.2200	2.5136	2.5708	0.0269	0.0810	0.0290
21	n-C6	86.18	4.4300	4.9220	5.0017	0.7546	2.0411	0.8063
22	224Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		106.20	115.54	116.64	36.49	57.26	37.32
	Stream Mole Ratio		1.0000	0.8819	0.8770	0.1181	0.0049	0.1230
	Heating Value	[BTU/SCF]				2098.80	3204.39	2143.22
	Gas Gravity	[Gas/Air]				1.26	1.98	1.29
	Bubble Pt. @ 100F	[psia]	182.14	20.77	10.68			
	RVP @ 100F	[psia]	316.85	84.47	62.40			
	Spec. Gravity @ 100F		0.681	0.692	0.694			

 * Project Setup Information *

Project File : C:\Documents and Settings\Owner\My Documents\EP-Tanks\AmericanEnergyPartners\WV\Maso
 Flowsheet Selection : Oil Tank with Separator
 Calculation Method : AP42
 Control Efficiency : 100.0%
 Known Separator Stream : High Pressure Oil
 Entering Air Composition : No

Filed Name : Ascent Resources
 Well Name : Mason Hills- West Virginia
 Well ID : (1) 100-bbl tanks
 Permit Number : Northeast Region Case 5, high pressure
 Date : 2015.12.02

 * Data Input *

Separator Pressure : 450.00 [psig]
 Separator Temperature : 75.00 [F]
 Ambient Pressure : 14.70 [psia]
 Ambient Temperature : 75.00 [F]
 C10+ SG : 0.8010
 C10+ MW : 196.00

-- High Pressure Oil -----

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0100
4	N2	0.0100
5	C1	4.9300
6	C2	2.5800
7	C3	3.4200
8	i-C4	3.4300
9	n-C4	3.7300
10	i-C5	5.5500
11	n-C5	3.6500
12	C6	8.0700
13	C7	14.6500
14	C8	13.2600
15	C9	7.8000
16	C10+	19.6300
17	Benzene	0.5400
18	Toluene	1.9200
19	E-Benzene	0.1700
20	Xylenes	2.2200
21	n-C6	4.4300
22	224Trimethylp	0.0000

-- Sales Oil -----

Production Rate : 7.8 [bbl/day]
 Days of Annual Operation : 365 [days/year]
 API Gravity : 68.0
 Reid Vapor Pressure : 12.50 [psia]
 Bulk Temperature : 80.00 [F]

-- Tank and Shell Data -----

Diameter : 10.00 [ft]
 Shell Height : 7.50 [ft]
 Cone Roof Slope : 0.06
 Average Liquid Height : 5.00 [ft]
 Vent Pressure Range : 0.06 [psi]

Solar Absorbance : 0.17

```

-- Meteorological Data -----
City           : Charleston, WV
Ambient Pressure : 14.70 [psia]
Ambient Temperature : 75.00 [F]
Min Ambient Temperature : 44.00 [F]
Max Ambient Temperature : 65.50 [F]
Total Solar Insolation : 1123.00 [Btu/ft^2*day]
    
```

 * Calculation Results *

```

-- Emission Summary -----
Item           Uncontrolled   Uncontrolled
                [ton/yr]       [lb/hr]
Total HAPs     0.370         0.084
Total HC       15.602        3.562
VOCs, C2+     13.007         2.970
VOCs, C3+     10.818         2.470
    
```

Uncontrolled Recovery Info.

Vapor	870.9600	x1E-3	[MSCFD]
HC Vapor	869.6100	x1E-3	[MSCFD]
GOR	111.66		[SCF/bbl]

```

-- Emission Composition -----
No Component   Uncontrolled   Uncontrolled
                [ton/yr]       [lb/hr]
1  H2S          0.000         0.000
2  O2           0.000         0.000
3  CO2          0.014         0.003
4  N2           0.009         0.002
5  C1           2.595         0.592
6  C2           2.189         0.500
7  C3           2.892         0.660
8  i-C4         2.196         0.501
9  n-C4         1.828         0.417
10 i-C5         1.492         0.341
11 n-C5         0.740         0.169
12 C6           0.659         0.150
13 C7           0.460         0.105
14 C8           0.149         0.034
15 C9           0.033         0.008
16 C10+        0.001         0.000
17 Benzene     0.029         0.007
18 Toluene     0.034         0.008
19 E-Benzene   0.001         0.000
20 Xylenes     0.013         0.003
21 n-C6        0.290         0.066
22 224Trimethylp 0.000         0.000
    Total      15.624        3.567
    
```

```

-- Stream Data -----
No. Component   MW           LP Oil      Flash Oil   Sale Oil    Flash Gas   W&S Gas    Total Emissions
                [mol %]     [mol %]     [mol %]     [mol %]     [mol %]     [mol %]     [mol %]
1  H2S           34.80        0.0000      0.0000      0.0000      0.0000      0.0000      0.0000
2  O2            32.00        0.0000      0.0000      0.0000      0.0000      0.0000      0.0000
3  CO2           44.01        0.0100      0.0012      0.0002      0.0756      0.0205      0.0735
4  N2            28.01        0.0100      0.0001      0.0000      0.0837      0.0001      0.0806
5  C1            16.04        4.9300      0.2253      0.0000      40.0777     0.0001      38.5637
6  C2            30.07        2.5800      0.5800      0.2387      17.5213     13.2618     17.3603
7  C3            44.10        3.4200      1.8345      1.4122      15.2645     25.0764     15.6352
8  i-C4          58.12        3.4300      2.7298      2.4861      8.6609      17.9153     9.0106
9  n-C4          58.12        3.7300      3.2684      3.0782      7.1786      15.6874     7.5001
10 i-C5          72.15        5.5500      5.6658      5.6052      4.6852      11.2277     4.9323
    
```

11	n-C5	72.15	3.6500	3.8284	3.8184	2.3174	5.7011	2.4452
12	C6	86.16	8.0700	8.9141	9.0312	1.7641	4.6020	1.8713
13	C7	100.20	14.6500	16.4689	16.7749	1.0612	2.9186	1.1314
14	C8	114.23	13.2600	14.9950	15.3023	0.2984	0.8635	0.3197
15	C9	128.28	7.8000	8.8361	9.0225	0.0595	0.1805	0.0641
16	C10+	196.00	19.6300	22.2575	22.7341	0.0008	0.0032	0.0009
17	Benzene	78.11	0.5400	0.6010	0.6103	0.0842	0.2226	0.0894
18	Toluene	92.13	1.9200	2.1659	2.2086	0.0830	0.2322	0.0886
19	E-Benzene	106.17	0.1700	0.1924	0.1964	0.0024	0.0070	0.0025
20	Xylenes	106.17	2.2200	2.5136	2.5661	0.0269	0.0794	0.0288
21	n-C6	86.18	4.4300	4.9220	4.9953	0.7546	2.0007	0.8017
22	2,2,4-Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		106.20	115.54	116.57	36.49	56.89	37.26
	Stream Mole Ratio		1.0000	0.8819	0.8773	0.1181	0.0046	0.1227
	Heating Value	[BTU/SCF]				2098.80	3184.72	2139.83
	Gas Gravity	[Gas/Air]				1.26	1.96	1.29
	Bubble Pt. @ 100F	[psia]	182.14	20.77	10.91			
	RVP @ 100F	[psia]	316.85	84.47	63.44			
	Spec. Gravity @ 100F		0.681	0.692	0.693			

Williams, Jerry

From: Williams, Jerry
Sent: Friday, January 08, 2016 2:16 PM
To: 'tim.cummings@ascentresources.com'; 'Evan Foster'
Cc: McKeone, Beverly D
Subject: WV DAQ NSR Permit Application Complete for Ascent Resources-Marcellus, LLC – Mason Hill

**RE: Application Status: Complete
Ascent Resources-Marcellus, LLC – Mason Hill
Permit Application R13-3287
Plant ID No. 103-00111**

Mr. Cummings,

Your application for a construction permit for a pigging facility was received by this Division on December 23, 2015 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 January 8, 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.

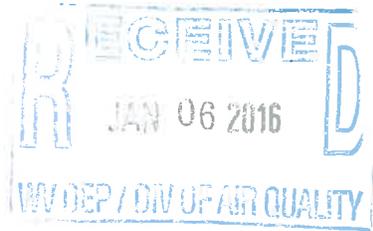
Should you have any questions, please contact Jerry Williams at (304) 926-0499 ext. 1223 or reply to this email.

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov



 Please consider the environment before printing this email.

NON-CONFIDENTIAL



Sent via UPS Next Day Air

January 4, 2016

Mr. Jerry Williams
Division of Air Quality
West Virginia Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

**RE: Ascent Resources – Marcellus, LLC
Mason Hill
Plant ID No. 103-00111**

Dear Mr. Williams:

Ascent Resources-Marcellus, LLC (ARM) would like to submit the Original Affidavit of Publication from the *Wetzel Chronicle* for the above mentioned facility. This is being submitted in accordance with a permit requirement for an oil and gas facility.

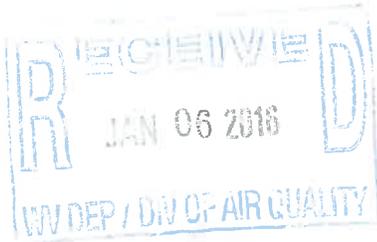
Sincerely,

Evan Foster
EH&S Air Compliance Specialist

Encl.

ID # 103-00111
Reg R13-3287
Company ASCENT RESOURCES
Mason Hill Initials JW

NON-CONFIDENTIAL



WETZEL CHRONICLE

New Martinsville, WV December 30, 2015

City of West Virginia, County of Wetzel:

Personally appeared before the undersigned, a Notary Public,

Brian Clutter who, being duly sworn,

states that he is the manager of the Wetzel Chronicle, a weekly

newspaper of general circulation, published at New Martinsville,

County of Wetzel, State of West Virginia, and that a copy of the

notice attached hereto was published for 1 successive

issues in the Wetzel Chronicle, beginning on the 30 day

December, 2015 and ending on the 30 day

December, 2015.

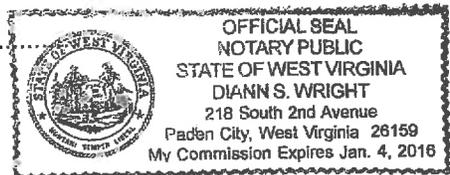
.....
Manager, Wetzel Chronicle

Subscribed and sworn to before me, a Notary Public of said
County, on this 30 day of December, 2015.

..... Notary Public

My commission expires on the 4th day of January, 2016.

Printers Fee.....



Legal Notices

AIR QUALITY PERMIT NOTICE

Notice of Application

Notice is given that Ascent Resources - Marcellus, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Construction Permit for a the Mason Hill facility located on McKimmie Ridge Road, in Reader, in Wetzel County, West Virginia. The latitude and longitude coordinates are: 39.5733° N, 80.7108° W

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

- NOx = 3.42 TPY
- CO = 2.89 TPY
- VOC = 5.33 TPY
- PM10 = 0.26 TPY
- SO2 = <0.01 TPY

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

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.
Dated this the 30th day of December, 2015.

By:
Ascent Resources - Marcellus, LLC
Tim Cummings
VP - Operations PO Box 13678
Oklahoma City, OK 73113
WC-12-30 12787

Williams, Jerry

From: Evan Foster <evan.foster@ascentresources.com>
Sent: Tuesday, January 05, 2016 2:25 PM
To: Williams, Jerry
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill
Attachments: MasonHill_Calcs_REV.pdf

Hi Jerry,

Please see the revised calculations attached.

Thanks,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Tuesday, January 05, 2016 12:40 PM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill

Evan,

The emission factors you used from the flare from 13.5-1 were not from the April 2015 version. The emission factors have been updated from the version (9/91) that you used. Please review and resubmit.

Thanks,
Jerry

From: Evan Foster [mailto:evan.foster@ascentresources.com]
Sent: Tuesday, January 05, 2016 11:53 AM
To: Williams, Jerry <Jerry.Williams@wv.gov>
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill

Jerry,

Please find the corrected attachments as well as an updated source aggregation analysis attached. The Mason Hill facility is not co-located with a well site.

Let me know if you have questions or need additional information.

Thanks,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Wednesday, December 30, 2015 8:40 AM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: Ascent Resources - Marcellus, LLC - Mason Hill

Evan,

Upon initial review of the air permit application (R13-3287), I have the following questions:

103-00111
Reg R13-3287
Company ASCENT RESOURCES
Facility MASON HILL
Initials JW

1. The vapor combustor emission factors used were for natural gas combustion (1.4) instead of flares (13.5). Please recalculate your emissions utilizing the correct emission factors and resubmit all affected pages.
2. Please include HAP and GHG emissions for all applicable sources. This application indicates there are neither. Please resubmit all affected pages.
3. Is this facility co-located with a well site?
4. Please provide a source aggregation analysis.

Please let me know if you have any questions.

Thanks,
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov



 Please consider the environment before printing this email.

TABLE N-1
EMISSIONS SUMMARY
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA

FIN/EPN Number	Description	NO _x (TPY)	PM ₁₀ (TPY)	PM ₁₀ (TPY)	PM ₁₀ (TPY)	PM ₁₀ (TPY)	SO ₂ (TPY)	CO (TPY)	VOC (TPY)	Benzene (TPY)	Toluene (TPY)	Ethyl-Benzene (TPY)	Xylenes (TPY)	n-Hexane (TPY)	Total HAPs (TPY)	GHG (TPY CO _{2e})
FUG	Sitewide Fugitive	--	--	--	--	--	--	--	2.87	0.001	0.002	--	0.001	0.04	0.04	24.92
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	--	--	0.21	0.001	0.001	0.000003	0.0003	0.01	0.01	9.62
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	--	--	0.21	0.001	0.001	0.000003	0.0003	0.01	0.01	9.62
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	--	--	0.21	0.001	0.001	0.000003	0.0003	0.01	0.01	9.62
COMB 1	Combustor (8 MMBtu/hr)	2.38	0.26	0.26	0.26	0.26	<0.01	10.86	0.74	0.002	0.002	0.0001	0.001	0.02	0.02	12,066.10
C LOAD	Condensate Loading	--	--	--	--	--	--	--	0.84	0.004	0.02	0.002	0.02	0.04	0.09	1.08
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	--	--	0.14	0.00003	0.0001	--	0.0001	0.002	0.002	0.86
ROADS	Unpaved Road Sources	--	0.01	0.02	0.02	0.02	--	--	--	--	--	--	--	--	--	--
	Total	2.38	0.27	0.28	0.28	0.28	<0.01	10.86	5.22	0.01	0.02	0.002	0.03	0.12	0.18	12,121.81

FIN/EPN Number	Description	NO _x (lb/hr)	PM ₁₀ (lb/hr)	PM ₁₀ (lb/hr)	PM ₁₀ (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	CO (lb/hr)	VOC (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl-Benzene (lb/hr)	Xylenes (lb/hr)	n-Hexane (lb/hr)	Total HAPs (lb/hr)
FUG	Sitewide Fugitive	--	--	--	--	--	--	--	0.66	0.0002	0.0004	--	0.0002	0.01	0.01
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	--	--	0.05	0.0001	0.0002	0.000001	0.0001	0.001	0.002
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	--	--	0.05	0.0001	0.0002	0.000001	0.0001	0.001	0.002
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	--	--	0.05	0.0001	0.0002	0.000001	0.0001	0.001	0.002
COMB 1	Combustor (8 MMBtu/hr)	0.54	0.06	0.06	0.06	0.06	<0.01	2.48	0.17	0.0004	0.001	0.00002	0.0002	0.004	0.01
C LOAD	Condensate Loading	--	--	--	--	--	--	--	46.59	0.24	1.02	0.10	1.36	2.15	4.88
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	--	--	2.83	0.001	0.002	--	0.001	0.04	0.04
ROADS	Unpaved Road Sources	--	0.002	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--
	Total	0.54	0.06	0.06	0.06	0.06	<0.01	2.48	50.39	0.24	1.02	0.10	1.36	2.21	4.94

**TABLE N-2
GAS ANALYSIS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Component	Mole %	Molecular Weight	lb/100 mole	Wt % Total	Wt % Hydrocarbon	Wt % VOC
H2S	0.000	34.08	0.00	0.00	--	--
O2	0.391	16.00	6.26	0.18	--	--
N2	3.359	28.01	94.09	2.73	--	--
CO2	0.106	44.01	4.67	0.14	--	--
Methane	33.745	16.04	541.27	15.68	15.68	--
Ethane	24.574	30.07	738.94	21.41	21.41	--
Propane	19.911	44.10	878.08	25.44	25.44	26.24%
Isobutane	4.126	58.12	239.80	6.95	6.95	7.17%
n-Butane	7.466	58.12	433.92	12.57	12.57	12.97%
Isopentane	2.210	72.15	159.45	4.62	4.62	4.77%
n-Pentane	1.772	72.15	127.85	3.70	3.70	3.82%
Benzene	0.011	78.11	0.86	0.02	0.02	0.03%
Toluene	0.023	92.14	2.12	0.06	0.06	0.06%
Ethylbenzene	0.000	106.17	0.00	0.00	0.00	0.00%
Xylenes	0.012	106.16	1.25	0.04	0.04	0.04%
n-Hexane	0.509	86.18	43.82	1.27	1.27	1.31%
Hexanes+	1.786	100.00	178.57	5.17	5.17	5.34%
Total	100.00	--	3450.94	100.00	96.96	61.74%

Notes:

1. Gas analysis provided by Legacy Measurement Solutions, sampled 4/15/2014. This gas analysis is from the site.
2. Wt % VOC is the VOC % in the hydrocarbon portion of the gas.

**TABLE N-3
EQUIPMENT FUGITIVE EMISSIONS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Equipment Type	Estimated Equipment At Site ^a	Emission Factor lb/hr/component ^b	% VOC ^c	VOC Emissions	
				(lb/hr)	(TPY)
Flanges					
Gas	55	0.00086	61.74%	0.03	0.13
Light Liquid	6	0.000243	100.00%	0.001	0.006
Valves					
Gas	50	0.00992	61.74%	0.31	1.34
Light Liquid	5	0.0055	100.00%	0.03	0.12
Other Relief Valves					
Gas	13	0.0194	61.74%	0.16	0.68
Light Liquid	3	0.0165	100.00%	0.05	0.22
Pump Seals					
Light Liquid	3	0.02866	100.00%	0.09	0.38
			Total VOC	0.66	2.87

HAP component	HAP wt.% ^c	HAP Emissions (lb/hr)	HAP Emissions (TPY)
Benzene	0.03%	0.0002	0.001
Toluene	0.06%	0.0004	0.002
Ethyl-Benzene	0.00%	--	--
Xylenes	0.04%	0.0002	0.001
n-Hexane	1.31%	0.01	0.04
Total	1.44%	0.01	0.04

^a Number of each component and type of service estimated based on a similar site.

^b Emission factors based on TCEQ's oil and gas production operations factors for process piping fugitive emissions.

^c Percent VOC and HAP for Gas/Vapor service based on representative gas analysis from facility (see Table N-2).

**TABLE N-4
ESTIMATED EMISSIONS FROM STORAGE TANKS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Identification - Pressurized Bullet Tank	TANK 1-2 - Condensate/Water		TANK 3 - Condensate/Water	
Tank ID	West Virginia		West Virginia	
State	210 BBL Tanks		100 BBL Tank	
Description	2860		2860	
Throughput (Total Annual Barrels)	2860		2860	
Tank Dimensions				
Shell Height (ft)	15		7.5	
Diameter (ft)	10		10	
Volume (gal)	8,820		4,200	
Turnovers	13.62		28.60	
Net Throughput (gal/yr)	120,134		120,134	
Other Inputs				
Shell & Roof Color/Shade	White		White	
Shell & Roof Condition	Good		Good	
Meteorological Data	West Virginia		West Virginia	
Tank Contents				
Mixture/Component	Condensate		Condensate	
Tank VOC Emissions				
VOC Losses (TPY)	<i>Uncontrolled^a</i>	<i>Controlled^c</i>	<i>Uncontrolled^a</i>	<i>Controlled^c</i>
VOC Losses (lb/hr)	10.56	0.21	10.50	0.21
Control Device Collection Efficiency (%) ^b	2.41	0.05	2.40	0.05
	98%		98%	
Tank HAP Emissions				
Total HAP (%) ^d	<i>Uncontrolled</i>	<i>Controlled</i>	<i>Uncontrolled</i>	<i>Controlled</i>
Total HAP Emissions (TPY) ^e	0.41	0.01	0.40	0.01
Total HAP Emissions (lb/hr) ^e	0.09	0.002	0.09	0.002
Benzene Emissions (TPY)	0.03	0.001	0.03	0.001
Benzene Emissions (lb/hr)	0.01	0.0001	0.01	0.0001
Toluene Emissions (TPY)	0.04	0.001	0.04	0.001
Toluene Emissions (lb/hr)	0.01	0.0002	0.01	0.0002
Ethyl-Benzene Emissions (TPY)	0.001	0.00003	0.001	0.00003
Ethyl-Benzene Emissions (lb/hr)	0.0003	0.00001	0.0003	0.00001
Xylenes Emissions (TPY)	0.02	0.0003	0.02	0.0003
Xylenes Emissions (lb/hr)	0.004	0.0001	0.004	0.0001
n-Hexane Emissions (TPY)	0.32	0.01	0.32	0.01
n-Hexane Emissions (lb/hr)	0.07	0.001	0.07	0.001

^a VOC Flashing, Standing & Working Losses were determined using E&P Tanks V2.0 using a representative regional geographical database case, and a maximum throughput.

^b It is estimated that 98% of the tank emissions are captured and sent to the combustor.

^c Controlled VOC Losses = Uncontrolled VOC Losses x (100% - 98%)

^d HAP (%) from E&P Tank v2.0 output.

<u>HAP component</u>	<u>210-bbl tank</u> <u>HAP wt. %</u>	<u>100-bbl tank</u> <u>HAP wt. %</u>
Benzene	0.31%	0.30%
Toluene	0.38%	0.37%
Ethyl-Benzene	0.01%	0.01%
Xylenes	0.15%	0.15%
n-Hexane	3.05%	3.00%
Total	3.90%	3.84%

^e HAP Emissions = VOC Losses x HAP (%)

**TABLE N-5
ESTIMATED EMISSIONS FROM COMB 1
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Input Parameters for Emission Calculations

Design Maximum Firing Rate ^a	8.00	MMBtu/hr
Flare Pilot Rate	0.05	MMBtu/hr
Average Heating Value of Gas Burned	1020	Btu/scf
Operating Hours per Year	8,760	Hrs/Yr

Calculated Inputs

Estimated Natural Gas Usage ^b	0.0078	MMscf/hr
VOC from Storage Tanks ^d	7.08	lb/hr
Total HAP from Storage Tanks ^d	0.27	lb/hr

POLLUTANT	EMISSION FACTOR	HOURLY FIRING RATE	HOURLY EMISSIONS	ANNUAL OPERATING HOURS	WEIGHT CONVERSION	ANNUAL EMISSIONS
CO ^c	0.31 $\frac{\text{lb CO}}{\text{MM Btu}}$ x	8.00 $\frac{\text{MM Btu}}{\text{Hr}}$	= 2.48 $\frac{\text{lb CO}}{\text{hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	= 10.86 $\frac{\text{tons CO}}{\text{yr}}$
NOx ^c	0.068 $\frac{\text{lb NOx}}{\text{MM Btu}}$ x	8.00 $\frac{\text{MM Btu}}{\text{Hr}}$	= 0.54 $\frac{\text{lb NOx}}{\text{hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	= 2.38 $\frac{\text{tons NOx}}{\text{yr}}$
PM10 ^c	7.60 $\frac{\text{lb PM10}}{\text{MM cu.ft. Natural Gas Burned}}$ x	0.0078 $\frac{\text{MM Cubic Feet}}{\text{Hr}}$	= 0.06 $\frac{\text{lb PM10}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.26 $\frac{\text{tons PM10}}{\text{yr}}$
VOC ^c	0.57 $\frac{\text{lb VOC}}{\text{MM Btu}}$ x	0.05 $\frac{\text{MM Btu}}{\text{Hr}}$	= 0.03 $\frac{\text{lb VOC}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.12 $\frac{\text{tons VOC}}{\text{yr}}$
VOC ^c	7.08 $\frac{\text{lb VOC}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.14 $\frac{\text{lb VOC}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.62 $\frac{\text{tons VOC}}{\text{yr}}$
		Total	0.17 $\frac{\text{lb VOC}}{\text{Hr}}$		Total	0.74 $\frac{\text{tons VOC}}{\text{yr}}$
Benzene ^d	0.02 $\frac{\text{lb Benzene}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.0004 $\frac{\text{lb Benzene}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.002 $\frac{\text{tons Benzene}}{\text{yr}}$
Toluene ^d	0.03 $\frac{\text{lb Toluene}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.001 $\frac{\text{lb Toluene}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.002 $\frac{\text{tons Toluene}}{\text{yr}}$
Ethyl-Benzene ^d	0.001 $\frac{\text{lb E-Bz}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.00002 $\frac{\text{lb E-Bz}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.0001 $\frac{\text{tons E-Bz}}{\text{yr}}$
Xylenes ^d	0.01 $\frac{\text{lb Xylenes}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.0002 $\frac{\text{lb Xylenes}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.001 $\frac{\text{tons Xylenes}}{\text{yr}}$
n-Hexane ^d	0.21 $\frac{\text{lb n-Hexane}}{\text{hr}}$ x	98% Destruction Efficiency	= 0.004 $\frac{\text{lb n-Hexane}}{\text{Hr}}$	8760 $\frac{\text{Hours}}{\text{yr}}$ x	$\frac{1 \text{ ton}}{2000 \text{ lbs}}$	0.02 $\frac{\text{tons n-Hexane}}{\text{yr}}$
		Total	0.01 $\frac{\text{lb HAP}}{\text{Hr}}$		Total	0.02 $\frac{\text{tons HAP}}{\text{yr}}$

^a From manufacturer's data.

^b Natural gas usage per hour = MMBtu/hr / Btu/scf.

Estimated Heat Input = 8.0 MMBtu/hr / 1020 Btu/scf = 0.0078 MMscf/hr

^c Criteria Pollutant Emission Factors obtained from AP-42 Industrial Flares, Table 13.5-1 (4/15).

CO Emission Factor = 0.31 lb/MMBtu

NOx Emission Factor = 0.068 lb/MMBtu

VOC Emission Factor = 0.57 lb/MMBtu (This factor only used to determine the VOC emissions from the pilot.)

Criteria Pollutant Emission Factors obtained from AP-42 Nat Gas Combustion, Table 1.4-1, (7/98) < 100 MMBtu/hr heat input; & Table 1.4-2, (7/98).

PM10 Emission Factor = 7.6 lb/MM Cubic Feet (This factor is conservatively used since no factor for flares exists.)

^d Captured VOC and HAP emissions from storage tanks. Assumes 98% destruction efficiency of vapors sent to the combustor.

Benzene from Storage Tanks 0.02 lb/hr

Toluene from Storage Tanks 0.03 lb/hr

Ethyl-benzene from Storage Tanks 0.001 lb/hr

Xylenes from Storage Tanks 0.01 lb/hr

n-Hexane from Storage Tanks 0.21 lb/hr

TABLE N-6
 ESTIMATED EMISSIONS FROM CONDENSATE LOADING
 ASCENT RESOURCES - MARCELLUS, LLC
 MASON HILL
 WEST VIRGINIA

Material Name	Saturation Factor ^a (S)	True Vapor Pressure ^b (P)		Molecular Weight of Vapors ^b (M) (lb/lb-mole)	Temp of Loaded Liquid ^b (F)		Emission Factor ^a (lb VOC/10 ³ gal)		Annual Throughput ^c (gals)	Estimated Hourly Throughput ^c (gal)	Total Annual VOC Emissions ^d (TPY)	Total Hourly VOC Emissions ^e (lb/hr)	HAP ^f (%)	Total Annual HAP Emissions ^g (TPY)	Total Hourly HAP Emissions ^g (lb/hr)
		Avg	Max		Avg	Max	Avg	Max							
Condensate	0.6	4.86	6.55	66	55	95	4.66	5.82	360,402	8,000	0.84	46.59	10.47%	0.09	4.88

^a Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1
 Emission Factor (lb VOC/10³ gal) =

$$\frac{S \times P \times M \times 12.46}{F + 460}$$

^b Saturation Factor = 0.6 for submerged loading; dedicated normal service

^c True vapor pressure, weight of vapors and temp of loaded liquid obtained from TANKS 4.0.9d run using Condensate RVP-10.

^d Throughput is the amount of condensate loaded out from tanks.

^e Uncontrolled Annual VOC Emissions = Annual Throughput / 1000 x Emission Factor / 2000 lb/T

^f Uncontrolled Hourly Emissions = Hourly Throughput / 1000 x Emission Factor

^g HAP (%) from E&P Tank v2.0 output.

HAP component	HAP wt%	Emissions (lb/hr)	Emissions (TPY)
Benzene	0.51%	0.24	0.004
Toluene	2.19%	1.02	0.02
Ethyl-Benzene	0.22%	0.10	0.002
Xylenes	2.93%	1.36	0.02
n-Hexane	4.82%	2.15	0.04
Total	10.47%	4.88	0.09

^g HAP Emissions = VOC Emissions x HAP (%)

**TABLE N-7
 POTENTIAL EMISSIONS FROM MSS ACTIVITIES
 ASCENT RESOURCES - MARCELLUS, LLC
 MASON HILL
 WEST VIRGINIA**

MSS - Pigging Operations

Description	Pigging
Number of Events per Year	96
Number of Events per hour	1
Volume per Event, scf	50.00
Stream Specific Gravity	1.2007
Air MW, lb/mole	28.96
Fuel Stream Density, lb/scf	0.092
VOC Percentage in Gas Stream, wt%	61.74%
VOC Hourly Emission Rate (lb/hr):	2.83
VOC Annual Emission Rate (TPY):	0.14
Total HAP wt%	1.44%
Total HAP Hourly Emission Rate (lb/hr):	0.041
Total HAP Annual Emission Rate (TPY):	0.002
Benzene wt%	0.03%
Benzene Hourly Emission Rate (lb/hr):	<0.01
Benzene Annual Emission Rate (TPY):	0.00003
Toluene wt%	0.06%
Toluene Hourly Emission Rate (lb/hr):	<0.01
Toluene Annual Emission Rate (TPY):	0.0001
Ethyl-Benzene wt%	0.00%
Ethyl-Benzene Hourly Emission Rate (lb/hr):	0.00
Ethyl-Benzene Annual Emission Rate (TPY):	0.00
Xylenes wt%	0.04%
Xylenes Hourly Emission Rate (lb/hr):	<0.01
Xylenes Annual Emission Rate (TPY):	0.0001
n-Hexane wt%	1.31%
n-Hexane Hourly Emission Rate (lb/hr):	0.04
n-Hexane Annual Emission Rate (TPY):	0.002

It is estimated that pigging will occur approximately once per week during the summer (May through November) and up to three times per week during the winter (December through April).

**TABLE N-8
UNPAVED ROADS EMISSION CALCULATION WORKSHEET
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Facility Data ¹

Vehicle Type	Light Vehicles (Pick-up Trucks and Cars)	Heavy Trucks (Tanker Trucks ²)
Average vehicle weight ((empty+load)/2) (tons)	2.5	23.5
Number of wheels per vehicle type (w)	4	18
Average number of round trips/day/vehicle type	0.13	0.13
Distance per round trip (miles/trip)	1	1
Vehicle miles travelled (miles/day)	0.13	0.13
Number of days operational (days/yr)	365	365
Vehicle miles travelled VMT (miles/yr)	47.7	47.7
Average vehicle speed S (mph)	10	10

Formula & Calculation Inputs

$$E = k(s/12)^s * (W/3)^b * ((365-P) / 365)$$

where:

- Days per year 365
- k = PM Particle Size Multiplier lb/VMT
- k = PM10 Particle Size Multiplier lb/VMT
- s = Surface Material Silt Content %
- P = Number of days > 0.01 inch of rain days/year
- a = PM Constant unitless
- a = PM10 Constant unitless
- b = PM & PM10 Constant unitless
- Total hourly fleet vehicle miles travelled (miles/hr) VMT/hr
- Total annual fleet vehicle miles travelled (miles/yr)³ VMT/yr
- Average wheels⁴ 5
- Average vehicle weight of the fleet (W)⁵ tons
- Moisture Ratio 2
- Natural Control Efficiency (CE)⁶ %

Reference : AP-42, Section 13.2.2 (11/06), Equation 1a and 2

Comment

- Rate 365
- Units
- Based on Attachment L default value
- Based on Attachment L default value

- AP-42 Section 13.2.2 (11/06), Figure 13.2.2-1 for West Virginia
- AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM)
- AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM₁₀)
- AP-42 Section 13.2.2 (11/06), Table 13.2.2-2

Estimated based on 0.4% controlled and 0.2% uncontrolled surface water content
Based on Moisture ratio and Figure 13.2.2-2 control

Emission Calculations

Emission Factors		Total Vehicle Miles Travelled		Controlled Emission Rates		Uncontrolled Emission Rates	
Total PM (lbs/VMT)	PM ₁₀ (lbs/VMT)	(VMT/hr)	(VMT/yr)	Total PM (lb/hr)	Total PM ₁₀ (lb/hr)	Total PM (TPY)	Total PM ₁₀ (TPY)
0.80	0.35	0.01	95.34	0.004	0.002	0.02	0.01

Notes:

- 1) Facility vehicle data based on estimates, GP5.1 and AP 42 13.2.2-2 defaults for industrial unpaved roads.
- 2) Tank trucker average vehicle weight as $(W_{empty} + W_{full})/2 = (7+40)/2 = 23.5$ tons.
- 3) Average vehicle miles travelled (VMT/yr) as (No. of round trip/vehicle * No. of vehicles/type * Roundtrip miles/trip) * 365 days/yr * No. of vehicle type
- 4) Average wheels calculated as average of (No. of wheels per vehicle type * No. of vehicles/type)
- 5) Average vehicle fleet calculated as (Average Weight of Vehicle type * Percentage of each vehicle type on the unpaved surface). Percentage of each vehicle type = $VMT_{vehicle type} / VMT_{total}$
- 6) Controlled emissions are based on the natural rainfall cycles and no plant control

TABLE N-9
ESTIMATION OF POTENTIAL GHG EMISSIONS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL

Facility-wide Summary		Total GHG Emissions	
GHG Emission Source	(m.L.CO ₂ e)	(m.L.CO ₂ e)	(tons CO ₂ e)
Tanks	28.17		28.65
Loading	0.91		1.09
Fugitive	22.51		21.92
MIS	0.78		0.80
Combustor	10,946.19		12,669.10
Total Facility Emissions:	10,998.74		12,721.56

Conversion Factors		Global Warming Potential	
	tonne/L	CO ₂	1
	m.t./kg	CH ₄	25
	lb./yr	N ₂ O	298

Emission Factor		Emissions	
	(m.L./hr)	CO ₂	CH ₄
6C	4.89E-06	0.007	0.84
ES	3.98E-07	0.005	0.08
8	9.8E-08	0.0002	0.00
3	2.4E-08	0.000016	0.00
6	2.8E-08	0.000030	0.70

Notes:
Carbon Dioxide Equivalent (CO₂e) emissions are calculated in the tables below by multiplying emissions by global warming potentials for each pollutant.
Emissions estimates converted to short tons in the tables below using conversion factor from 40 CFR 98 Subpart A, Table A-1.
Global Warming Potential obtained from 40 CFR 98 Subpart A, Table A-1.
M.t. = values obtained from a fuel gas analysis file.

Fugitive Sources

Source ID Number	Description	Maximum Hours of Operation	Emission Factor (m.L./hr)	CO ₂ (m.L.)	CH ₄ (m.L.)	N ₂ O (m.L.)	CO ₂ (m.L.CO ₂ e)	CH ₄ (m.L.CO ₂ e)	N ₂ O (m.L.CO ₂ e)	Total Emissions (m.L.CO ₂ e)
6C	Valves - Gas	8,760	4.89E-06	0.007	0.84	--	0.007	20.85	--	21.59
ES	Flanges - Gas	8,760	3.98E-07	0.005	0.08	--	0.005	1.59	--	1.73
8	Valves - LI-G	8,760	9.8E-08	0.0002	0.00	--	0.0002	0.08	--	0.08
3	Pump Seals - LI-G	760	2.4E-08	0.000016	0.00	--	0.000016	0.01	--	0.01
6	Flanges - LI-O	8,760	2.8E-08	0.000030	0.70	--	0.000030	0.00	--	0.00

Note - Emissions estimated using API Compendium, Section 6.0, Tables 6-12 and 6-21.

MSS Emissions

Source ID Number	Description	Annual SSML Activities Volume (m ³ /yr)	Volume Emissions (Eq. W-35) CO ₂ (CF)	CH ₄ (m.L.)	CO ₂ (m.L.CO ₂ e)	CH ₄ (m.L.CO ₂ e)	Total Emissions (m.L.CO ₂ e)
MSS	MSS Activities/Pigging Operations	5	5.1	1,819.8	0.0003	0.78	0.0003

Note - Emissions estimated using Macklow method outlined in §60.220-10.

Loading Sources

Source ID Number	Description	BBK Loaded (bbbl/yr)	Emission Factor (m.L./Mgal)	CO ₂ (m.L.)	CH ₄ (m.L.)	N ₂ O (m.L.)	CO ₂ (m.L.CO ₂ e)	CH ₄ (m.L.CO ₂ e)	N ₂ O (m.L.CO ₂ e)	Total Emissions (m.L.CO ₂ e)
C LIC-D	Condensate Loading	1,581	0.91	0.00004	0.04	--	0.00004	0.98	--	0.98

Note - Emissions estimate using API Compendium Sections 6.81 for Loading Loss Emissions.

Tank Sources

Source ID Number	Description	Annual Condensate Production (bbbl/yr)	Annual Condensate Production (1,000 gal/yr)	Default Liquid CH ₄ Content (mol %)	Average Separator Pressure (psig)	Average Separator Temperature (°F)	Disolved Gas Gravity (SG _L)	Actual VOC Gas/Oil Ratio	Total Emissions (m.L.CO ₂ e)
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	2,860	120	97.4	110	80	0.90	23.27	8.72
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	2,860	120	27.4	110	80	0.90	23.27	8.72
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	2,860	120	27.4	110	80	0.90	23.27	8.72

Note 1 - Default CH₄ Content for a gas is per API Compendium Section 6.7 and Appendix B.

Note 2 - Emissions estimated using API Compendium, Section 5.4.

Combustor

Source ID Number	Description	Annual Gas Burner Rating (MMBtu/yr)	Annual Gas Usage (scf/yr)	CO ₂ (mol %)	CH ₄ (mol %)	N ₂ O (m.L./MMscf)	CO ₂ (m.L.)	CH ₄ (m.L.)	N ₂ O (m.L.)	Total Emissions (m.L.CO ₂ e)
COMB 1	Combustor (8 MMBtu/yr)	8.0	68,705.882	0.0011	0.38	5.8E-07	10,890	10.2	0.00004	10,990

Note 1 - Emissions calculated using the gas heating value of 1,030 Btu/ft³.

Note 2 - Emissions estimated using API Compendium, Section 5.4 for Combustion Emissions.

Williams, Jerry

From: Evan Foster <evan.foster@ascentresources.com>
Sent: Tuesday, January 05, 2016 11:53 AM
To: Williams, Jerry
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill
Attachments: MasonHill_Calcs_REV.pdf

Jerry,

Please find the corrected attachments as well as an updated source aggregation analysis attached. The Mason Hill facility is not co-located with a well site.

Let me know if you have questions or need additional information.

Thanks,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Wednesday, December 30, 2015 8:40 AM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: Ascent Resources - Marcellus, LLC - Mason Hill

Evan,

Upon initial review of the air permit application (R13-3287), I have the following questions:

1. The vapor combustor emission factors used were for natural gas combustion (1.4) instead of flares (13.5). Please recalculate your emissions utilizing the correct emission factors and resubmit all affected pages.
2. Please include HAP and GHG emissions for all applicable sources. This application indicates there are neither. Please resubmit all affected pages.
3. Is this facility co-located with a well site?
4. Please provide a source aggregation analysis.

Please let me know if you have any questions.

Thanks,
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
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Charleston, WV 25304
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ID # 103 00111
Reg R13-3287
Company ASCENT RESOURCES
Facility MASON HILL Initials JW

NON-CONFIDENTIAL



TABLE N-1
EMISSIONS SUMMARY
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA

FIN/EPN Number	Description	NO _x (TPY)	PM ₁₀ (TPY)	PM _{10T} (TPY)	SO ₂ (TPY)	CO (TPY)	VOC (TPY)	Benzene (TPY)	Toluene (TPY)	Ethyl-Benzene (TPY)	Xylenes (TPY)	n-Hexane (TPY)	Total HAPs (TPY)	GHG (TPY CO _{2e})
FUG	Sitewide Fugitive	--	--	--	--	--	2.87	0.001	0.002	--	0.001	0.04	0.04	24.92
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.21	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.21	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	0.21	0.001	0.001	0.00003	0.0003	0.01	0.01	9.62
COMB 1	Combustor (8 MMBtu/hr)	0.24	0.26	0.26	<0.01	12.96	0.74	0.002	0.002	0.0001	0.001	0.02	0.02	12,066.10
C LOAD	Condensate Loading	--	--	--	--	--	0.84	0.004	0.02	0.002	0.02	0.04	0.09	1.08
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	0.14	0.00003	0.0001	--	0.0001	0.002	0.002	0.86
ROADS	Unpaved Road Sources	--	0.01	0.02	--	--	--	--	--	--	--	--	--	--
	Total	0.24	0.27	0.28	<0.01	12.96	5.22	0.01	0.02	0.002	0.03	0.12	0.18	12,121.81

FIN/EPN Number	Description	NO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{10T} (lb/hr)	SO ₂ (lb/hr)	CO (lb/hr)	VOC (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl-Benzene (lb/hr)	Xylenes (lb/hr)	n-Hexane (lb/hr)	Total HAPs (lb/hr)
FUG	Sitewide Fugitive	--	--	--	--	--	0.66	0.0002	0.0004	--	0.0002	0.01	0.01
TANK 1	Tank 1 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.05	0.0001	0.0002	0.00001	0.0001	0.001	0.002
TANK 2	Tank 2 - Atmospheric Tank (210-bbl)	--	--	--	--	--	0.05	0.0001	0.0002	0.00001	0.0001	0.001	0.002
TANK 3	Tank 3 - Atmospheric Tank (100-bbl)	--	--	--	--	--	0.05	0.0001	0.0002	0.00001	0.0001	0.001	0.002
COMB 1	Combustor (8 MMBtu/hr)	0.05	0.06	0.06	<0.01	2.96	0.17	0.0004	0.001	0.00002	0.0002	0.004	0.01
C LOAD	Condensate Loading	--	--	--	--	--	46.59	0.24	1.02	0.10	1.36	2.15	4.88
MSS	MSS Activities/Pigging Operations	--	--	--	--	--	2.83	0.001	0.002	--	0.001	0.04	0.04
ROADS	Unpaved Road Sources	--	0.002	0.00	--	--	--	--	--	--	--	--	--
	Total	0.05	0.06	0.06	<0.01	2.96	50.39	0.24	1.02	0.10	1.36	2.21	4.94

**TABLE N-2
GAS ANALYSIS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Component	Mole %	Molecular Weight	lb/100 mole	Wt % Total	Wt % Hydrocarbon	Wt % VOC
H2S	0.000	34.08	0.00	0.00	--	--
O2	0.391	16.00	6.26	0.18	--	--
N2	3.359	28.01	94.09	2.73	--	--
CO2	0.106	44.01	4.67	0.14	--	--
Methane	33.745	16.04	541.27	15.68	15.68	--
Ethane	24.574	30.07	738.94	21.41	21.41	--
Propane	19.911	44.10	878.08	25.44	25.44	26.24%
Isobutane	4.126	58.12	239.80	6.95	6.95	7.17%
n-Butane	7.466	58.12	433.92	12.57	12.57	12.97%
Isopentane	2.210	72.15	159.45	4.62	4.62	4.77%
n-Pentane	1.772	72.15	127.85	3.70	3.70	3.82%
Benzene	0.011	78.11	0.86	0.02	0.02	0.03%
Toluene	0.023	92.14	2.12	0.06	0.06	0.06%
Ethylbenzene	0.000	106.17	0.00	0.00	0.00	0.00%
Xylenes	0.012	106.16	1.25	0.04	0.04	0.04%
n-Hexane	0.509	86.18	43.82	1.27	1.27	1.31%
Hexanes+	1.786	100.00	178.57	5.17	5.17	5.34%
Total	100.00	--	3450.94	100.00	96.96	61.74%

Notes:

1. Gas analysis provided by Legacy Measurement Solutions, sampled 4/15/2014. This gas analysis is from the site.
2. Wt % VOC is the VOC % in the hydrocarbon portion of the gas.

**TABLE N-3
EQUIPMENT FUGITIVE EMISSIONS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Equipment Type	Estimated Equipment At Site ^a	Emission Factor lb/hr/component ^b	% VOC ^c	VOC Emissions	
				(lb/hr)	(TPY)
Flanges					
Gas	55	0.00086	61.74%	0.03	0.13
Light Liquid	6	0.000243	100.00%	0.001	0.006
Valves					
Gas	50	0.00992	61.74%	0.31	1.34
Light Liquid	5	0.0055	100.00%	0.03	0.12
Other Relief Valves					
Gas	13	0.0194	61.74%	0.16	0.68
Light Liquid	3	0.0165	100.00%	0.05	0.22
Pump Seals					
Light Liquid	3	0.02866	100.00%	0.09	0.38
			Total VOC	0.66	2.87

HAP component	HAP wt.% ^c	HAP Emissions (lb/hr)	HAP Emissions (TPY)
Benzene	0.03%	0.0002	0.001
Toluene	0.06%	0.0004	0.002
Ethyl-Benzene	0.00%	--	--
Xylenes	0.04%	0.0002	0.001
n-Hexane	1.31%	0.01	0.04
Total	1.44%	0.01	0.04

^a Number of each component and type of service estimated based on a similar site.

^b Emission factors based on TCEQ's oil and gas production operations factors for process piping fugitive emissions.

^c Percent VOC and HAP for Gas/Vapor service based on representative gas analysis from facility (see Table N-2).

**TABLE N-4
ESTIMATED EMISSIONS FROM STORAGE TANKS
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Identification - Pressurized Bullet Tank	TANK 1-2 - Condensate/Water	TANK 3 - Condensate/Water
Tank ID	West Virginia	West Virginia
State	210 BBL Tanks	100 BBL Tank
Description	2860	2860
Throughput (Total Annual Barrels)		
Tank Dimensions		
Shell Height (ft)	15	7.5
Diameter (ft)	10	10
Volume (gal)	8,820	4,200
Turnovers	13.62	28.60
Net Throughput (gal/yr)	120,134	120,134
Other Inputs		
Shell & Roof Color/Shade	White	White
Shell & Roof Condition	Good	Good
Meteorological Data	West Virginia	West Virginia
Tank Contents		
Mixture/Component	Condensate	Condensate
Tank VOC Emissions	<i>Uncontrolled^a</i> <i>Controlled^c</i>	<i>Uncontrolled^a</i> <i>Controlled^c</i>
VOC Losses (TPY)	10.56	10.50
VOC Losses (lb/hr)	2.41	2.40
Control Device Collection Efficiency (%) ^b	98%	98%
Tank HAP Emissions	<i>Uncontrolled</i> <i>Controlled</i>	<i>Uncontrolled</i> <i>Controlled</i>
Total HAP (%) ^d	3.90%	3.84%
Total HAP Emissions (TPY) ^e	0.41	0.40
Total HAP Emissions (lb/hr) ^e	0.09	0.09
Benzene Emissions (TPY)	0.03	0.03
Benzene Emissions (lb/hr)	0.01	0.01
Toluene Emissions (TPY)	0.04	0.04
Toluene Emissions (lb/hr)	0.01	0.01
Ethyl-Benzene Emissions (TPY)	0.001	0.001
Ethyl-Benzene Emissions (lb/hr)	0.0003	0.0003
Xylenes Emissions (TPY)	0.0003	0.0003
Xylenes Emissions (lb/hr)	0.02	0.02
n-Hexane Emissions (TPY)	0.004	0.004
n-Hexane Emissions (lb/hr)	0.01	0.01
n-Hexane Emissions (TPY)	0.32	0.32
n-Hexane Emissions (lb/hr)	0.07	0.07

^a VOC Flashing, Standing & Working Losses were determined using E&P Tanks V2.0 using a representative regional geographical database case, and a maximum throughput.

^b It is estimated that 98% of the tank emissions are captured and sent to the combustor.

^c Controlled VOC Losses = Uncontrolled VOC Losses x (100% - 98%)

^d HAP (%) from E&P Tank v2.0 output.

<u>HAP component</u>	<u>210-bbl tank</u> <u>HAP wt. %</u>	<u>100-bbl tank</u> <u>HAP wt. %</u>
Benzene	0.31%	0.30%
Toluene	0.38%	0.37%
Ethyl-Benzene	0.01%	0.01%
Xylenes	0.15%	0.15%
n-Hexane	3.05%	3.00%
Total	3.90%	3.84%

^e HAP Emissions = VOC Losses x HAP (%)

**TABLE N-5
ESTIMATED EMISSIONS FROM COMB 1
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Input Parameters for Emission Calculations

Design Maximum Firing Rate ^a	<u>8.00</u> MMBtu/hr
Flare Pilot Rate	<u>0.05</u> MMBtu/hr
Average Heating Value of Gas Burned	<u>1020</u> Btu/scf
Operating Hours per Year	<u>8,760</u> Hrs/Yr

Calculated Inputs

Estimated Natural Gas Usage ^b	<u>0.0078</u> MMscf/hr
VOC from Storage Tanks ^d	<u>7.08</u> lb/hr
Total HAP from Storage Tanks ^d	<u>0.27</u> lb/hr

POLLUTANT	EMISSION FACTOR			HOURLY FIRING RATE		HOURLY EMISSIONS		ANNUAL OPERATING HOURS		WEIGHT CONVERSION		ANNUAL EMISSIONS			
CO ^c	0.37	$\frac{\text{lb CO}}{\text{MM Btu}}$	x	8.00	$\frac{\text{MM Btu}}{\text{Hr}}$	=	2.96	$\frac{\text{lb CO}}{\text{hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 12.96	$\frac{\text{tons CO}}{\text{yr}}$
NOx ^c	0.0068	$\frac{\text{lb NOx}}{\text{MM Btu}}$	x	8.00	$\frac{\text{MM Btu}}{\text{Hr}}$	=	0.05	$\frac{\text{lb NOx}}{\text{hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.24	$\frac{\text{tons NOx}}{\text{yr}}$
PM10 ^c	7.60	$\frac{\text{lb PM10}}{\text{MM cu.ft. Natural Gas Burned}}$	x	0.0078	$\frac{\text{MM Cubic Feet}}{\text{Hr}}$	=	0.06	$\frac{\text{lb PM10}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.26	$\frac{\text{tons PM10}}{\text{yr}}$
VOC ^c	0.57	$\frac{\text{lb VOC}}{\text{MM Btu}}$	x	0.05	$\frac{\text{MM Btu}}{\text{Hr}}$	=	0.03	$\frac{\text{lb VOC}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.12	$\frac{\text{tons VOC}}{\text{yr}}$
VOC ^c	7.08	$\frac{\text{lb VOC}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.14	$\frac{\text{lb VOC}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.62	$\frac{\text{tons VOC}}{\text{yr}}$
					Total	=	0.17	$\frac{\text{lb VOC}}{\text{Hr}}$					Total	0.74	$\frac{\text{tons VOC}}{\text{yr}}$
Benzene ^d	0.02	$\frac{\text{lb Benzene}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.0004	$\frac{\text{lb Benzene}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.002	$\frac{\text{tons Benzene}}{\text{yr}}$
Toluene ^d	0.03	$\frac{\text{lb Toluene}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.001	$\frac{\text{lb Toluene}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.002	$\frac{\text{tons Toluene}}{\text{yr}}$
Ethyl-Benzene ^d	0.001	$\frac{\text{lb E-Bz}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.00002	$\frac{\text{lb E-Bz}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.0001	$\frac{\text{tons E-Bz}}{\text{yr}}$
Xylenes ^d	0.01	$\frac{\text{lb Xylenes}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.0002	$\frac{\text{lb Xylenes}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.001	$\frac{\text{tons Xylenes}}{\text{yr}}$
n-Hexane ^d	0.21	$\frac{\text{lb n-Hexane}}{\text{hr}}$	x	98%	Destruction Efficiency	=	0.004	$\frac{\text{lb n-Hexane}}{\text{Hr}}$	8760	$\frac{\text{Hours}}{\text{yr}}$	x	$\frac{1}{2000}$	$\frac{\text{ton}}{\text{lbs}}$	= 0.02	$\frac{\text{tons n-Hexane}}{\text{yr}}$
					Total	=	0.01	$\frac{\text{lb HAP}}{\text{Hr}}$					Total	0.02	$\frac{\text{tons HAP}}{\text{yr}}$

^a From manufacturer's data.

^b Natural gas usage per hour = MMBtu/hr / Btu/scf.

Estimated Heat Input = 8.0 MMBtu/hr / 1020 Btu/scf = 0.0078 MMscf/hr

^c Criteria Pollutant Emission Factors obtained from AP-42 Industrial Flares, Table 13.5-1.

CO Emission Factor = 0.37 lb/MMBtu

NOx Emission Factor = 0.0068 lb/MMBtu

VOC Emission Factor = 0.57 lb/MMBtu (This factor only used to determine the VOC emissions from the pilot.)

Criteria Pollutant Emission Factors obtained from AP-42 Nat Gas Combustion, Table 1.4-1, (7/98) < 100 MMBtu/hr heat input; & Table 1.4-2, (7/98).

PM10 Emission Factor = 7.6 lb/MM Cubic Feet (This factor is conservatively used since no factor for flares exists.)

^d Captured VOC and HAP emissions from storage tanks. Assumes 98% destruction efficiency of vapors sent to the combustor.

Benzene from Storage Tanks 0.02 lb/hr

Toluene from Storage Tanks 0.03 lb/hr

Ethyl-benzene from Storage Tanks 0.001 lb/hr

Xylenes from Storage Tanks 0.01 lb/hr

n-Hexane from Storage Tanks 0.21 lb/hr

**TABLE N-6
ESTIMATED EMISSIONS FROM CONDENSATE LOADING
ASCENT RESOURCES - MARCELLUS, LLC
MASON HILL
WEST VIRGINIA**

Material Name	Saturation Factor ^a (S)	True Vapor Pressure ^b (P)		Molecular Weight of Vapors ^b (M) (lb/lb-mole)	Temp of Loaded Liquid ^b (F)		Emission Factor ^a (lb VOC/10 ³ gal)		Annual Throughput ^c (gals)	Estimated Hourly Throughput ^d (gal)	Total Annual VOC Emissions ^e (TPY)	Total Hourly VOC Emissions ^e (lb/hr)	HAP ^f (%)	Total Annual HAP Emissions ^g (TPY)	Total Hourly HAP Emissions ^g (lb/hr)
		Avg	Max		Avg	Max	Avg	Max							
Condensate	0.6	4.86	6.55	66	55	95	4.66	5.82	360,402	8,000	0.84	46.59	10.47%	0.09	4.88

^a Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1
Emission Factor (lb VOC/10³gal) =
$$\frac{S \times P \times M \times 12.46}{F + 460}$$

^b True vapor pressure, weight of vapors and temp of loaded liquid obtained from TANKS 4.0.9d run using Condensate RVP-10.

^c Throughput is the amount of condensate loaded out from tanks.

^d Uncontrolled Annual VOC Emissions = Annual Throughput / 1000 x Emission Factor / 2000 lb/T

^e Uncontrolled Hourly Emissions = Hourly Throughput / 1000 x Emission Factor

^f HAP (%) from E&P Tank v2.0 output.

HAP component	HAP wt%	Emissions (lb/hr)	Emissions (TPY)
Benzene	0.51%	0.24	0.004
Toluene	2.19%	1.02	0.02
Ethyl-Benzene	0.22%	0.10	0.002
Xylenes	2.93%	1.36	0.02
n-Hexane	4.62%	2.15	0.04
Total	10.47%	4.88	0.09

^g HAP Emissions = VOC Emissions x HAP (%)

**TABLE N-7
 POTENTIAL EMISSIONS FROM MSS ACTIVITIES
 ASCENT RESOURCES - MARCELLUS, LLC
 MASON HILL
 WEST VIRGINIA**

MSS - Pigging Operations

Description	Pigging
Number of Events per Year	96
Number of Events per hour	1
Volume per Event, scf	50.00
Stream Specific Gravity	1.2007
Air MW, lb/mole	28.96
Fuel Stream Density, lb/scf	0.092
VOC Percentage in Gas Stream, wt%	61.74%
VOC Hourly Emission Rate (lb/hr):	2.83
VOC Annual Emission Rate (TPY):	0.14
Total HAP wt%	1.44%
Total HAP Hourly Emission Rate (lb/hr):	0.041
Total HAP Annual Emission Rate (TPY):	0.002
Benzene wt%	0.03%
Benzene Hourly Emission Rate (lb/hr):	<0.01
Benzene Annual Emission Rate (TPY):	0.00003
Toluene wt%	0.06%
Toluene Hourly Emission Rate (lb/hr):	<0.01
Toluene Annual Emission Rate (TPY):	0.0001
Ethyl-Benzene wt%	0.00%
Ethyl-Benzene Hourly Emission Rate (lb/hr):	0.00
Ethyl-Benzene Annual Emission Rate (TPY):	0.00
Xylenes wt%	0.04%
Xylenes Hourly Emission Rate (lb/hr):	<0.01
Xylenes Annual Emission Rate (TPY):	0.0001
n-Hexane wt%	1.31%
n-Hexane Hourly Emission Rate (lb/hr):	0.04
n-Hexane Annual Emission Rate (TPY):	0.002

It is estimated that pigging will occur approximately once per week during the summer (May through November) and up to three times per week during the winter (December through April).

TABLE M-9
ESTIMATION OF POTENTIAL GHG EMISSIONS
ASCENT RESOURCES - MARCELLUS, LLC
WASON HILL

Facility-wide Summary		Total GHG Emissions	
GHG Emission Source	(m.t. CO ₂ e)	(m.t. CO ₂ e)	(tons CO ₂ e)
Tanks	35.17	28.82	28.82
Leaking	0.98	1.08	1.08
Fugitives	22.81	24.92	24.92
ISS	0.78	0.86	0.86
Combustor	10,549.19	12,068.10	12,068.10
Total Facility Emissions:	10,586.74	12,121.81	12,121.81

Conversion Factors		Global Warming Potential	
Conversion Factor	Unit	CO ₂	CH ₄
1.0231	mmol	1	1
0.001	m.t./g	25	25
8.760	Hzr/g	25	25
379.3	scf/tonne gas	25	25
2304.62	lb/tonne	25	25

Emission Factor		Emissions		Emissions		Emissions		Total Emissions	
Source Type/Service	Maximum Hours of Operation	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (m.t. CO ₂ e)	CH ₄ (m.t. CO ₂ e)	N ₂ O (m.t.)	CO ₂ (tons)	CH ₄ (tons)	N ₂ O (tons)
Valves - Gas	63	4.90E-08	0.007	0.007	20.15	0.007	0.007	0.92	0.007
Flanges - Gas	55	3.90E-07	0.005	0.005	1.59	0.005	0.006	0.07	0.005
Valves - LI-Cr	8	9.90E-08	0.00002	0.00002	0.01	0.00002	0.00002	0.00	0.00
Pump Seals - LI-Cr	8	2.90E-08	0.0000018	0.0000018	0.01	0.0000018	0.000020	0.00	0.01
Flanges - LI-Cr	8	2.90E-08	0.0000003	0.0000003	0.00	0.0000003	0.000000	0.00	0.001

Notes:
Carbon Dioxide Equivalent (CO₂e) emissions are calculated in the tables below by multiplying emissions by global warming potentials for each pollutant.
Emissions estimates converted to short tons in the tables below, using conversion factor from 40 CFR 68 Subpart 3.
Global Warming Potential: observed from 40 CFR 68 Subpart A, Table 1-1.
M.t. = values obtained from a fuel gas analysis.

Fugitive Sources		Emissions		Emissions		Emissions		Total Emissions	
Source ID Number	Description	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (m.t. CO ₂ e)	CH ₄ (m.t. CO ₂ e)	N ₂ O (m.t.)	CO ₂ (tons)	CH ₄ (tons)	N ₂ O (tons)
ISS	MSS 2-ch. Hesse Piggling Operations	5.1	1.816.8	0.00002	0.78	0.00003	0.03	0.78	0.06

Note: Emission estimated using API Compendium, Section 6.0, Tables 6-12 and 6-21.

MSS Emissions		Volumetric Emissions (Eq. W-33)		Mass Emissions (Eq. W-36)		Emissions		Total Emissions	
Source ID Number	Description	Annual SSML Activities Volume (Mscf/y)	CO ₂ (CF)	CH ₄ (CF)	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (tons)	CH ₄ (tons)	N ₂ O (tons)
ISS	MSS 2-ch. Hesse Piggling Operations	5	1,816.8	0.00002	0.03	0.00003	0.03	0.78	0.06

Note: Emissions calculated using down method outlined in 40 CFR 233.6(c).

Loading Sources		Emission Factor		Emissions		Emissions		Total Emissions	
Source ID Number	Description	Annual Condensate Production (bbl/y)	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (m.t. CO ₂ e)	CH ₄ (m.t. CO ₂ e)	N ₂ O (m.t.)	CO ₂ (tons)	N ₂ O (tons)
C LOAD	Condensate Loading	8,581	0.00004	0.04	0.00004	0.98	0.00004	0.04	0.98

Note: Emissions estimated using API Compendium Sections 5.1 for Loading Loss Emissions.

Tank Sources		Emission Factor		Emissions		Emissions		Total Emissions	
Source ID Number	Description	Annual Condensate Production (bbl/y)	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (m.t. CO ₂ e)	CH ₄ (m.t. CO ₂ e)	N ₂ O (m.t.)	CO ₂ (tons)	N ₂ O (tons)
TANK 1	Tank 1 - Atmospheric Tank (21044B)	2,640	27.4	0.90	0.90	0.23	0.23	8.72	9.62
TANK 2	Tank 2 - Atmospheric Tank (21044B)	2,860	27.4	0.90	0.90	0.23	0.23	8.72	9.62
TANK 3	Tank 3 - Atmospheric Tank (10035B)	2,860	27.4	0.90	0.90	0.23	0.23	8.72	9.62

Note 1: Default CH₄ content for crude oil per API Compendium Section 5.4 and Appendix B.
Note 2: Emissions estimated using API Compendium, Section 5.4.

Combustor		Emission Factor		Emissions		Emissions		Total Emissions	
Source ID Number	Description	Annual Gas Usage (MMBtu/hr)	CO ₂ (m.t.)	CH ₄ (m.t.)	CO ₂ (m.t. CO ₂ e)	CH ₄ (m.t. CO ₂ e)	N ₂ O (m.t.)	CO ₂ (tons)	N ₂ O (tons)
COI:3.1	Combustor (8 MMBtu/hr)	8.0	66,705.882	0.0011	10.80	0.00004	0.00004	258	0.012

Note 1: Annual gas usage estimated using API Compendium, Section 4.6 for flow through.
Note 2: Emissions estimated using API Compendium, Section 4.6 for flow through.

Source Aggregation Analysis

All equipment at the Mason Hill facility (Facility) is owned and operated by Ascent Resources – Marcellus, LLC and has been included in this application. There are currently no additional sources within a quarter ($\frac{1}{4}$) mile of the Facility; therefore any additional source aggregation analysis is not required.

Williams, Jerry

From: Evan Foster <evan.foster@ascentresources.com>
Sent: Monday, January 04, 2016 10:30 AM
To: Williams, Jerry
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill

My apologies, please see below.

Tim Cummings
VP-Operations
Email: tim.cummings@ascentresources.com
Office: 405.608.5544

Thanks,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Monday, January 04, 2016 9:25 AM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill

Evan,

The application also did not provide an email address or contact telephone number for Tim Cummings (Responsible Official). Would you please provide this information.

Thanks,
Jerry

From: Evan Foster [mailto:evan.foster@ascentresources.com]
Sent: Monday, January 04, 2016 9:23 AM
To: Williams, Jerry <Jerry.Williams@wv.gov>
Subject: RE: Ascent Resources - Marcellus, LLC - Mason Hill

ID # 103-02111
Reg R13-3287
Company Ascent Resources
Facility Mason Hill Initials JL

Hi Jerry,

I am working on your list below. I apologize for the late reply, I've been out of the office.

Thanks,
Evan

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Wednesday, December 30, 2015 8:40 AM
To: Evan Foster <evan.foster@ascentresources.com>
Subject: Ascent Resources - Marcellus, LLC - Mason Hill

NON-CONFIDENTIAL

Evan,

Upon initial review of the air permit application (R13-3287), I have the following questions:

1. The vapor combustor emission factors used were for natural gas combustion (1.4) instead of flares (13.5). Please recalculate your emissions utilizing the correct emission factors and resubmit all affected pages.

2. Please include HAP and GHG emissions for all applicable sources. This application indicates there are neither. Please resubmit all affected pages.
3. Is this facility co-located with a well site?
4. Please provide a source aggregation analysis.

Please let me know if you have any questions.

Thanks,
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov



 Please consider the environment before printing this email.

Williams, Jerry

From: Ward, Beth A
Sent: Wednesday, December 30, 2015 2:06 PM
To: Williams, Jerry
Subject: ASCENT RESOURCES MARCELLUE LLC PERMIT APPLICATION FEE

This is the receipt for payment received from:

ASCENT RESOURCES – MARCELLUS LLC, MASON HILL, CHECK NUMBER 000008347, CHECK DATE 12/22/2015, \$1000.00
R13-3287 ID# 103-00111

OASIS Deposit CR 1600071021

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**

NON-CONFIDENTIAL

Williams, Jerry

From: Williams, Jerry
Sent: Wednesday, December 30, 2015 9:40 AM
To: 'evan.foster@ascentresources.com'
Subject: Ascent Resources - Marcellus, LLC - Mason Hill

Evan,

Upon initial review of the air permit application (R13-3287), I have the following questions:

1. The vapor combustor emission factors used were for natural gas combustion (1.4) instead of flares (13.5). Please recalculate your emissions utilizing the correct emission factors and resubmit all affected pages.
2. Please include HAP and GHG emissions for all applicable sources. This application indicates there are neither. Please resubmit all affected pages.
3. Is this facility co-located with a well site?
4. Please provide a source aggregation analysis.

Please let me know if you have any questions.

Thanks,
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov



Please consider the environment before printing this email.

NON-CONFIDENTIAL

App # 103-00111
Reg R13-3287
Company ASCENT RESOURCES
Facility ASCENT HILL Initials JW

Adkins, Sandra K

From: Adkins, Sandra K
Sent: Tuesday, December 29, 2015 2:05 PM
To: 'evan.foster@ascentresources.com'
Cc: McKeone, Beverly D; Williams, Jerry
Subject: WV DAQ Permit Application Status for Ascent Resources - Marcellus, LLC; Mason Hill

**RE: Application Status
Ascent Resources – Marcellus, LLC
Mason Hill
Plant ID No. 103-00111
Application No. R13-3287**

Mr. Foster,

Your application for a construction permit for the Mason Hill location was received by this Division on December 23, 2015, and was assigned to Jerry Williams. 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 Jerry 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, Jerry Williams, at 304-926-0499, extension 1223.

NON-CONFIDENTIAL

after-the-fact

103-00111

R13# 3287 Construction

NEWIO#

Jeng

**45CSR13 Administrative Update, Construction, Modification, Relocation,
Temporary Permit or General Permit Registration Incomplete Application**

A complete application is demonstrated when all of the information required below is properly prepared, completed and attached. The items listed below are required information which must be submitted with a 45CSR13 permit application. Any submittal will be considered incomplete if the required information is not included. The applicant must submit a complete application in order to receive a 45CSR13 permit.



Class I legal advertisement ~~not~~ published in a newspaper certified to accept legal advertisements and original affidavit submitted.



Application fee AND/OR additional application fees not included:

- \$250 Class I General Permit
- \$300 Class II Administrative Update
- \$1,000 Construction, Modification, Relocation or Temporary Permit
- \$500 Class II General Permit
- \$1,000 NSPS
- \$2,500 NESHAP
- \$2,500 45CSR27 Pollutant
- \$5,000 Major Modification
- \$10,000 Major Construction



Original and two (2) copies of the application not submitted.



File organization – application pages are not numbered or in correct order, application is not bound in some way, etc.



Confidential Business Information is not properly identified.



General application forms not completed and signed by a responsible official.



Authority of Corporation form not included – required if application is signed by someone other than a responsible official.



Applicant is not registered with the West Virginia Secretary of State's Office.



Copy of current Business Registration Certificate not included.



Process description, including equipment and emission point identification numbers, not submitted.



Process flow diagram, including equipment and emission point identification numbers, not submitted.



Plot plan, including equipment and emission point identification numbers, not submitted.



Applicable technical forms not completed and submitted:

- Emission Point Data Summary Sheets
- Emission Unit Data Sheets
- Air Pollution Control Device Sheets
- Equipment List Form



Emission calculations not included – emission factors, references, source identification numbers, etc.



Electronic submittal diskette not included.