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**west virginia department of environmental protection**

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Division of Air Quality  
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Earl Ray Tomblin, Governor  
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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: G70-A156A  
Plant ID No.: 103-00104  
Applicant: Ascent Resources - Marcellus, LLC  
Facility Name: Mary Miller  
Location: Wetzel County  
NAICS Code: 211111  
Application Type: Class II Update  
Received Date: November 10, 2015  
Engineer Assigned: Caraline Griffith  
Fee Amount: \$300.00  
Date Received: November 18, 2015  
Complete Date: December 14, 2015  
Due Date: January 28, 2016  
Applicant Ad Date: November 25, 2015  
Newspaper: *The Wetzel Chronicle*  
UTM's: Easting: 533.057 km Northing: 4,384.756 km Zone: 17  
Description: Application to install one (1) additional line heater and one (1) gas buster tank.

**DESCRIPTION OF PROCESS**

Incoming raw natural gas from the (4) wells is routed through the 1.5 MMBtu/hr gas production units (GPUs) (S001-S004) where the first stage of fluid separation occurs. The GPUs separate the well stream flow into a high pressure natural gas stream and condensate liquid stream. In the second stage of separation, the liquid streams are routed through four 1.5 MMBtu/hr line heaters (S005-S008) to aid in the downstream separation process. The fluids are then routed to the 1.0 MMBtu/hr low pressure flash separator (S009) where condensate and produced water are separated. The flash from the low pressure separator is captured via two flash gas compressors driven by natural gas-fired engines (S017-S018) and routed to the sales gas pipeline. Produced water from the flash separator is routed to three produced water storage tanks (S014-S016). The condensate is routed to the three condensate storage tanks (S011-S013).

The natural gas stream will exit the facility for transmission via pipeline. Condensate and produced water are transported offsite via tank truck. Flashing, working and breathing emissions from the three produced water and three condensate tanks will be routed to the enclosed combustor (S019). Tank truck loading operations from the produced water and condensate loading (S020-S021) will be vapor balanced to the tanks and controlled by the enclosed combustor.

Based upon current observed daily condensate production at similar facilities, AEM does not expect the quantity of condensate production that would justify the operation of the condensate stabilizer. AEM is filing this application to account for the loading of the condensate tank directly from the flash separator. With this permitting approach, AEM is reasonably conservative in its permitting actions and has the authorization to operate the condensate stabilizer should field conditions deem it necessary.

One 47 bhp High-power prime power natural gas generator (S022) is included in the permit application and provides power to the Mary Miller site.

Additionally, one more line heater (S023) will be added to aid in the fluid separation process. A 100 barrel gas buster tank (S024) is being added to the Mary Miller GRT site to allow for the blowdown of sand and fluids from the sand trap tanks that exist between the wellhead and GPU separators. Blowdown events are conducted on a daily basis, for no more than 10 minutes per day. Blowdown events are uncontrolled at this site.

## SITE INSPECTION

A site inspection was conducted on May 27, 2015 by James Robertson of the enforcement section. *"The site was under active drilling at the time of my visit but it did not appear that any permitted equipment had been installed. The pad is located in a remote location on top of a hill. There is one house near the entrance to the pad but it is well over 300' away from the pad itself. I did not see any other houses that would be within 300' of the pad.*

*In my opinion this site is suitable for a General Permit."*

*From Route 7 East out of New Martinsville towards Morgantown for 17 miles. Turn left onto Barker Run Road and continue for 1.2 miles, before taking a left onto Hoyt Ridge Road. Follow Hoyt Ridge Road for three miles. Well Site Mary Miller will be on the right.*

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The Line Heater emissions were calculated using AP-42 emission factors. Storage tank emissions were calculated using E&P Tanks, TANKS 4.0.9. and AP-42.

Emission Unit	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
S023 1.50 mmBTU/ht Line Heater	Nitrogen Oxides	0.12	0.51
	Carbon Monoxide	0.10	0.43
	Volatile Organic Compounds	0.01	0.03
	Sulfur Dioxide	<0.01	<0.01
	Particulate Matter-10	0.01	0.04
	CO <sub>2</sub> e	175.47	769.33
S024 100 bbl Gas Combustor Tank	Volatile Organic Compounds	17.28	3.15
	Total HAPs	4.26	0.78

The total facility potential to emit (PTE) is shown in the following table:

Pollutant	Facility Wide Emissions G70-A156A TPY	Facility Wide Emissions G70-A156A TPY	Change in Emissions TPY
Nitrogen Oxides	23.02	23.53	+0.51
Carbon Monoxide	20.40	20.83	+0.43
Volatile Organic Compounds	10.00	13.18	+3.18
Particulate Matter-10/2.5	1.00	1.04	+0.04
Sulfur Dioxide	0.08	0.08	+<0.01
Total HAPs	1.34	2.13	+0.79
Carbon Dioxide Equivalent	18,247.47	19,027.24	+779.77

## REGULATORY APPLICABILITY

The proposed Ascent Resources natural gas production facility is subject to substantive requirements in the following state and federal air quality rules and regulations: 45CSR2, 45CSR6 and 45CSR13. Each applicable rule (and ones that have reasoned non-applicability), and Ascent Resource's compliance therewith, will be discussed in detail below.

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

The Line Heater (S023) has been determined to meet the definition of a "fuel burning unit" under 45CSR2 and is, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of the unit is less than 10 mmBtu/hr, it is not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

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

### **45CSR10: *To Prevent and Control Air Pollution from the Emission of Sulfur Oxides***

Pursuant to the exemption given under §45-10-10.1, as the MDHI of the Line HEater (S023) is less than 10 mmBtu/hr, the units are not subject to the substantive sections of 45CSR10.

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

The Mary Miller natural gas production facility does not have a potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY, however it is subject to a substantive requirement (45CSR6), therefore, pursuant to §45-13-2.24, the facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Ascent Resources is required to obtain a permit registration under 45CSR13 for the construction and operation of the natural gas production facility.

As required under §45-13-8.3 ("Notice Level A"), Ascent Resources placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on November 25, 2015 in *The Wetzel Chronicle*.

**45CSR22: Air Quality Management Fee Program**

The Mary Miller facility is not subject to 45CSR30. Ascent Resources paid the \$300 application fee for a Class II Administrative update.

**40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution**

Subpart OOOO applies to facilities that commence construction, reconstruction, or modification after August 23, 2011 (October 15, 2012 for well completions). Since the Mary Miller pad will begin operation after August 23, 2011 it is subject to the requirements of Subpart OOOO. The tanks at the Mary Miller facility will utilize a vapor combustor, therefore the tanks will not have the potential to emit more than 6 tpy of VOC's, therefore the tanks will not be subject to the rule. The site will also include pneumatic controllers that were ordered and installed after August 23, 2011, therefore the controllers will be subject to the applicable provisions of Subpart OOOO. The proposed controllers have a bleed rate of 6.6 scf/day. The gas wells at the Mary Miller pad will also be affected facilities subject to Subpart OOOO.

The addition of the 100 bbl gas buster tank will not emit over 6 tpy of VOCs before control, so it is not subject to this criteria.

**TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS**

This section provides an analysis for those regulated pollutants that may be emitted from the Mary Miller natural gas production facility and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO<sub>x</sub>), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM<sub>10</sub>), Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>), and Sulfur Dioxide (SO<sub>2</sub>). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) standards promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or

suspects may cause cancer or other serious human health effects. Ascent Resources included the following HAPs as emitted in substantive amounts in their emissions estimate: Benzene, n-Hexane, Toluene, and Trimethylpentane. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

#### Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC	No	Inadequate Data
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	No	Inadequate Data
Xylene	VOC	No	Inadequate Data
Trimethylpentane	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](http://www.epa.gov/iris).

#### AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions from the proposed Mary Miller natural gas production facility are less than applicability thresholds that would define the proposed facility as a "major stationary source" under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature of the proposed construction, modeling was not required under 45CSR13, Section 7.

#### MONITORING OF OPERATIONS

The following substantive monitoring, compliance demonstration, and record-keeping requirements (MRR) were taken from the previous permit and shall still be required:

- For the purposes of demonstrating compliance with maximum limit for the aggregate production of condensate/liquids from the wells set forth in Section 4.0 of the general permit registration, Ascent Resources shall be required to monitor and record the monthly and rolling twelve month total of condensate/liquids (in

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gallons) produced in the wells. Monitoring and recording the monthly and rolling twelve month total of condensate/liquids (in gallons) unloaded from the storage tanks can be used to show compliance with this requirement.

- For the purposes of demonstrating compliance with visible emissions limitations set forth in Section 7.0 of the G70-A general permit, Ascent Resources shall be required to:
  - (1) Conduct an initial Method 22 visual emission observation on the GPUs and Flash Separator Heaters to determine the compliance with the visible emission provisions. Ascent Resources shall be required to take a minimum of two (2) hours of visual emissions observations on the GPU and Flash Separator Heaters.
  - (2) Conduct monthly Method 22 visible emission observations of the GPU and Flash Separator Heater stack to ensure proper operation for a minimum of ten (10) minutes each month the line heaters are in operation.
  - (3) In the event visible emissions are observed in excess of the limitations given under Section 7.5 of the G70-A general permit, Ascent Resources shall be required to take immediate corrective action.
  
- Ascent Resources shall be required to maintain records of all visual emission observations pursuant to the monitoring required under Section 7.2 of the G70-A general permit including any corrective action taken.
  
- Ascent Resources shall be required to report any deviation(s) from the allowable visible emission requirement for any emission source discovered during observations using 40CFR Part 60, Appendix A, Method 9 or 22 to the Director of the Division of Air Quality as soon as practicable, but in any case within ten (10) calendar days of the occurrence and shall include at least the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

RECOMMENDATION TO DIRECTOR

Information supplied in the registration application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that general permit registration G70-A156A for the construction of a natural gas production facility near Wileyville, Wetzel County, be granted to Ascent Resources - Marcellus, LLC



Caraline Griffith  
Permit Engineer



DATE

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