



**west virginia** department of environmental protection

Division of Air Quality  
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**GENERAL PERMIT REGISTRATION APPLICATION  
ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

|                    |   |
|--------------------|---|
| Registration No.:  | G30-D148A   |
| Plant ID No.:      | 081-00227   |
| Applicant:         | ARP Mountaineer Production, LLC   |
| Facility Name:     | SD-11 Compressor Site   |
| Location:          | Harper, Raleigh County, WV  |
| SIC Code:          | 4922  |
| Application Type:  | Modification  |
| Received Date:     | July 21, 2015   |
| Engineer Assigned: | Caraline Griffith   |
| Fee Amount:        | \$500.00  |
| Date Received:     | July 22, 2015   |
| Complete Date:     | July 24, 2015   |
| Due Date:          | October 22, 2015  |
| Applicant Ad Date: | July 16, 2015   |
| Newspaper:         | <i>The Register Herald</i>  |
| UTM's:             | Easting: 472.03 km      Northing: 4186.66 km      Zone: 17  |
| Description:       | Replacing one 400 bhp Waukesha Model F-18L compressor engine with a 145 bhp Caterpillar Model G3306NALCR compressor engine. |

**TYPE OF PROCESS**

ARP Mountaineer Production, LLC is looking to replace one 400 bhp Waukesha Model F-18L compressor engine with a 145 bhp Caterpillar Model G3306NALCR compressor engine.

The following process description was taken from Registration Application G30-D148A:

Natural Gas (methane, ethane, propane, etc.) come from CDM wells and are piped to a booster compressor which removes some of the water entrained in the gas stream by disturbance of the gas flow inside the separator on the skid, the water and trace amounts of Oil/Condensate is dumped out of the separators using high pressure gas to a One (1) 100 barrel (4200 gallons/tank) steel holding tank.

Site equipment will entail one (1) new engine/compressor (a 145 bhp Caterpillar Model G3306NALCR), (1) existing 100 barrel tank and one (1) existing 300 gallon tank for new oil supply for Caterpillar engine/compressor. The one (1) 100 barrel storage tank is used to store water and a small amount of condensate that has been entrained in the water that is dumped from the on skid separator which sees gas from the wells.

**SITE INSPECTION**

A site inspection was conducted by on May 21, 2013 by John Moneypenny of the DAQ Enforcement Section. The facility received a site rating of 30.

Directions as given in the permit application are as follows:

*From Beckley, proceed west on SR-3 for 12.8 miles. Turn right continuing on SR-3 (Coal River Road) for approximately 2.7 miles. Turn right on CR3/13 (Jack Bair Farm – Matt VI) and continue for approximately 1.7 miles. Bear right onto SR-2 (Lower Sandlick Road) and proceed for approximately 1.6 miles. Access road to the facility will be on the right.*

**ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER**

Maximum controlled point source emissions from ARP’s natural gas compressor station are summarized in the table below. The calculations for these PTE estimates were done using AP-42 and the manufacture’s specifications for the Caterpillar and Waukesha engines, respectively. The Caterpillar engine will replace the Waukesha engine.

**Table 1: PTE Estimates from OLD Compressor Engine CE-1**

| Source ID | Emission Source                  | Pollutant                  | Maximum Hourly Emissions (lb/hr) | Maximum Annual Emissions (tpy) |
|-----------|----------------------------------|----------------------------|----------------------------------|--------------------------------|
| CE-1      | Waukesha F18GL Compressor Engine | Nitrogen Oxides            | 1.76                             | 7.71                           |
|           |                                  | Carbon Monoxide            | 1.54                             | 6.75                           |
|           |                                  | Volatile Organic Compounds | 0.66                             | 2.89                           |
|           |                                  | Sulfur Dioxide             | 0.01                             | 0.01                           |
|           |                                  | Particulate Matter-10      | 0.01                             | 0.01                           |
|           |                                  | Formaldehyde               | 0.15                             | 0.66                           |

**Table 2: PTE Estimates from NEW Compressor Engine CE-1**

| Source ID | Emission Source                         | Pollutant                  | Maximum Hourly Emissions (lb/hr) | Maximum Annual Emissions (tpy) |
|-----------|---|----------------------------|----------------------------------|--------------------------------|
| CE-1      | Caterpillar 3306NALCR Compressor Engine | Nitrogen Oxides            | 7.71                             | 33.72                          |
|           |   | Carbon Monoxide            | 0.45                             | 1.96                           |
|           |   | Volatile Organic Compounds | 0.051                            | 0.223                          |
|           |   | Sulfur Dioxide             | 0.0006                           | 0.0027                         |
|           |   | Particulate Matter-10      | 0.01                             | 0.044                          |
|           |   | Formaldehyde               | 0.022                            | 0.096                          |

**Table 3: Net PTE Amounts**

| Pollutant                  | Maximum Annual Emissions Waukesha F18GL (tpy) | Maximum Annual Emissions Caterpillar 3306NALCR (tpy) | Net Emissions (tpy) |
|----------------------------|---|--|---------------------|
| Nitrogen Oxides            | 7.71  | 33.72  | +26.01              |
| Carbon Monoxide            | 6.75  | 1.96   | -4.79               |
| Volatile Organic Compounds | 2.89  | 0.223  | -2.667              |
| Sulfur Dioxide             | 0.01  | 0.0027   | -0.0073             |
| Particulate Matter-10      | 0.01  | 0.044  | +0.034              |
| Formaldehyde               | 0.66  | 0.096  | -0.564              |

### REGULATORY APPLICABILITY

The following rules apply to General Permit G30-D:

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

There are no direct heat exchangers at the SD-11 facility.

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

45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable. All facilities are inspected by the DAQ Enforcement Section.

There will likely be no objectionable odor at the SD-11 facility, however ARP will ensure to follow all criteria in this regulation is any odor is reported.

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

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. All fuel burning units will be subject to the weight emission standard for sulfur dioxide set forth in 45CSR10.

The SD-11 facility meets all weight emissions requirements for Sulphur Oxides and does not exceed any limits.

**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

As provided in 45CSR13, the Secretary may issue Class II General Permits involving the same or similar processes or pollutants. For eligible applicants and/or registrants, Class II General Permit registration satisfies the construction, modification, relocation and operating permit requirements of 45CSR13.

ARP has appropriately filed an application for a Class II General Permit Modification and satisfies the permit requirements for 45CSR13. As required under §45-13-8.3 (“Notice Level A”), ARP placed a Class I legal advertisement in a “newspaper of *general circulation* in the area where the source is . . . located.” The ad ran on July 16, 2015 in the *Register Herald* and the affidavit of publication for this legal advertisement was submitted on July 24, 2015.

**45CSR22** Air Quality Management Fee Program

45CSR22 applies to all registrants which are minor sources and no NSPS applies. The affected registrants will be subject to the fee schedule set forth in 45CSR22. They are also required to keep their Certificate to Operate status current.

**45CSR30** (Requirements for Operating Permits)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The SD-11 Compressor Station does not meet the definition of a “major source under §112 of the Clean Air Act” as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Table 4) of any regulated pollutant does not exceed 100 TPY. Additionally, the facility-wide PTE does not exceed 10 TPY of any individual HAP or 25 TPY of aggregate HAPs.

**40CFR60 Subpart IIII** (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)

Subpart III sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject emergency generator.

The engine in question, Caterpillar 3306NALCR, is a spark ignition ICE and is therefore not subject to this rule.

#### **40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)**

Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine.

The date of manufacture for the engine to be installed, Caterpillar 3306NALCR, is October 29, 2003, which does not meet the manufacture date requirements (after June 12, 2006) to be subject to 40CFR60 Subpart JJJJ.

#### **40CFR63 Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)**

On June 1, 2013 the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart ZZZZ. As the SD-11 Compressor Station is defined as an area source of HAPs, the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart III, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

#### **TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS**

Small amounts of non-criteria regulated hazardous or toxic air pollutants such as benzene, ethylbenzene, toluene, xylenes and formaldehyde may be emitted when natural gas is combusted in reciprocating engines. Total non-criteria regulated hazardous/toxic air pollutant emissions are tabulated for each registered natural gas compressor station in the Class II General Permit Registration Application. The Director has previously determined that due to the rural location and the typically small amounts emitted, these non-criteria regulated hazardous/toxic pollutants should not adversely impact an applicable ambient air quality standard or cause or contribute to degradation of public health and welfare. The changes to this permit do not change that determination. A toxicity analysis will be performed when the Director finds existing circumstances and/or submitted data provide cause for an assessment to be made concerning whether a specific natural gas compressor station may interfere with attainment or maintenance of an applicable ambient air quality standard or cause or contribute to degradation of public health and welfare. Any natural gas compressor station granted Class II General Permit registration by the Director shall not have a potential to emit of 10 tons per year of any hazardous/toxic pollutant or 25 tons per year of any combination of hazardous/toxic pollutants.

#### **MONITORING OF OPERATIONS**

G30-D registrants will be required to perform the following monitoring:

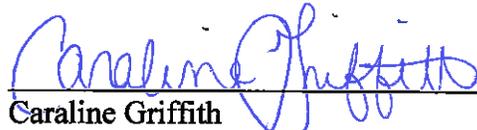
1. Monitor and record calendar monthly and calendar annual quantity of natural gas consumed and hours of operation for all engines and combustion sources.
2. Monitor and record calendar annual quantity of organic liquid throughput in all registered storage tanks.
3. Conduct visual observations of all vent points listed in the permit that are subject to 45CSR2 opacity limits.
4. Conduct annual preventative maintenance/inspection, and all routine maintenance service and repairs as required, to facilitate proper control device performance, for the control devices listed in the registration.

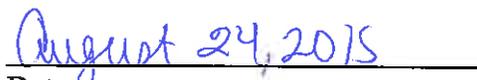
G30-D registrants will be required to perform the following recordkeeping:

1. Maintain on-site a tabulation of actual emissions for each calendar year annual period, showing emission totals for the air pollutants regulated in the registration.
2. Maintain records on-site of all required monitoring parameters for the emission units and control devices listed in the registration.
3. Maintain records relating to inspection, maintenance, failure, replacement, and/or repair of catalytic reduction devices, and associated auxiliary air pollution control devices for each calendar year. Such records shall include a summary of any engine or air pollution control device and/or auxiliary air pollution control device failure, preventative maintenance or corrective action performed.
4. These records shall be maintained on-site for a minimum of five (5) years from the date of record creation.

#### RECOMMENDATION TO DIRECTOR

ARP's request to modify a natural gas compressor station at the Harper, Raleigh County, WV site meets the requirements of General Permit G30-D and all applicable rules and regulations and therefore should be granted a General Permit Registration to construct and operate the said facility.

  
Caraline Griffith  
Permit Engineer

  
Date