



**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

**Permit Application Analysis
A0001345**

August 27, 2015

NAME OF FIRM: BP America Production Company

TYPE OF OPERATION: Strategic Pad Compression Fleet

LOCATION: Sweetwater and Carbon Counties, Wyoming

RESPONSIBLE OFFICIAL: Shanda Caldwell
Field Environmental Coordinator

MAILING ADDRESS: P.O. Box 157
Wamsutter, WY 82336

TELEPHONE NUMBER: (307) 328-3779

REVIEWING ENGINEER: Sarah A. Brown, Air Quality Engineer

1. PURPOSE OF APPLICATION

On July 31, 2015, the Division of Air Quality received BP America Production Company's application to operate ten (10) portable compressor engines consisting of four (4) 380 hp Cummins KTA19GC natural gas fired engines, three (3) 325 hp Caterpillar G3406TA natural gas fired engines, one (1) 400 hp Caterpillar G3408TA natural gas fired engine, one (1) 145 hp Caterpillar G3306NA natural gas fired engine, and one (1) 203 hp Caterpillar G3306TA natural gas fired engine to be operated at oil and gas well sites at various locations in Sweetwater and Carbon Counties in Wyoming. The natural gas fired engines will be equipped with non-selective catalytic reduction (NSCR) catalysts and air/fuel-ratio controllers (AFRC) to control NO_x emissions to 0.7 g/hp-hr, CO emissions to 2.0 g/hp-hr, VOC emissions to 0.7 g/hp-hr, and formaldehyde emissions to 0.05 g/hp-hr.

The portable compressor engines will be used temporarily at various locations in Sweetwater and Carbon Counties to maximize production at wells in the Wamsutter Field. The temporary portable compressor engines shall operate no more than twelve (12) months at any single facility.

2. ESTIMATED EMISSIONS

The portable compressor engines will be field gas fired. The major pollutants emitted from natural gas combustion include nitrogen oxides (NO_x) with some carbon monoxide (CO) from incomplete combustion. Volatile organic compounds (VOCs) including some hazardous air pollutants (HAPs) will also be emitted from the engines. Emission factors for the engines, estimated emissions and the Division assigned ID numbers are shown in the following tables:

Table 1: Engine Emission Factors (g/hp-hr)						
Engine	AQD ID#	Controls	NO _x	CO	VOC	Formaldehyde
Cummins KTA19GC natural gas fired engines	BP-P0019797-01 through BP-P0019797-04	NSCR/AFRC	0.7	2.0	0.7	0.05
Caterpillar G3406TA natural gas fired engines	BP-P0019797-05 through BP-P0019797-07	NSCR/AFRC	0.7	2.0	0.7	0.05
Caterpillar G3408TA natural gas fired engine	BP-P0019797-08	NSCR/AFRC	0.7	2.0	0.7	0.05
Caterpillar G3306NA natural gas fired engine	BP-P0019797-09	NSCR/AFRC	0.7	2.0	0.7	0.05
Caterpillar G3306TA natural gas fired engine	BP-P0019797-10	NSCR/AFRC	0.7	2.0	0.7	0.05

Table 2: Engine Emissions ¹									
Engine	hp	NO _x		CO		VOC		Formaldehyde	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Cummins KTA19GC natural gas fired engines	380	0.6	2.6	1.7	7.3	0.6	2.6	0.04	0.18
Caterpillar G3406TA natural gas fired engines	325	0.5	2.2	1.4	6.3	0.5	2.2	0.04	0.16
Caterpillar G3408TA natural gas fired engine	400	0.6	2.7	1.8	7.7	0.6	2.7	0.04	0.19
Caterpillar G3306NA natural gas fired engine	145	0.2	1.0	0.6	2.8	0.2	1.0	0.02	0.07
Caterpillar G3306TA natural gas fired engine	203	0.3	1.4	0.9	3.9	0.3	1.4	0.02	0.10

¹ Emissions are based on 8,760 hours of operation.

3. BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The natural gas fired engines will be controlled to the levels listed in Table 1. These rich burn engines will be equipped with an AFRC and a NSCR catalyst, which not only controls NO_x but also aids in the destruction of formaldehyde and other HAPs. The Division considers a NSCR catalyst with an AFRC as representing BACT for these types of rich burn engines.

With the finalization of 40 CFR part 60, subpart JJJJ, the Division is establishing VOC limits as part of the BACT analysis. Given all engines are equipped with a NSCR catalyst, the Division considers the VOC limits to represent BACT.

4. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (MACT)

EPA's current promulgated NESHAP rules under 40 CFR part 63, subpart ZZZZ apply to stationary major sources of HAP emissions, as well as area sources of HAP emissions. The compressor engines are portable and authorized for no more than twelve (12) months at any one (1) location. Therefore, Subpart ZZZZ does not apply to the temporary natural gas fired engines.

5. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

The temporary portable compressor engines are limited to no more than twelve (12) months of operation at each location. Therefore, a PSD analysis is not required.

6. NEW SOURCE PERFORMANCE STANDARDS (NSPS)

The temporary natural gas fired portable compressor engines are not subject to 40 CFR part 60, subpart JJJJ. Subpart JJJJ applies to stationary engines. The natural gas fired portable compressor engines will only be used for up to twelve (12) months at any one (1) location. Therefore, Subpart JJJJ does not apply.

7. AMBIENT AIR QUALITY

It is the Division's experience that ambient air quality standards will be maintained with the utilization of control measures recognized as BACT for natural gas fired engine operations of this type.

8. GREATER SAGE-GROUSE

The proposed operation of the temporary portable compressor engines must comply with the Greater Sage-Grouse Executive Order 2011-5. BP America Production Company shall demonstrate compliance by only operating the temporary portable compressor engines at well sites with approved Applications to Permit to Drill (APD's) and approved Sundry Notices, as required by the Wyoming Oil and Gas Conservation Commission (WOGCC).

9. PROPOSED PERMIT CONDITIONS

The Division proposes to issue an Air Quality Permit to BP America Production Company for the natural gas fired engines with the following conditions:

1. That authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or is being constructed or installed for the purpose of investigating actual or potential sources of air pollution and for determining compliance or non-compliance with any rules, standards, permits or orders.
2. That all substantive commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as conditions of this permit.

3. That all notifications, reports and correspondences associated with this permit shall be submitted to the Stationary Source Compliance Program Manager, Air Quality Division, 122 West 25th Street, Cheyenne, WY 82002 and a copy shall be submitted to the appropriate Air Quality District Engineer.

For District 2, Carbon County; 152 North Durbin Street, Suite 100, Casper, WY 82601.

For District 5, Sweetwater County; 510 Meadowview Drive, Lander, WY 82520.

Submissions may also be done electronically though <https://airimpact.wyo.gov> to satisfy the requirements of this permit.

4. Engine startup and shutdown notifications shall be submitted to the Division, within fifteen (15) days of startup and shutdown of each of the temporary portable compressor engines. Such notification shall be submitted on a complete Engine Installation/Removal form. The form can be downloaded from the Air Quality website <http://deq.wyoming.gov/aqd> or obtained from the Air Quality Division.
5. Each of the following temporary portable compressor engines shall be limited to the values in the following table:

AQD ID#	Engine	NO _x			CO			VOC		
		g/hp-hr	lb/hr	tpy	g/hp-hr	lb/hr	tpy	g/hp-hr	lb/hr	tpy
BP-P0019797-01 through BP-P0019797-04	Cummins KTA19GC natural gas fired engines	0.7	0.6	2.6	2.0	1.7	7.3	0.7	0.6	2.6
BP-P0019797-05 through BP-P0019797-07	Caterpillar G3406TA natural gas fired engines	0.7	0.5	2.2	2.0	1.4	6.3	0.7	0.5	2.2
BP-P0019797-08	Caterpillar G3408TA natural gas fired engine	0.7	0.6	2.7	2.0	1.8	7.7	0.7	0.6	2.7
BP-P0019797-09	Caterpillar G3306NA natural gas fired engine	0.7	0.2	1.0	2.0	0.6	2.8	0.7	0.2	1.0
BP-P0019797-10	Caterpillar G3306TA natural gas fired engine	0.7	0.3	1.4	2.0	0.9	3.9	0.7	0.3	1.4

6. The natural gas engines shall be tested within ninety (90) days of initial start-up for NO_x, CO and VOC emissions. Testing shall follow 40 CFR part 60, subpart JJJJ §60.4244, except that §60.8 only applies to engines subject to 40 CFR part 60, subpart JJJJ. A test protocol shall be submitted to this office for review and approval prior to testing. Engine horsepower and other operating conditions shall be recorded during each test run and submitted with the test report. Notification of the test date shall be provided to the Division fifteen (15) days prior to testing. Results shall be submitted to this Division within forty-five (45) days of completion.

7. That BP America Production Company shall follow the testing requirements as follows for the temporary portable compressor engines:
 - i. That every twelve (12) calendar months, the natural gas engines shall be tested to verify compliance with the limits set forth in this permit. Testing for NO_x and CO and VOC emissions shall follow 40 CFR part 60, subpart JJJJ §60.4244, except that §60.8 only applies to engines subject to 40 CFR part 60, subpart JJJJ. Notification of the test date shall be provided to the Division fifteen (15) days prior to testing. Results of the tests shall be submitted to this Division within forty-five (45) days of completing the tests.
 - ii. The Air Quality Division shall be notified within twenty-four (24) hours of any engine where the testing/monitoring required by (i) of this condition shows operation outside the permitted emission limits. By no later than seven (7) calendar days of such testing/monitoring event, the owner or operator shall repair and retest/monitor the affected engine to demonstrate that the engine has been returned to operation within the permitted emission limits. Compliance with this permit condition regarding repair and retesting/monitoring shall not be deemed to limit the authority of the Air Quality Division to cite the owner or operator for an exceedance of the permitted emission limits for any testing/monitoring required by (i) of this condition which shows noncompliance.
8. That for the temporary portable compressor engines, BP America Production Company shall operate and maintain the engine, air pollution control equipment and monitoring equipment according to good air pollution control practices at all times, including startup, shutdown and malfunction. Records of any maintenance or corrective actions shall be kept and maintained for a period of five (5) years and shall be made available to the Division upon request.
9. That records shall be maintained documenting the location and operating hours of the temporary portable compressor engines and shall be made available to the Division upon request.
10. The temporary portable compressor engines shall operate no more than twelve (12) months at any well site.
11. BP America Production Company shall keep a copy of the permit with the temporary portable engines at all times.
12. BP America Production Company shall clearly post the Division's ID number, as assigned in Table 1, on the engines within fifteen (15) days of initial startup.
13. The temporary portable compressor engines shall operate only in Sweetwater and Carbon Counties, Wyoming, but are not authorized to locate or operate within the portion of Sweetwater County designated non-attainment for the 2008 8-hour ozone NAAQS, as defined in 40 CFR part 81.351.
14. The temporary portable compressor engines shall only be located at well sites with approved Applications to Permit to Drill (APD's) and approved Sundry Notices, as required by the Wyoming Oil and Gas Conservation Commission (WOGCC).
15. This permit shall expire five (5) years from the date of issuance.