



**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
Permit Application Analysis  
A0001485**

**September 11, 2015**

**NAME OF FIRM:** BP America Production Company  
**FACILITY:** Luman 10-40 H PAD  
**TYPE OF OPERATION:** Compressor Engine  
**LOCATION:** NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> of Section 15, T22N, R95W  
Lat: 41.88571 Long: -108.13798  
Sweetwater County, Wyoming  
**RESPONSIBLE OFFICIAL:** Shanda Caldwell  
Field Environmental Coordinator  
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**REVIEWING ENGINEER:** Sarah Brown, Air Quality Engineer

**1. PURPOSE OF APPLICATION**

On September 2, 2015, the Division of Air Quality received BP America Production Company’s application to operate one (1) 840 hp Waukesha F3524GSI compressor engine at the Luman 10-40 H Pad, located in the NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> of Section 15, T22N, R95W approximately seventeen (17) miles north-northwest of Wamsutter in Sweetwater County, Wyoming. The Waukesha F3524GSI natural gas fired engine will be equipped with a non-selective catalytic reduction (NSCR) catalyst and an air/fuel-ratio controller (AFRC) to control NO<sub>x</sub> 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.

**2. ESTIMATED EMISSIONS**

The Waukesha F3524GSI compressor engine will be natural gas fired. The major pollutants emitted from natural gas combustion include nitrogen oxides (NO<sub>x</sub>) with some carbon monoxide (CO) from incomplete combustion. Volatile organic compounds (VOCs) including some hazardous air pollutants (HAPs) will also be emitted from the engine. Emission factors for the engine, estimated emissions and the Division assigned ID numbers are shown in the following tables:

Engine	IMPACT ID	Controls	NO <sub>x</sub>	CO	VOC	Formaldehyde
Waukesha F3524GSI	ENG005	NSCR/AFRC	0.7	2.0	0.7	0.05

Table 2: Engine Emissions Summary <sup>1</sup>									
Engine	hp	NO <sub>x</sub>		CO		VOC		Formaldehyde	
		lb/hr	Tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Waukesha F3524GSI	840	1.3	5.7	3.7	16.2	1.3	5.7	0.09	0.41

<sup>1</sup>Emissions in tpy are based on 8,760 hours of operation.

**3. BEST AVAILABLE CONTROL TECHNOLOGY (BACT)**

The Waukesha F3524GSI will be controlled to the levels listed in Table 1. The Waukesha F3524GSI rich burn engine will be equipped with an AFRC and a NSCR catalyst, which not only controls NO<sub>x</sub> but also aids in the destruction of CO, VOC, formaldehyde and other HAPs. The Division considers a NSCR catalyst with an AFRC as representing BACT for this type of rich burn engine.

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

EPA’s current promulgated NESHAP rules under 40 CFR part 63, subpart ZZZZ applies to stationary major sources of HAP emissions, as well as area sources of HAP emissions. The Waukesha F3524GSI compressor engine is subject to all applicable requirements of Subpart ZZZZ.

**5. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)**

The Luman 10-40 H Pad is not a “major stationary source” as defined by Chapter 6, Section 4 of the WAQSR. Therefore, no further analysis is required.

**6. NEW SOURCE PERFORMANCE STANDARDS (NSPS)**

Applicability of 40 CFR part 60, subpart JJJJ is determined by the manufacture date of the engine. BP America Production Company shall submit a Subpart JJJJ determination with the startup notification.

**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 Waukesha F3524GSI compressor engine must comply with the Greater Sage-Grouse Executive Order 2015-4. BP America Production Company shall demonstrate compliance by having an approved Applications to Permit to Drill (APD) for the Luman 10-40 H Pad. The APD approval process includes evaluation of compliance with the Greater Sage Grouse Executive Order 2015-4.

**9. PROPOSED PERMIT CONDITIONS**

The Division proposes to issue an Air Quality Permit to BP America Production Company for the one (1) 840 hp Waukesha F3524GSI compressor engine at the Luman 10-40 H Pad 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 25<sup>th</sup> Street, Cheyenne, WY 82002 and a copy shall be submitted to the District Engineer, Air Quality Division, 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 notification shall be submitted to the Division, within fifteen (15) days of startup of the Waukesha F3524GSI compressor engine. 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. The Waukesha F3524GSI compressor engine shall be limited to the values in the following table:

Engine	IMPACT ID	NO <sub>x</sub>			CO			VOC		
		g/hp-hr	lb/hr	tpy	g/hp-hr	lb/hr	tpy	g/hp-hr	lb/hr	tpy
Waukesha F3524GSI	ENG005	0.7	1.3	5.7	2.0	3.7	16.2	0.7	1.3	5.7

6. The Waukesha F3524GSI natural gas engine (ENG005) shall be tested within ninety (90) days of initial startup for NO<sub>x</sub>, CO and VOC emissions. Testing shall follow 40 CFR part 60, subpart JJJ §60.4244, except that §60.8 only applies to engines subject to 40 CFR part 60, subpart JJJJ. For the initial performance test, testing shall not consist of Method 19 or ASTM Methods. 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 Waukesha F3524GSI natural gas engine (ENG005):
  - i. That every twelve (12) calendar months, the Waukesha F3524GSI natural gas engine shall be tested to verify compliance with the limits set forth in this permit. Testing for NO<sub>x</sub>, 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. Periodic tests are required within twelve (12) calendar months after completion of the initial performance test or the last periodic test. 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 Waukesha F3524GSI compressor engine (ENG005), 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. BP America Production Company shall comply with all applicable requirements of 40 CFR part 60, subpart JJJJ.
10. BP America Production Company shall comply with all applicable requirements of 40 CFR part 63, subpart ZZZZ.