



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.: R13-2956
Plant ID No.: 081-00254
Applicant: CNX Gas, LLC
Facility Name: Rowland 302
Location: Bradley, Raleigh County
NAICS Code: 211111
Application Type: Modification
Received Date: July 9, 2012
Engineer Assigned: Laura Jennings
Fee Amount: \$1,000.00
Date Received: July 9, 2012
Complete Date: September 7, 2012
Due Date: December 6, 2012
Applicant Ad Date: July 26, 2012
Newspaper: *Beckley Newspapers*
UTM's: Easting: 469.571 km Northing: 4190.748 km Zone:
17
Description: This permit application is for a modification of a previously exempt coal bed methane natural gas compression facility that is changing their engines. The permitted emissions will be: 14.99 tpy NO_x, 18.30 tpy CO, 1.48 tpy VOCs, 0.22 tpy Formaldehyde, and 0.24 tpy of Total HAPs.

DESCRIPTION OF PROCESS

Rowland 302 station draws incoming gas from Coal bed Methane (CBM) wells at a suction pressure of 1 psig. The inlet gas is then compressed in one stage to increase the pressure to 52 psig. The high pressure gas is then discharged out of the station through a pipeline connecting it to the nearby 50 psi gathering pipeline.

The NG Compressor/Generator Engine Data Sheet provided with the application indicates that there are two engines.

Engine E-1 is a Caterpillar 3306 rated 203 bhp/1800 rpm that will be installed September 1, 2012. The engine manufactured/reconstruction date is 1999. The data sheet indicates that this is not a certified stationary spark engine according to 40CFR60, Subpart JJJJ. The engine type is Rich Burn Four Stroke (RB4S) and uses Non-Selective Catalytic Reduction (NSCR) for Air Pollution Control. The fuel type is raw gas.

Engine G1 is a Ford WSG 1068 rated 98 bhp/1800 rpm that will be installed September 1, 2012. The engine manufactured/reconstruction date is 1999. The data sheet indicates that this is not a certified stationary spark engine according to 40CFR60, Subpart JJJJ. The engine type is Rich Burn Four Stroke (RB4S) and does not use an Air Pollution Control Device.

The application also indicates that there are three existing storage tanks. Tank 1 contains Brine and has a volume of 2100 gallons. Tanks 2 and 3 contain 99% water and have a volume of 10,500 gallons.

SITE INSPECTION

The site does not have a physical address. The directions to the facility provided in the application are listed below:

Exit from Route 19 at the Bradley, North Beckley exit. Go north on Route 16 150 feet, then turn left onto North Sand Branch Road. Go 4.6 miles to intersection, then right onto Clear Creek Road. Go 0.9 miles to intersection then left, still on Clear Creek Road. Go 7.3 miles and turn left onto Workman Branch Road. Go 1.5 miles to tipple, gthrough gate, then turn left. Go 0.2 mile then right up hill. Go 1.4 miles to intersection and take left fork. Go 0.4 miles to top of the hill then left down hill 2.6 miles to location.

Longitude: - 81.345942
Latitude: 37.863692

A site visit was previously conducted by David Keatley, an engineer in the DAQ NSR permitting group. The site visit was conducted as part of the application process for a general permit application G30-D176 that was submitted and later withdrawn because it was determined that the facility was not eligible for the general permit. There is no need to re-visit this site with the submittal of this R13-2956 permit application.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

[E1] Caterpillar 3306 TA Engine (203 hp):
AP-42 emission factors for 4SRB engines were used to calculate the SO₂, PM₁₀, Benzene, and Formaldehyde emissions and a fuel heating value of 1 MMBtu/1000 scf. Manufacturer's data was used for NO_x, CO, and VOC's. The emission for the 3306 factor is a three-way catalyst attached to the exhaust from MIRATECH Emission Control. The model number for the NSCR Housing & Catalyst is EQ-Y301-06-C1 and

Fact Sheet R13-2956
CNX Gas, LLC
Rowland 302

the guaranteed reduction for NOx and CO is 85% reduction. Annual emissions are based on 8760 hours. The emission factors and emissions calculations were reviewed by the writer.

[E1] Caterpillar 3306 TA Engine Emissions w/ NSCR Control:

Regulated Pollutant	Uncontrolled Emissions		Controlled Emissions	
	lb/hr	tpy	lb/hr	tpy
NOx	7.42	32.50	1.11	4.87
CO	7.42	32.50	1.11	4.87
VOC	0.08	0.35	0.08	0.35
SO2	0.01	0.01	0.01	0.01
PM10	0.03	0.14	0.03	0.14
Benzene	0.01	0.01	0.01	0.01
Formaldehyde	0.03	0.15	0.03	0.15
Total HAPs	0.04	0.16	0.04	0.16

[G1] Ford WSG-1068 engine (98 hp) in Cummins 60 Hz Generator set: AP-42 emission factors were used to calculate the SO₂, PM₁₀, Benzene, and Formaldehyde emissions. Manufacturer's data was used for NO_x, CO, and VOC's. The emissions for the generator use the prime factor for natural gas as the generator is running constantly. Annual emissions are based on 8760 hours. The emission factors and calculations were verified by the writer.

[G-1] Ford WSG-1068 engine in Generator Set:

Regulated Pollutant	Potential Emissions	
	lb/hr	tpy
NOx	2.31	10.12
CO	3.07	13.43
VOC	0.26	1.13
SO2	0.01	0.01
PM10	0.02	0.06
Benzene	0.01	0.01
Formaldehyde	0.02	0.07
Total HAPs	0.03	0.08

Total Permitted Emissions:

Regulated Pollutant	Potential Emissions	
	lb/hr	tpy
NOx	3.42	14.99
CO	4.18	18.30
VOC	0.34	1.48
SO2	0.01	0.01
PM10	0.05	0.20
Benzene	0.01	0.02
Formaldehyde	0.05	0.22
Total HAPs	0.07	0.24

REGULATORY APPLICABILITY

STATE REGULATIONS:

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

The applicant is subject to this regulation because they meet the definition of a modification because the potential to emit without controls is greater than 6 lb/hr and 10 tpy of any regulated air pollutant.

The applicant has met the applicable requirements of this rule by paying the application fee of \$1,000 for a construction permit, publishing a Class I legal advertisement in *The Beckley Newspapers* on July 26, 2012, and submitting a complete permit application.

45CSR16 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES PURSUANT TO 40 CFR PART 60

The applicant is not subject to this regulation because they are not subject to the New Source Performance Standards in 40CFR Part 60.

45CSR22 AIR QUALITY MANAGEMENT FEE PROGRAM

The applicant is subject to this regulation because it is not subject to the fees in 45CSR30. This natural gas compressor station has a total

reciprocating engine capacity less than 1,000 hp and therefore, is classified in Group 9M.

45CSR27 TO PREVENT AND CONTROL THE EMISSIONS OF TOXIC AIR POLLUTANTS

The applicant is not subject to this regulation because the engines do not meet the definition of a “chemical processing unit” per §45-27-2.4.

45CSR30 REQUIREMENTS FOR OPERATING PERMITS

The facility is not subject to this regulation because they do not meet the definition of a major source of either criteria pollutants or hazardous air pollutants. The facility is subject to 40 CFR Part 63, Subpart ZZZZ; however, areas sources that are subject to this subpart are not subject to the obligation to obtain a permit under 40 CFR part 70 or 71, provided they are not required to obtain a permit under CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than their status as an area source under this subpart.

45CSR34 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The applicant is subject to this regulation because they are subject to 40CFR63, Subpart ZZZZ.

FEDERAL REGULATIONS:

40CFR Part 60 STANDARDS OF PERFORMANCE FOR STATIONARY SPARK
Subpart JJJJ IGNITION INTERNAL COMBUSTION ENGINES

40CFR60, 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 subpart is applicable to: (1) owners and operators of stationary SI ICE that commence construction after June 12, 2006 where the stationary SI ICE are manufactured according to (a) on or after 7/1/07 for engines with a maximum engine power \geq 500 HP (except lean burn engines with a maximum engine power \geq 500 HP and \leq 1,350 HP), (b) on or after 1/1/08, for lean burn engines with a maximum engine power \geq 500 HP and \leq 1,350 HP, or (c), on or after 7/1/08 for engines with a maximum engine power $>$ 25HP; (2) owners and operators of stationary SI ICE that are modified or reconstructed after 6/12/06, and any person that modified or reconstructs any stationary SI ICE after 6/12/06; or (3) owners or operators of stationary SI ICE that commence construction after 6/12/06. Commence construction date is the date the engine is ordered by the owner or operator.

According to the permit application, both engines were manufactured in 1999. The order date far predates 6-12-2012. The proposed engines are both built prior to June 12, 2006 and are not subject to NSPS, Subpart JJJJ.

40CFR Part 60 STANDARDS OF PERFORMANCE FOR CRUDE OIL AND
Subpart OOOO NATURAL GAS PRODUCTION, TRANSMISSION, AND
 DISTRIBUTION

This subpart 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.

Reciprocating compressors located at a well site are not affected facilities under this subpart and the facility, therefore, is not subject to this subpart.

40CFR Part 63 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR
Subpart ZZZZ POLLUTANTS FOR RECIPROCATING INTERNAL COMBUSTION
 ENGINES

40CFR63, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The subpart is applicable to owners or operators of a stationary RICE at a major or area source of HAP emissions.

An affected source is an existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions. The Rowland 302 facility is an area source of HAP emissions. The engines [E1, E2] at the Rowland 302 facility are classified as new stationary sources because the commenced construction date is after June 12, 2006.

The engines are affected sources that meet the criteria established in §63.6590 (c)(1) because they are new stationary RICE located an area source; therefore; they must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR Part 60, Subppart JJJJ for spark ignition engines. No further requirements apply under this subpart.

40CFR Part 63 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR
Subpart HH POLLUTANTS FROM OIL AND NATURAL GAS PRODUCTION
FACILITIES

The Rowland 302 facility is not subject to this subpart because they are an area source that does not include a triethylene glycol (TEG) dehydration unit and therefore, does not meet the definition of an affected source.

40CFR Part 63 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR
Subpart HHH POLLUTANTS FROM NATURAL GAS TRANSMISSION AND
STORAGE FACILITIES

The Rowland 302 facility is not subject to this subpart. Compressor stations that transport natural gas prior to the point of custody transfer or to a natural gas processing plant (if present) is not considered a part of the natural gas transmission and storage source category.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Benzene and Formaldehyde are the hazardous air pollutants that will be emitted from the engines associated with this facility. A summary of each pollutant is provided below.

Benzene

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Formaldehyde

Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

AIR QUALITY IMPACT ANALYSIS

The proposed project does not meet the definition of a major modification according to the definitions in 45CSR14 and 45CSR19; therefore, modeling is not required for this permit application.

MONITORING OF OPERATIONS

- Records will be maintained for the amount of fuel consumed and the operating hours for each engine.
- Records will be maintained of all maintenance performed.
- The temperature to the inlet of the catalyst for the NSCR control device will be monitored.

CHANGES TO PERMIT

This is a new permit.

RECOMMENDATION TO DIRECTOR

Based on the information provided in the application, CNX Gas, LLC, Rowland 302 facility will meet all applicable state and federal air regulations. It is therefore recommended, that permit R13-2956 be issued to CNX Gas, LLC for the Rowland 302 facility located in Bradley, Raleigh County, WV.

Laura Jennings
Permit Engineer

Date