



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3309
Plant ID No.: 095-00059
Applicant: Jay-Bee Oil & Gas, Inc.
Facility Name: Doc Wellpad
Location: Tyler County
NAICS Code: 211111
Application Type: Modification
Received Date: April 20, 2016
Engineer Assigned: Roy F. Kees, P.E.
Fee Amount: \$1,000.00
Date Received: April 21, 2016
Complete Date: June 13, 2016
Due Date: September 13, 2016
Applicant Ad Date: April 27, 2016
Newspaper: *Tyler Star News*
UTM's: Easting: 519.900 km Northing: 4,366.600 km Zone: 17S
Description: Application for a well pad located in Tyler County consisting of three (3) condensate tanks, three (3) produced water tanks, three (3) gas processing units, truck loading, one (1) VRU driver with backup combustor, and one (1) thermoelectric generator.

DESCRIPTION OF PROCESS

Jay-Bee currently operates its Doc Well Pad Production Facility under General Permit Registration number G70-B148A. The following describes current operations of the Facility. This modification is solely for conversion to an R-13 permit so that the contiguous and aggregated Icon Midstream Doc Dehydration Facility can operate under a separate permit.

Natural gas and Produced Fluids (condensate and water) are received from two wells at this location at approximately 2500 psi and pass through Gas Processing Units (one per well) to avoid ice formation during subsequent pressure drops. These materials then pass through a threeway separator where gas, condensate and water are separated. The gas will

be routed to the adjacent Icon Midstream Doc Dehydration Facility and then to a pipeline owned and operated by others.

Both the condensate and Produced Water are accumulated in six 210 BBL tanks (three for Condensate and three for Produced Water), pending truck transportation by others. The Condensate is transported to a regional processing facility and the Produced Water to a regional disposal facility. Flash, working and breathing losses from these tanks is routed to a Vapor Recovery Unit (VRU) with the captured vapors routed back to the raw gas discharge line. In addition, Jay-Bee has installed an enclosed combustor as a back-up for the VRU to capture and destroy tank emissions for those times when the VRU is not available (e.g. engine and compressor maintenance).

There are no equipment additions, modifications or removals being requested at this time.

SITE INSPECTION

A site inspection of the proposed facility was conducted by James Robertson of the enforcement section on March 4, 2015. "The site has been graded and rocked but no equipment is onsite other than staged trucks for the Grumpy Pad, which was being fracked. The Doc Pad will be located on the same access road as the Grumpy Pad.

The pad will overlook Wildman Road to the west, Indian Creek Road to the south, and Woodburn Road to the east. In my opinion this site is suitable for a General Permit. The entire area in general is remote, with a few scattered houses along each of the cited roads below the pad. All the houses in the vicinity appear to be well over 300' from the pad.

In my opinion this site meets the 300' criteria and is suitable for a General Permit."

From Middlebourne, proceed southeast on Route 18 (main Street) out of town. Proceed approximately 5.8 miles to the junction with C/R 1/3 (Indian Creek Road) on the left. From the intersection, take Indian Creek Road east for 4.4 miles. Turn left onto lease road, follow north for 0.2 miles to well pad entrance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions listed below were calculated by Jay-Bee and reviewed for accuracy by the writer. Heater treater and flare emissions were calculated using AP-42 emission factors. Storage tank and loading emissions were calculated using Gas to Oil Ratio method, TANKS 4.0. and AP-42. Engine emissions were calculated using emission data from the vendor.

Emission Unit	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
HTR-1 - HTR-3 (3) 1.5 mmBtu/hr Heater Treater (Combined)	Nitrogen Oxides	0.45	1.98
	Carbon Monoxide	0.39	1.65
	Volatile Organic Compounds	0.03	0.12
	Sulfur Dioxide	<0.01	0.01
	Particulate Matter-10	0.03	0.15
	CO ₂ e	544	2,382
T01-T03 & T04-T06 Condensate/P. Water Tanks (Combined)	Volatile Organic Compounds	9.29	40.67
	Total HAPs	0.31	1.70
L001 Cond. Loading	Volatile Organic Compounds	27.90	2.14
	Total HAPs	1.37	0.10
Cummins G5.9 VRU Comp. (CE-1)	Nitrogen Oxides	0.19	0.81
	Carbon Monoxide	0.37	1.62
	Volatile Organic Compounds	0.05	0.21
	Formaldehyde	0.02	0.07
	CO ₂ e	89	391
Fugitives F001	Volatile Organic Compounds	0.17	0.76
	CO ₂ e	--	22

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

Pollutant	Facility Wide Emissions (tons/year)
Nitrogen Oxides	3.43
Carbon Monoxide	6.62
Volatile Organic Compounds	43.89
Particulate Matter-10/2.5	1.57
Sulfur Dioxide	0.01
Total HAPs	1.94
Carbon Dioxide Equivalent	3,997

REGULATORY APPLICABILITY

The proposed Jay-Bee natural gas production facility is subject to substantive requirements in the following state and federal air quality rules and regulations: 45CSR2, and 45CSR13. Each applicable rule (and ones that have reasoned non-applicability), and Jay-Bee'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 gas production units (HTR-1 - HTR-3) have been determined to meet the definition of a "fuel burning unit" under 45CSR2 and are, 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 line heaters are 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.

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 construction of the Doc natural gas production facility has a potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY and, 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, Jay-Bee is required to obtain a modification permit under 45CSR13 for the construction and operation of the natural gas production facility.

As required under §45-13-8.3 (“Notice Level A”), Jay-Bee placed a Class I legal advertisement in a “newspaper of general circulation in the area where the source is . . . located.” The ad ran on April 27, 2016 in *The Tyler Star News*.

45CSR22 *Air Quality Management Fee Program*

The Doc Facility is not subject to 45CSR30. The facility is subject to 40CFR60 Subpart OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source, therefore, the facility is not subject and will pay its annual fees through the Rule 22 program.

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 Doc pad will begin operation after August 23, 2011 it is subject to the requirements of Subpart OOOO. The tanks at the Doc facility will utilize a VRU with a backup 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 Doc pad will also be affected facilities subject to Subpart OOOO.

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

40CFR60 Subpart JJJJ establishes emission standards for applicable SI ICE.

The proposed 84 hp Cummins G5.9 (CE-1) was manufactured after the July 1, 2008 date for engines with a maximum rated power capacity between 25 and 100 horsepower.

The proposed 84 hp Cummins G5.9 (CE-1) is certified by the manufacturer to meet the emission standards listed in 40CFR60 Subpart JJJJ. Therefore, Jay-Bee will not be required to conduct an initial or subsequent performance testing.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary 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 engine (CE-1) at the Doc Wellpad is subject to the area source requirements for non-emergency spark ignition engines.

The applicability requirements for new stationary RICEs located at an area source of HAPs, is the requirement to meet the standards of 40CFR60 Subpart JJJJ. These requirements were outlined above. The proposed engines meet these standards.

Because the engine will be certified by the manufacturer, Jay-Bee will not be required to perform an initial or subsequent performance tests.

Non Applicability Determinations

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 gas production units (HTR-1 - HTR-3) are less than 10 mmBtu/hr, the units are not subject to the substantive sections of 45CSR10.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.

The facility-wide potential-to-emit of the Doc natural gas production facility is below the levels that would define the source as “major” under 45CSR14 and, therefore, the construction evaluated herein is not subject to the provisions of 45CSR14.

Source aggregation determinations are typically made based on the following criteria:

- Whether the facilities are under common control,
- Whether the facilities belong to the same Major Group (i.e. the first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement;
- Whether the facilities are located on one or more contiguous or adjacent properties; and the distance between all pollutant emitting activities,
- Whether the facilities can operate independently

Only if all criteria are met does a permitting authority aggregate the facilities into a single source. The conversion from a General Permit Registration to an R-13 Individual Permit does not impact the current aggregation status. This conversion is being done to allow the contiguous Icon Midstream Doc Dehydration Facility and the Jay-Bee Doc Well Pad Production Facility to operate under separate permits even though they are aggregated.

40 CFR 60 Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

Pursuant to §60.110b, 40 CFR 60, Subpart Kb applies to “each storage vessel with a capacity greater than or equal to 75 cubic meters (m³) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or

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modification is commenced after July 23, 1984.” The largest storage tanks located at the Doc facility are each 8,820 gallons, or 33.4 m³. Therefore, Subpart Kb does not apply to any of the storage tanks.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the Doc 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_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM₁₀), Particulate Matter less than 2.5 microns (PM_{2.5}), and Sulfur Dioxide (SO₂). 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. Jay-Bee 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.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions from the proposed Doc 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) shall be required:

- For the purposes of demonstrating compliance with maximum limit for the aggregate production of condensate/liquids from the wells set forth in Permit R13-3309, Jay-Bee shall be required to monitor and record the monthly and rolling twelve month total of condensate/liquids (in 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 Permit R13-3309, Jay-Bee shall be required to:
 - (1) Conduct an initial Method 22 visual emission observation on the heater treaters to determine the compliance with the visible emission provisions. Jay-Bee shall be required to take a minimum of two (2) hours of visual emissions observations on the line heaters.
 - (2) Conduct monthly Method 22 visible emission observations of the heater treater 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 in permit R13-3309, Jay-Bee shall be required to take immediate corrective action.
- Jay-Bee shall be required to maintain records of all visual emission observations pursuant to the monitoring required under permit R13-3309 including any corrective action taken.
- Jay-Bee 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 permit R13-3309 for the construction of a natural gas production facility near Middlebourne, Tyler County, be granted to Jay-Bee Resources Corporation

Roy F. Kees, P.E.
Engineer - NSR Permitting

DATE

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