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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A053A
Plant ID No.:	095-00040
Applicant:	Jay-Bee Oil & Gas, Inc.
Facility Name:	RPT8 Well Pad
Location:	Alma, Tyler County
NAICS Code:	211111
Application Type:	Modification
Received Date:	December 18, 2015
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$500.00
Date Received:	December 21, 2015
Complete Date:	February 2, 2016
Due Date:	March 17, 2016
Applicant Ad Date:	December 23, 2015
Newspaper:	*Tyler Star News*
UTM's:	Easting: 518.399 km Northing: 4,370.419 km Zone: 17
Description:	Application for a natural gas well pad consisting of three (3) gas production units, six (6) condensate and produced water tanks, one (1) vapor recovery unit compressor engine, and truck loading.

DESCRIPTION OF PROCESS

Natural gas and Produced Fluids (condensate and water) are received from three wells at this location and passed through Gas Processing Units (one per well) to avoid ice formation during subsequent pressure drops. The GPU also separates the gas from the liquids and separates the liquids into Condensate and Produced Water. The gas is routed to a gathering 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 currently

routed to a Vapor Recovery Unit (VRU) with the captured vapors routed back to the raw gas discharge line. In accordance with the G70-A permit registration a maximum capture and control efficiency of only 95% is claimed for the VRU.

Jay-Bee is seeking approval for installation of 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). In association with this change, condensate and water production rates have changed subsequent to issuance if the initial permit registration. Accordingly, Jay-Bee is seeking to revise the permitted rates for production and associated tank emissions and truck loading emissions for these two liquids. Additionally, Jay-Bee is seeking approval for the installation and operation of a Thermo-Electric Generator. No other changes are being requested at this time.

SITE INSPECTION

A site inspection was conducted on March 28, 2014. While the site meets the siting criteria of the G70-A General Permit, it was found to be constructed without a permit, and thus in violation of Section 5.1 of 45CSR13. A notice of violation was issued on April 1, 2014. On June 11, 2014, Doug Hammell visited the site and found extra equipment not listed in the application at the site. On October 23, 2014, Shane Dowell of Jay-Bee verified that the extra equipment was only being stored there and would be used at a different pad when needed.

From intersection of WV 18 and CR 13 (Indian Creek Road), follow CR 13 east for 0.9 miles to CR 40 (Big Run Road). Turn left onto CR 40 heading north for 2.0 miles. Entrance to the production facilities is on the left. Follow 3.0 miles to the end of lease road.

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. Gas production unit emissions were calculated using AP-42 emission factors. Storage tank and loading emissions were calculated using E&P Tanks and TANKS. Engine emissions were calculated using emission data from the vendor.

Emission Unit	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
GPU1-GPU3 (3) 1.5 mmBtu/hr Gas production units (Combined)	Nitrogen Oxides	0.45	1.97
	Carbon Monoxide	0.38	1.66
	Volatile Organic Compounds	0.02	0.11
	Sulfur Dioxide	<0.01	0.01
	Particulate Matter-10	0.03	0.52
	CO_2e	544	2,381
TEG-1 T-E Gen.	Nitrogen Oxides	<0.01	0.01
	Carbon Monoxide	<0.01	0.01
TNK1-6 Tanks & VRU	Volatile Organic Compounds	4.63	20.28
	Total HAPs	0.42	1.84
EC-1 Tanks & Comb.	Volatile Organic Compounds	1.85	8.10
	Total HAPs	0.17	0.74
	Nitrogen Oxides	0.15	0.64
	Carbon Monoxide	0.76	3.34
TL-1 Cond. Loading	Volatile Organic Compounds	27.80	1.01
	Total HAPs	1.37	0.05

TL-2 P.W. Loading	Volatile Organic Compounds	0.14	0.01
	Total HAPs	<0.01	<0.01
VRU1 Cummins G5.9 Engine	Nitrogen Oxides	0.52	2.27
	Carbon Monoxide	0.89	3.89
	Volatile Organic Compounds	0.02	0.09
	Formaldehyde	0.01	0.06
Fugitive Leaks	Volatile Organic Compounds	0.31	1.35
	Total HAPs	0.01	0.04

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

Pollutant	Facility Wide Emissions (tons/year)
Nitrogen Oxides	4.89
Carbon Monoxide	8.89
Volatile Organic Compounds	30.96
Particulate Matter-10/2.5	3.17
Sulfur Dioxide	0.01
Total HAPs	2.80
Carbon Dioxide Equivalent	3,882

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 (GPU1-GPU3) 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 modification of the RPT8 natural gas production facility does not have a potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY. However, the addition of an enclosed combustor triggers 45CSR6, a substantive requirement under 45CSR13. Therefore, Jay-Bee is required to obtain a modification to their permit registration under 45CSR13 for the modification 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 December 23, 2015 in *Tyler Star News.*

45CSR22 Air Quality Management Fee Program

The RPT8 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 RPT8 pad will begin operation after August 23, 2011 it is subject to the requirements of Subpart OOOO. The tanks at the RPT8 facility will utilize a vapor recovery unit claiming 95% control. With the VRU in place, 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 with a bleed rate equal to or less that 6 scfd, therefore the controllers will not be subject to the applicable provisions of Subpart OOOO. The gas wells at the RPT8 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))

40CFR60.4230 states that a source that commenced construction after June 12, 2006 whose SI ICE was less than 500 hp and was manufactured on or after July 1, 2008 is subject to this rule. Jay-Bee has proposed to install one (1) 84 HP SI ICE. Since the SI ICE that Jay-Bee will install was manufactured on March 19, 2012, Jay-Bee is subject to this rule.

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 (GPU1-GPU3) 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 RPT8 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.

Classifying multiple facilities as one "stationary source" under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of "Building, structure, facility, or installation" as given in §45-14-2.13 and §45-19-2.12. The definition states:

> "Building, Structure, Facility, or Installation" means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same "Major Group" (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

RPT8 shares the same SIC code as several other well pads owned by Jay-Bee in the area. Therefore, the potential classification of the RPT8 facility as one stationary source any other facility depends on the determination if these stations are considered "contiguous or adjacent properties."

"Contiguous or Adjacent" determinations are made on a case by case basis. These determinations are proximity-based, and it is important to focus on this and whether or not it meets the common sense notion of one stationary source. The terms "contiguous" or "adjacent" are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; *touching along a boundary or at a point.* Adjacent has a dictionary definition of not distant; nearby; *having a common endpoint or border.*

The RPT8 natural gas production facility is not located contiguous with, or directly adjacent to any other Jay-Bee facility. The nearest Jay-Bee facility (RPT-5) is approximately 0.6 miles southwest of the site.

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 (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984." The largest storage tanks located at the RPT8 facility are each 16,800 gallons, or 63.5 m^3. 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 RPT8 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 (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). 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 affects 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 RPT8 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 Section 4.0 of the general permit registration, 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.

- Jay-Bee shall be required to maintain records of all VRU downtime and amount of waste gas sent to the enclosed combustor.

- For the purposes of demonstrating compliance with visible emissions limitations set forth in Section 7.0 of the G70-A general permit, Jay-Bee shall be required to:

  (1) Conduct an initial Method 22 visual emission observation on the gas production units 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 gas production unit 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 under Section 7.5 of the G70-A general permit, 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 Section 7.2 of the G70-A general permit 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.

- Jay-Bee shall be required to maintain records of the amount of natural gas burned in all engines, heaters or other fuel burning units.

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 general permit registration G70-A053A for the modification of a natural gas production facility near Alma, Tyler County, be granted to Jay-Bee Oil & Gas, Inc.

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

3/3/16
DATE