west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2972D
Plant ID No.:	009-00099
Applicant:	SWN Production Company, LLC
Facility Name:	Barry Greathouse A Pad
Location:	Brooke County
NAICS Code:	211111
Application Type:	Class I Administrative Update
Received Date:	October 24, 2016
Engineer Assigned:	David Keatley
Fee Amount:	$0
Date Fee Received:	Not Applicable (NA)
Complete Date:	December 21, 2016
Due Date:	March 21, 2017
Applicant Ad Date:	NA
Newspaper:	*NA*
UTM's:	Easting: 531.000 km Northing: 4,449.063 km Zone: 17
Description:	Permit R13-2972D will supersede and replace permit R13-2927C. The condensate throughput has increased, the composition of the condensate has been revised, and the capture efficiency has been made 100%. Truck loading emissions have been updated due the change in throughput. Fugitive emissions have been revised. Removal one (1) 145 bhp engine.

DESCRIPTION OF PROCESS

The facility is an oil and natural gas exploration and production facility, responsible for the production of natural gas and condensate. Raw natural gas comes from two (2) natural gas wells to two (2) 1.5-mmBtu/hr line heaters (EU-LH1 and EU-LH2) to raise the temperature of the raw natural gas to encourage phase separation. The heated raw natural gas from the line heaters goes to two (2) 1.0-mmBtu gas production units (GPUs), where the first state of separation occurs. Gas from the

GPUs (EU-GPU1 and EU-GPU2) exit the facility via pipeline. Liquid from the GPUs goes to two (2) 0.5-mmBtu/hr heater treaters (EU-HT1 and EU-HT2) and it heated. The flash gas from the heater treaters exits the facility via pipeline. Produced water from the heater treaters flows into the six (6) 400-bbl produced water tanks EU-TANKS-PW. The condensate flows from the heater treaters to the six (6) 400-bbl condensate tanks EP-TANKS-COND. Condensate and produced water are transported offsite via truck. Loading emissions will be controlled with vapor return, which has a 70% capture efficiency and then routed to the 30 mmBtu/hr enclosed combustor APC-COMB-TKLD for at least 98% destruction efficiency. Loading of produced water will be at a maximum rate of 761,901 gallons/year. Loading of condensate will be at a maximum rate of 4,215,750 gallons/year. Working, breathing, and flashing vapors from the condensate and produced water storage tanks will be routed to the enclosed combustor to be combusted with at least 98% control efficiency. The enclosed combustor has natural gas fired pilots EU-PILOTS (150 scf/hr) to ensure a constant flame for combustion.

SITE INSPECTION

At the intersection of SR 2 and CR 1. Take CR 1 (Short Creek Road) for 0.60 miles. Turn left onto CR2/2 (Girty's Point Road), travel approximately 2.55 miles to CR 28 (Huffs Run-Apple Pie Ridge) and turn left. Drive approximately 0.65 miles to a stop sign and turn left to continue on CR 28. Drive 0.25 of a mile and turn left onto BG lane, travel on BG lane for approximately 0.71 mile the facility will be on the right.

Steven J. Sobutka from the DAQ's Compliance and Enforcement Section performed a site visit on August 30, 2012. The closest residence is well over 1,000 ft. from this proposed facility.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Promax using gas and liquids samples from George Gantzer Pad was used to estimate the flash emissions from the storage tanks at this facility. TANKS 4.0.9d was used to estimate the working and breathing losses from the storage tanks. The enclosed combustor's emissions were estimated with 98% control efficiency. Loading emissions were estimated using a 70% capture efficiency and submerged and dedicated service.

Table 1: Maximum Estimated Controlled Modified PTE

Emission Point	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
APC-COMB-TKLD	Enclosed Combustor APC-COMB-TKLD Controlling vapors from: EU-TANKS-COND, EU-TANKS-PW, EU-LOAD-COND and EU-LOAD-PW and EU-PILOTS	Nitrogen Oxides	4.16	18.20
		Carbon Monoxide	8.28	36.28
		Total Particulate Matter	0.09	0.38
		Volatile Organic Compounds	6.54	28.66
		n-Hexane	0.38	1.66
		Benzene	0.01	0.02
		Toluene	0.03	0.11
		Ethylbenzene	0.03	0.12
		Xylenes	0.09	0.41
		Carbon Dioxide Equivalents	3,525	15,440
EP-LOAD-COND	Condensate Truck Loading 4,215,750 gallons/year	Volatile Organic Compounds	-	4.27
		n-Hexane	-	0.25
		Toluene	-	0.02
		Ethylbenzene	-	0.02
		Xylenes	-	0.06
EP-LOAD-COND	Condensate Truck Loading 761,901 gallons/year	Volatile Organic Compounds	-	0.77
		n-Hexane	-	0.04
		Xylenes	-	0.01
-	Fugtive Haul Roads	Total Particulate Matter	0.20	0.67
-	Fugitive Emissions	Volatile Organic Compounds	0.75	3.32
		Carbon Dioxide Equivalents	16	64

Table 2: Maximum Estimated Controlled Facility Wide Air Emissions and Increase

Pollutant	Current Maximum Annual Facility Wide Emissions (tons/year)	Proposed Maximum Annual Facility Wide Emissions (tons/year)	Increase
Nitrogen Oxides	22.58	21.10	-1.48
Carbon Monoxide	41.52	38.70	-2.83
Volatile Organic Compounds	38.97	37.18	-1.78
Particulate Matter	4.28	1.26	-3.01
Sulfur Dioxide	0.02	0.02	0
Formaldehyde	0.09	0	-0.09
Benzene	0.03	0.03	0
n-Hexane	2.19	2.17	-0.02
Ethylbenzene	0.16	0.15	-0.01
Toluene	0.15	0.14	-0.01
Xylenes	0.53	0.52	-0.01
Total HAPs	3.19	3.01	-0.18
Carbon Dioxide Equivalent	19,277	16,860	-2,417

REGULATORY APPLICABILITY

The following rules and regulations apply to this facilities Class II Administrative Update:

45CSR4 (To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors)

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable.

45CSR6 (Control of Air Pollution from Combustion of Refuse)

This rule establishes emission standards for particulate matter and requirements for particulate matter and requirements for activities involving incineration of refuse which are not subject to, or are exempted from regulation under a federal counterpart for specific combustion sources. This rule also prohibits open burning and sets forth the registration, permitting, reporting, testing, emergency, natural disaster and exemption provisions for activities involving the combustion of refuse and land clearing debris.

The facility has proposed an enclosed combustor for controlling the working/breathing/flashing emissions from the condensate/produced water storage tanks.

The enclosed combustor must meet the requirements for the emission standards set forth in section 4.1 of this rule, were the allowable particulate matter emission rate to be discharged is determined below.

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)
Where, the factor, F, is as indicated in Table I below:
Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions.

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

Emissions to the incinerator are 327 lbs/hr.

Emissions (lb/hr) = 5.43 x 0.1635 tons/hr = 0.89 lb/hr

The estimated hourly particulate matter emission rate from the enclosed combustor is 0.09 lb/hr. The facility's enclosed combustor should meet the emission requirements of this rule. The facility will demonstrate compliance by maintaining and operating the combustor properly.

The enclosed combustor must meet the visible emissions requirements of this rule, which limits the combustor to 20% opacity during operation per section 4.3 of this rule. The permittee will be required to operate the enclosed combustor according to manufacturer specifications in order to maintain a smokeless operation. The permittee will also be required to conduct Method 9 opacity checks upon request of the Director.

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)

As can be seen from the increase column from Table 2 this facility meets the requirements of the Class II Administrative Update.

45CSR22 (Air Quality Management Fee Program)

As can be seen from the proposed facility wide emissions in Table 2 this facility is a minor source for all regulated air pollutants. This facility is not subject to 45CSR30 and the applicable NSPS are exempt from Title V. Since this facility is not natural gas compressor station it is a 9M with an annual fee of $200. SWN is required to keep their Certificate to Operate current.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various regulated hazardous air pollutants emitted from the operation of this facility and none of the emissions have increased as seen in Table 2 above. If you want to obtain additional information about certain hazardous air pollutants feel free to visit [http://www.epa.gov/ttn/atw/hlthef/hapindex.html].

AIR QUALITY IMPACT ANALYSIS

Based on the annual emission rates this facility will not be a major source as defined by 45CSR14 as can be seen in the proposed emissions column of Table 2, so air quality modeling was not performed.

CHANGES TO PERMIT R13-2972C

Permit R13-2972D will supercede and replace R13-2972C. The condensate throughput has increased, the composition of the condensate has been revised, and the capture efficiency has been made 100%. Truck loading emissions associated with EU-TANKS-PW and EU-TANKS-COND have been updated due the change in throughput. Fugitive emissions have been revised. Removal one (1) 145 bhp engine EU-MC4324. Sections 5 and 10 of permit R13-2972C were removed. The natural gas throughput limitations for the line heaters, heater treaters, and GPUs were removed due to limited maximum capacity of the units. The emission limits for the enclosed combustor were modified.

RECOMMENDATION TO DIRECTOR

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements will be achieved . It is recommended that SWN should be granted a 45CSR13 Class I Administrative Update permit for Barry Greathouse A Pad.

David Keatley
Permit Writer - NSR Permitting

December 22, 2016
Date