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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3192
Plant ID No.:	103-00094
Applicant:	Stone Energy Corporation
Facility Name:	ZMBG Wellpad
Location:	New Martinsville, Wetzel County
SIC Code:	1311 (Crude Petroleum and Natural Gas)
NAICS Code:	211111 (Crude Petroleum and Natural Gas Extraction)
Application Type:	Construction
Received Date:	May 16, 2014
Engineer Assigned:	Laura M. Jennings
Fee Amount:	$2,000
Date Received:	May 22, 2014
Complete Date:	July 7, 2014
Due Date:	October 5, 2014
Applicant Ad Date:	May 21, 2014
Newspaper:	*The Wetzel Chronicle*
UTM's:	Easting: 515.3917 km Northing: 4,387.9539 km Zone: 17
Longitude:	-80.820722
Lattitude:	39.641061
Description:	Natural gas production facility consisting of 8 wells, 3 electric generators, 8 GPU's, 2 flash gas compressors, 2 vapor recovery units (VRU's), 2 separators, 2 heaters, 4 condensate storage tanks, 2 produced water storage tanks, 2 combustors, and a tank truck loading area.

DESCRIPTION OF PROCESS

Natural gas and produced fluids (condensate and water) will be received from 8 wells on this location at approximately 500 psi and pass through heaters (one per well) to avoid ice formation during subsequent pressure drops. These materials will then pass through a three-way separator where gas, condensate and water are separated. The gas will be routed to a gathering pipeline and routed to Stone's Winters Compressor Station approximately 0.8 miles from this new site.

Condensate will normally be injected into a liquids pipeline and also routed to the Winters Compressor Station. However, as a back-up to this pipeline, provisions will be made to stabilize the condensate through heating and pressure reduction, coupled with vapor recovery. The stabilized condensate will be accumulated in four 400 BBL tanks, pending truck transportation by others to a regional processing facility for separation into individual products. Flash, working, and breathing losses from these tanks will be routed to a pair of Vapor Recovery Units (VRUs) with the captured vapors routed back to the discharge line. In the event of shut down of the VRUs due to maintenance or equipment failure, the vapors from the condensate tanks will be routed to two vapor combustion units operating in parallel. Vapors generated during truck loading of condensate will be routed to the two vapor combustion units.

A capture and control efficiency of 99% is being claimed for the VRUs. In accordance with guidance adopted by DAQ, several features will be present in association with these units to support a capture and control efficiency above the default, 95%. These features are:

- Additional sensing equipment to monitor the run status of the VRUs will be present. If the VRU shuts down, the wells shut in.
- There will be a by-pass system which operates automatically whereby discharge is routed back to the inlet of the VRU until the appropriate pressure is built up for the compressor to turn on.
- They will run both a blanket gas and have automatic throttling to ensure oxygen does not enter the tanks
- They will have continuous monitoring/recordkeeping of the pressure in the tanks to demonstrate that the gas is not escaping through pressure relief valves. They will also have gas detection on the vents with the lowest set pressure. When gas is detected, the wells will be shut in until the problem is found and resolved.

A process flow diagram depicting these VRU features is provided.

The produced water, and water generated during the fuel gas conditioning process will be accumulated in two 400 BBL tanks pending transportation via pipeline to a Stone Energy water management facility. Nominal flash gas vapors from these tanks (modeled at 8 scfd during steady state operations but conservatively estimated at 120 scfd for permitting purposes to account for any temporary surges in the system) will be vented to the atmosphere. These vapors are comprised solely of flash gas generated during the drop to atmospheric pressure.

Three gas-fired generators will also be present to provide electric service for facility instrumentation and controllers and to operate pumps.

All natural gas fired equipment uses natural gas received at the station as fuel.

There will be no natural gas dehydration units at this facility.

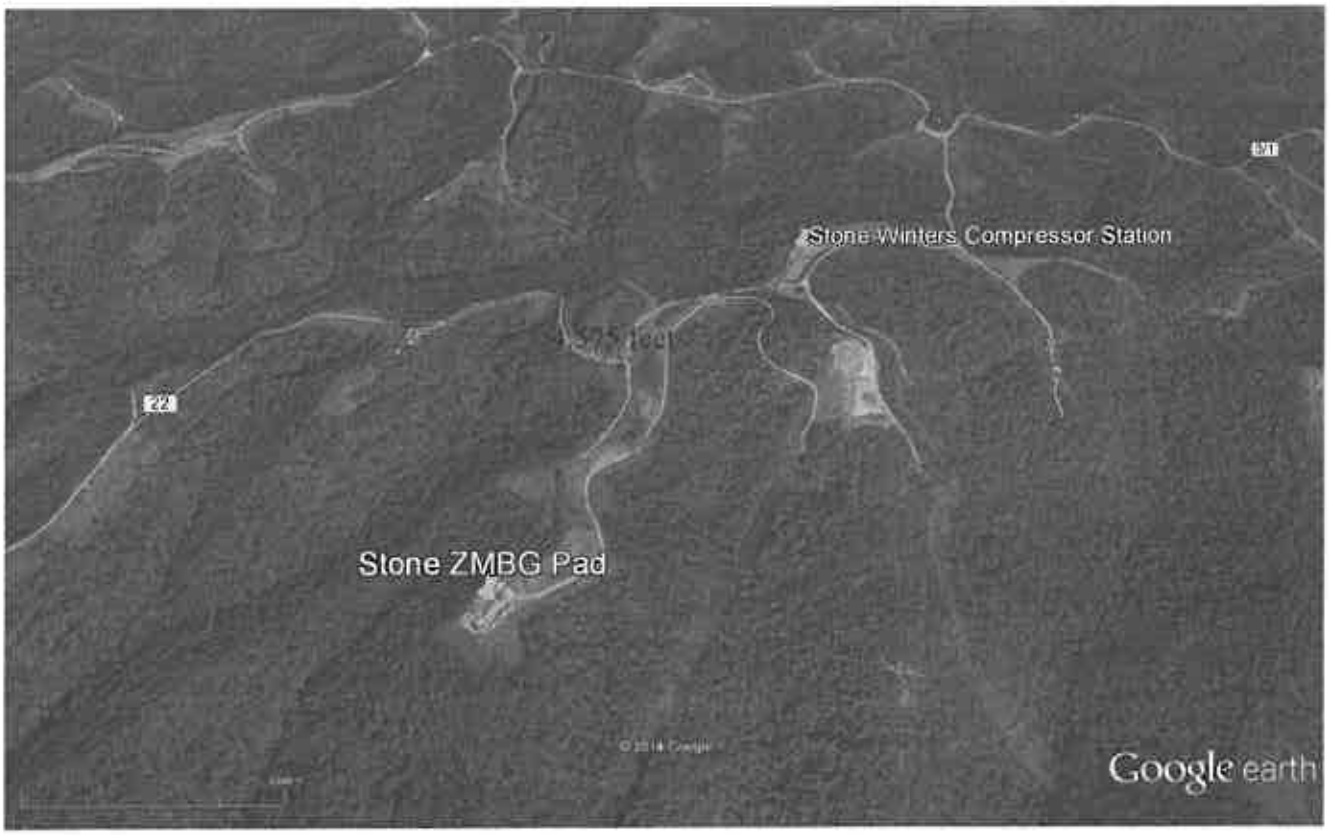
Natural Gas Wells: 047-103-02784, 047-103-02785, 047-103-02788, 047-103-02789, 047-103-02893, 047-103-02894, 047-103-02895, and 047-103-02896.

SITE INSPECTION

On October 1, 2014, James Jarrett of DAQ's Compliance and Enforcement Section conducted an inspection at Stone Energy's ZMBG Well Site and met with Tracy Weekley.

There is no production at this site. Eight (8) natural gas wells have been drilled. Four (4) wells have been fracked and plugged. The facility was drilling out the plugs during the site visit. The remaining four (4) wells need fracked. The site plans to flowback the wells in November, 2014. There were no GPUs or permanent production storage tanks on-site. The unpaved road distance is 1.4 miles per trip (from gate to center of the well pad). The closest residence is ~ 1,600 feet to the North from the well site.

Directions to the facility: From WV-2 turn right on Dolin Run Road and travel 1.1 miles. Turn left on Schupbach Ridge and travel 2.2 miles. Turn right onto a gravel road and travel ~ 0.7 miles to the facility. UTM Coordinates: 515,383.00 m E & 4,387,935.00 m N.



Aggregation Analysis:

"Stationary source" is defined as any "building, structure, facility or installation which emits, or may emit any air pollutant". "Building, structure, facility, or installation" is defined as all 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. If a facility meets all of these criteria, emissions from all applicable sources must be aggregated in order to determine the facility's total emissions in regards to major source or PSD status.

The ZMBG Well Pad facility produces natural gas and associated produced fluids from the wells. After separation of the liquids, the gas will be injected into a gathering line for transportation to Stone Energy's Winters Compressor Station. The Winters Compressor Station also receives gas from other well pads.

Three-prong test:

1. Same Industrial Grouping. As stated in the permit application, the receiving Winters Compressor Station is under the same general SIC Code.

2. Common Control of the same person. The receiving Winters Compressor Station is under common ownership and may, from time to time have a sharing of staff.

3. 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 a plant. 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 receiving Winters Compressor Station is approximately 0.8 miles from the site of this new facility and receives gas from various other production facilities; therefore, there is not a dependency relationship. There are no other operating Stone Energy facilities closer to ZMBG than the Winters Compressor Station.

   Stone also owns the Smith well pad which is approximately 0.55 miles from the planned ZMBG facility. Wells on this pad have been drilled but have not been developed at this time. Thus, there are no emission sources at that location. Once completed, gas from this well pad will flow directly to the Winters Compressor Station, operating independent of the ZMBG facility.

   Given its independent operation and distance between it and the Winters Compressor Station, the emissions from the Stone, ZMBG Well Pad should not be aggregated with other facilities in determining major source or PSD status.

Emission Units Table:

Emission Unit ID	Emission Point ID	Emission Unit Description	Design Capacity	Control Device	Emission Calculation Methodology
CE-1	1E	Flash Gas Compressor Engine (Cummins GTA855)	225 Hp	1C (NSCR)	Miratech Catalyst Warranty for NOX, CO, VOC, and CH20. AP-42 for SO2, PM, PM2.5 and HAPs. 40 CFR98, Table C-2 for GHGs.
CE-2	2E	Flash Gas Compressor Engine (Cummins GTA855)	225 Hp	2C (NSCR)	Miratech Catalyst Warranty for NOX, CO, VOC, and CH20. AP-42 for SO2, PM, PM2.5 and HAPs. 40 CFR98, Table C-2 for GHGs.
VCU-1	3E-A	Enclosed Combustor	100 MSFD	N/A	AP-42 emission factors and HYSYS Model
VCU-2	3E-B	Enclosed Combustor	100 MSFD	N/A	AP-42 emission factors and HYSYS Model
TL	TL	Condensate Truck Loading	10 MMgal/yr	VCU-1/ VCU-2	AP-42. Used NSPS Annual Testing with 98.7% capture
T05-T06	4E	Produced Water Tanks	400 BBL each	None	HYSYS Model
GN-1	5E	Generator Engine (PSI 1.6 L)	25 Hp	None	Emission factors were used from the manufacturer for NOX, CO, and VOC; and from AP-42 for other pollutants.
GN-2	6E	Generator Engine (PSI 1.6 L)	25 Hp	None	Emission factors were used from the manufacturer for NOX, CO, and VOC; and from AP-42 for other pollutants.
GN-3	7E	Generator Engine (Caterpillar G3412, LE)	637 Hp	3C (SCR)	Emission factors were used from the manufacturer for NOX, CO, VOC, and HCHO; and from AP-42 for other pollutants.
T01-T04	18E, 19E	Condensate Tanks	400 BBL each	CE-3/CE-4 (VRU-1/ VRU-2)	HYSYS Model
HTR-1	8E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-2	9E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-3	10E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-4	11E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors

HTR-5	12E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-6	13E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-7	14E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-8	15E	Line Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-9	16E	Condensate Heater	0.75 MMBtu/hr	None	AP-42 emission factors
HTR-10	17E	Condensate Heater	0.75 MMBtu/hr	None	AP-42 emission factors
CE-3	18E	VRU Compressor Engine (Cummins G8.3)	118 Hp	4C (NSCR)	Engine: Miratech Catalyst Warranty for NOX, CO, and VOC; AP-42 for SO2, PM, PM2.5 and HAPs. 40 CFR98, Table C-2 for GHGs. VRU System: HYSYS Model
CE-4	19E	VRU Compressor Engine (Cummins G8.3)	118 Hp	5C (NSCR)	Engine: Miratech Catalyst Warranty for NOX, CO, and VOC;. AP-42 for SO2, PM, PM2.5 and HAPs. 40 CFR98, Table C-2 for GHGs. VRU System: HYSYS Model
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Control Devices

Control Device ID	Control Device Description	Pollutant	Control Efficiency
1C, 2C	NSCR Catalyst for 225 hp Cummins GTA 855 RICE	NOX CO	92% 31%
3C	SCR Catalyst for 637 hp Caterpillar 3412 RICE	CO VOC	20% 50%
4C, 5C	NSCR for 118 hp Cummins G8.3 RICE	NOX CO	92% 77%
VRU-1, VRU-2	Vapor Recovery Units	VOC	99% Capture
VCU-1, VCU-2	Hy-Bon ABUTEC 100 Enclosed Vapor Combustor	VOC	98%

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions Table 1: Criteria Pollutants (Controlled Emissions)

Emission Pt ID	Emission Unit ID	Control Device	NO_X		CO		VOC		SO_2		PM_{10}/ $PM_{2.5}$		Formaldehyde		Total HAPs		CO_2e
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy
1E	CE-1	1C	0.50	2.17	0.99	4.35	0.35	1.52	0.01	0.01	0.02	0.08	0.05	0.22	0.07	0.31	1,156
2E	CE-2	2C	0.50	2.17	0.99	4.35	0.35	1.52	0.01	0.01	0.02	0.08	0.05	0.22	0.07	0.31	1,156
3E-A	VCU-1	N/A	.61	.18	3.32	0.95	8.07	2.39	-	-	0.02	0.01	-	-	.33	.06	300
3E-B	VCU-2	N/A	.61	.18	3.32	0.95	8.07	2.39	-	-	0.02	0.01	-	-	.33	.06	300
4E-1	T05	None	-	-	-	-	0.16	0.70	-	-	-	-	-	-	-	-	8.10
4E-2	T06	None	-	-	-	-	0.16	0.70	-	-	-	-	-	-	-	-	8.10
5E	GN-1	None	0.20	0.86	1.38	6.05	0.08	0.37	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.01	116
6E	GN-2	None	0.20	0.86	1.38	6.05	0.08	0.37	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.01	116
7E	GN-3	3C	1.40	6.15	2.76	12.12	0.31	1.35	<0.01	0.01	0.05	0.23	0.38	1.66	0.45	1.98	3,354
8E - 17E	HTR-1 - HTR-10	None	0.61	2.65	0.51	2.23	0.03	0.15	<0.01	0.02	0.05	0.20	<0.01	<0.01	<0.01	<0.01	3,200
18E*	CE-3	4C	0.26	1.14	0.52	2.28	3.80	16.65	0.01	0.01	0.01	0.04	0.02	0.09	0.08	0.34	543
19E*	CE-4	5C	0.26	1.14	0.52	2.28	3.80	16.65	0.01	0.01	0.01	0.04	0.02	0.09	0.08	0.34	543
N/A	Truck Load	VCU-1, VCU-2	-	-	-	-	0.72	0.86	-	-	-	-	-	-	0.07	0.09	-
N/A	Fugitives	None	-	-	-	-	0.47	2.07	-	-	-	-	-	-	-	-	31.92
Total Facility PTE			5.15	17.50	15.69	41.61	29.45	47.69	0.04	0.07	0.20	0.69	0.54	2.30	1.48	3.51	10832

*Uncaptured condensate storage tank emissions are included in the VRU emissions.

The total facility PTE, including fugitive emissions is shown on the last line of the above emissions table.

REGULATORY APPLICABILITY

State Regulations: *The state regulations listed below apply to this facility.*

45CSR2 (TO PREVENT AND CONTROL PARTICULATE AIR POLLUTION FROM COMBUSTION OF FUEL IN INDIRECT HEAT EXCHANGERS)

The applicant is not subject to the weight emission standard for particulate matter set forth in 45 CSR2-4.1 because the line heaters and condensate heaters (HTR-1 through HTR-10) are less than 10 MMBtu/hr; however, they are subject to the 10% opacity based on a six minute block average. Compliance will be demonstrated by complying with permit requirements. The applicant is using natural gas as fuel; therefore, meeting the 10% opacity requirements should not be a problem.

45CSR6 (TO PREVENT AND CONTROL AIR POLLUTION FROM THE COMBUSTION OF REFUSE)

The applicant has two enclosed combustion devices (VCU-1, VCU-2) at the facility that is subject to this rule. The VCUs will use natural gas as its fuel and therefore will have negligible particulate matter emissions and is expected to be in compliance by being in compliance with the permit requirements.

45CSR10 (TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF SULFUR OXIDES)

The line heaters and condensate heaters (HTR-1 through HTR-10) each have a maximum design heat input of less than 10 MMBtu/hr and are therefore exempt from sections 3, 6, and 8.

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 rule because they meet the definition of a stationary source.

They have demonstrated compliance with 45CSR13 by submitting a complete permit application, placing a legal advertisement in *The Wetzel Chronicle* on May 21, 2014, and paying the applicable fees.

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

The facility is subject to 45CSR16 because they are subject to NSPS, Subparts JJJJ and OOOO. These requirements are discussed in the federal section below.

45CSR22 (AIR QUALITY MANAGEMENT FEE PROGRAM)

Stone is not subject to 45CSR30. The ZMBG Well Pad is subject to 40 CFR 60, Subparts JJJJ and OOOO; however, they are exempt from the obligation to obtain a permit for a reason other than their status as an area source.

The applicant has paid the $1,000 application fee, the $1,000 NSPS fee as required by section 3.4.b of this rule because they are subject to NSPS requirements as described in this regulatory review section. The $2,500 NESHAP fee for 45CSR34, Subpart ZZZZ is waived when compliance is demonstrated by compliance with NSPS, Subpart JJJJ.

Additionally, the source will be added to the fee database when the registration is issued and the Stone is required to pay the appropriate annual fees and keep their Certificate to Operate current.

45CSR34 (EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS)

The facility is subject to 45CSR34 because they are subject to 40 CFR 63, Subpart ZZZZ. These requirements are discussed in the federal section below.

Federal Regulations: *The federal regulations listed below apply to this facility.*

NSPS, Subpart JJJJ (STANDARDS OF PERFORMANCE FOR NEW STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES)

40 CFR 60, Subpart JJJJ establishes emission standards for applicable SI ICE.

The 225 hp Cummins GTA855 engines (CE-1, CE-2) were manufactured after the July 1, 2011 date for engines with a maximum rated power capacity less than 500 hp. The proposed 225 hp Cummins GTA855 engines will be subject to the following emission limits: NOx - 1.0 g/HP*hr; CO - 2.0 g/HP*hr; VOC (not including formaldehyde) - 0.7 g/HP*hr. Based on the manufacturer's specifications for this engine, the emission standards will be met.

The 118 hp Cummins G8.3 engines (CE-3, CE-4) were manufactured after the July 1, 2011 date for engines with a maximum rated power capacity less than 500 hp. The proposed 225 hp Cummins GTA855 engines will be subject to the following emission limits: NOx - 1.0 g/HP*hr; CO - 2.0 g/HP*hr; VOC (not including formaldehyde) - 0.7 g/HP*hr. Based on the manufacturer's specifications for this engine, the emission standards will be met.

The 25 hp Power Solutions generators (GN-1, GN-2) were manufactured after the July 1, 2011 date for engines with a maximum rated power capacity less than 500 hp. In accordance with this rule, these units are subject to the requirements of 40 CFR 60.4233(a). These engines each have a capacity of 1.6 L, and it is stipulated that the engines must meet the requirements of 40 CFR 1054. These requirements

requirements are HC + NOx must be less than or equal to 8.0 g/kW-hr and CO must be less than or equal to 610 g/kW-hr. The engines are rated at 6.89 and 33.7 respectively. Therefore, based on the manufacturer's specifications for this engine, the emission standards will be met. In addition, these engines are designated as "certified engines" to meet the standards of this rule.

The 637 hp Caterpillar 3412 engine (GN-3) was manufactured after the July 1, 2010 date for lean burn engines with a maximum rated power capacity between 500 HP and 1,350 HP. The proposed engine will be subject to the following emissions limits: NOx - 1.0 g/HP*hr; CO - 2.0 g/HP*hr; VOC (not including formaldehyde) - 0.7 g/HP*hr. Based on the manufacturer's specifications for this engine, the emission standards will be met.

The units that are not certified by the manufacturer to meet the emission standards listed in 40CFR60, Subpart JJJJ are required to conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, to demonstrate compliance. The engines identified as CE-1, CE-2, CE-3, CE-4, and GN-3 are not certified engines.

NSPS, Subpart OOOO (STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION)

EPA published its new source performance standards (NSPS) and air toxic rules for the oil and gas sector on August 16, 2012 and published their amendments on September 23, 1013.

40CFR60, Subpart OOOO 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. The affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart as described below:

a. Each gas well affected facility, which is a single natural gas well.

The gas wells that exist at the ZMBG Well Pad were drilled principally for the production of natural gas and were done so after August 23, 2011; therefore, these wells are considered affected facilities under this subpart. Stone is subject to the recordkeeping and reporting requirements of §§ 60.5410 and 60.5420. *Stone will demonstrate compliance by demonstrating compliance with the requirements of the permit.*

d. For the natural gas production segment, each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh.

The application submitted for the ZMBG Well Pad states that all pneumatic

controllers to be installed at the production pad will meet the criteria required by § 60.5390(b).

e. Each storage vessel affected facility, which is a single storage vessel located in the oil and natural gas production segment, natural gas processing segment, or natural gas transmission and storage segment, and has the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section by October 15, 2013 for Group 1 storage vessels and by April 15, 2014, or 30 days after startup (whichever is later) for Group 2 storage vessels. A storage vessel affected facility that subsequently has its potential for VOC emissions decrease to less than 6 tpy shall remain an affected facility under this subpart.

The emissions from the storage vessels that will be located at the ZMBG Well Pad will be routed to a Vapor Recovery Unit (VRU) System that is designed with a 99% capture efficiency that includes back-up control to Vapor Combustors (VCUs).

Total VOC emissions from the condensate storage tanks that are not captured by the Vapor Recovery Units System (99% capture) according to the HYSYS model is 16.52 tpy that equates to 4.13 tpy for each tank. NSPS, Subpart OOOO allows the capture of emissions by the VRU to be included in the tank PTE when the VRU requirements are federally enforceable in a permit; therefore, the PTE per tank is below 6 tpy. The VOC PTE for the produced water tanks is less than 6 tpy per tank without controls. Stone is not required by this section to further reduce VOC emissions by 95%.

40 CFR63, Subpart ZZZZ (NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAP's emitted from stationary RICE located at major and area sources of HAP emissions. The engines at this facility are subject to the area source requirements and are considered "new" sources.

The requirements for new stationary RICEs located at any area source to be in compliance with Subpart ZZZZ is to demonstrate compliance with NSPS, Subpart JJJJ. The requirements for NSPS, Subpart JJJJ were previously discussed and the proposed engines meet these standards.

Non-applicability: rules listed in this section do not apply to this facility.

45CSR 30 (REQUIREMENTS FOR OPERATING PERMITS)

The ZMBG Well Pad facility is not subject to 45CSR30 because they do not meet the definition of a major source. Although the facility is subject to NSPS, Subparts JJJJ and OOOO and NESHAP, Subpart ZZZZ, they are exempt from the obligation to

obtain a permit because they are not otherwise required to do so.

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)

Subpart Kb establishes control requirements, testing requirements, monitoring requirements, and recordkeeping and reporting requirements. Subpart Kb applies to any storage vessel with a capacity greater than 19,313 gallons that is used to store volatile organic liquids except that it does not apply to storage vessels with a capacity greater than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 3.5 kPa or with a capacity greater than 19,813 gallons but less than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

This subpart does not apply to vessels with a design capacity less than or equal to 419,204 gallons used for petroleum or condensate stored, processed, or treated prior to custody transfer.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. A discussion of formaldehyde is provided below.

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 changes in this permit application do 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

Stone will be required to perform the following monitoring and recordkeeping for the ZMBG facility:

- Monitor and record quantity of natural gas consumed and hours of operation for all combustion sources
- Monitor the presence of the vapor combustor pilot flame with a thermocouple or equivalent
- Monitor opacity from all fuel burning units
- Monitor the condensate storage tanks to ensure that all vapors are sent to the vapor recovery units
- Monitor the condensate truck loading to ensure all vapors are sent to the vapor combustion units
- Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit
- Maintain records of the visible emission opacity tests conducted per the permit
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engine and ancillary equipment
- Maintain records of all applicable requirements of 40CFR60 Subpart JJJJ, and 40 CFR63, Subpart ZZZZ
- The records shall be maintained on site or in a readily available off-site location for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

It is recommended that permit R13-3192 be granted to Stone Energy Corporation; ZMBG Well Pad located in New Martinsville, Wetzel County. Based on the information provided in the application, including all supplemental information received, the applicant should be in compliance with all applicable state and federal air regulations.

Laura M. Jennings
Permit Engineer

12/19/14
Date