



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3137
Plant ID No.: 051-00181
Applicant: Chevron Appalachia, L.L.C. (Chevron)
Facility Name: Curry Natural Gas Production Site
Location: Moundsville, Marshall County
NAICS Code: 211111
Application Type: Construction
Received Date: October 4, 2013, Application Resubmittal December 20, 2013
Engineer Assigned: Jerry Williams, P.E.
Fee Amount: \$2,000.00
Date Received: October 4, 2013
Complete Date: December 30, 2013
Due Date: March 30, 2014
Applicant Ad Date: October 10, 2013
Newspaper: *Moundsville Daily Echo*
UTM's: Easting: 528.53 km Northing: 4,417.80 km Zone: 17
Description: This permitting action proposes the installation of one (1) line heater, three (3) storage tanks, one (1) liquids loading rack, one (1) enclosed ground flare, and associated equipment.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3137:

The facility is an oil and natural gas exploration and production facility, responsible for the production of natural gas. The raw gas is first routed through a line heater (BAP-0110) to assist with the phase separation process in the downstream three-phase separator (MBD-0120), especially during cooler ambient temperatures. In the separator, condensate is removed from the raw gas and transferred to the condensate storage tank (ABJ-0012). Produced water is removed from the raw gas in the separator and transferred to the produced water storage tank (ABJ-0011). From the phase separator, natural gas flows to the downstream sales pipeline. A smaller gas stream is routed from the phase separator to the fuel gas scrubber (MBF-0030). Produced water is removed in the scrubber and transferred to the produced water storage tank (ABJ-0011). From

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the scrubber, gas either flows to the vapor destruction unit, (ZZZ-0060) where it is burned, or to the ethanol based de-salter (MBF-0111). Gas flows from the ethanol based de-salter to the fuel gas pot (MBF-0110) and then to the line heater, where it is burned as a fuel source. Produced water is removed in the de-salter and gas pot and transferred to the produced water storage tank (ABJ-0011). Emissions from the produced water, condensate, and blowdown tanks are directed to a knockout drum (ABF-0065) and then to the vapor destruction unit (ZZZ-0060), where they are incinerated. Water that accumulates in the knockout drum (ABF-0065) is pumped back into the blowdown tank (ABJ-0014). From the storage tanks, the produced water, condensate, and blowdown fluid is pumped into a tank truck on an as needed basis and is disposed of off-site.

Various control systems are used at the site to monitor and regulate temperature, flow, and pressure. Numerous other activities, including blowdowns are required to conduct maintenance activities, pneumatic device venting, and fugitive component leaks occur at the production site. The fuel gas scrubber, ethanol de-salter, and fuel gas pot provides additional separation of the produced water and natural gas. The ethanol de-salter is a small vertical pressure vessel inside of the gas processing unit that is periodically filled with a liquid solution to remove salt particles suspended in the gas stream. The fuel gas moves through the liquid and strips the salt out of the gas. The salt will stay in the liquid solution and periodically get drained out for disposal.

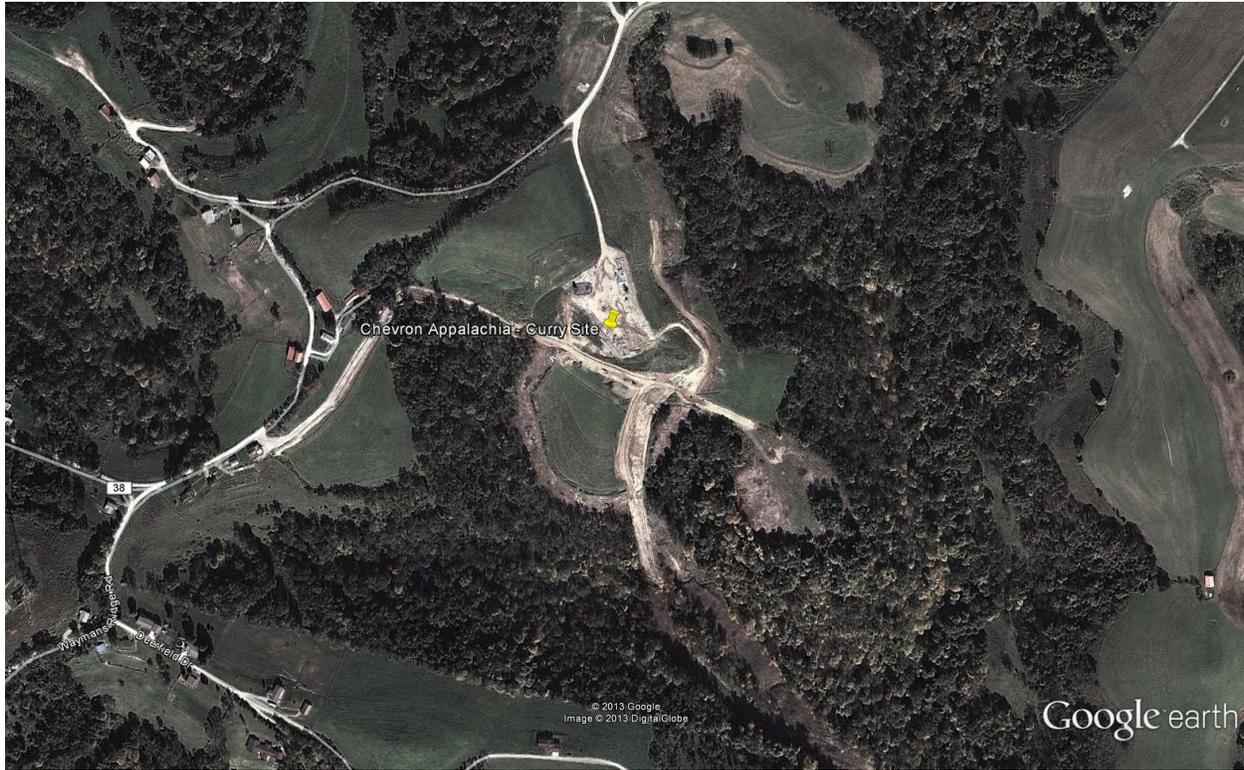
SITE INSPECTION

A site inspection was conducted by Steve Sobotka of the DAQ Enforcement Section on October 25, 2013. The site is remote and bordered by wooded areas around pad. The nearest residence sits above grade to the well pad probably (15-20 feet) but is approximately 300 feet from the edge of well pad. The well pad is approximately 0.2 miles from main road (Wayman's Ridge Road). Mr. Sobotka stated that the site is appropriate for the facility.

Latitude: 39.909806
Longitude: -80.666206

Directions to the proposed facility are as follows:

From Moundsville: Travel on US-250 S for approximately 6 miles. Take a left onto Waymans Ridge Road. The entrance to the site road is on the left, 1.75 miles ahead.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the combustion emissions from one (1) line heater (BAP-0110), three (3) storage tanks (ABJ-0011, ABJ-0012, ABJ-0014), one (1) vapor destruction device (ZZZ-0060), one (1) liquids loading rack (LR-1), and fugitive emissions.

The following table indicates which methodology was used in the emissions determination:

Emission Unit ID#	Process Equipment	Calculation Methodology
BAP-0110	1.0 MMBTU/hr Line Heater	Manufacturer's Data, EPA AP-42 Emission Factors
ABJ-0011	400 bbl (16,800 gal) Produced Water Storage Tank	Promax Process Simulation
ABJ-0012	400 bbl (16,800 gal) Condensate Storage Tank	Promax Process Simulation
ABJ-0014	400 bbl (16,800 gal) Blowdown Storage Tank	Promax Process Simulation
ZZZ-0060	4 MMBTU/hr Vapor Destruction Device	EPA AP-42 Emission Factors, Mass Balance
LR-1	Liquids Loading Rack (5,040 gal/day)	Promax Process Simulation

Fugitive emissions for the facility are based on calculation methodologies presented in 40CFR98 Subpart W. 40CFR98 Subpart W is the greenhouse gas reporting tool for the natural gas industry.

The following table indicates the control device efficiencies that are required for this facility:

Emission Unit	Pollutant	Control Device	Control Efficiency
ABJ-0011, ABJ-0012, ABJ-0014 Storage Tanks	Volatile Organic Compounds	Vapor Destruction Device	98 %
	Total HAPs		98 %

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

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	0.43
Carbon Monoxide	0.38
Volatile Organic Compounds	7.34
Particulate Matter-10/2.5	0.03
Sulfur Dioxide	<0.01
Formaldehyde	<0.01
Total HAPs	0.17
Carbon Dioxide Equivalent	569

Maximum detailed controlled point source emissions were calculated by Chevron and checked for accuracy by the writer and are summarized in the table on the next page.

Chevron Appalachia, LLC – Curry Natural Gas Production Site (R13-3137)

Emission Point ID#	Source	NO _x		CO		VOC		PM-10/2.5		SO ₂		Formaldehyde		Total HAPs		CO ₂ e	
		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year
BAP-0110	Line Heater	0.10	0.43	0.08	0.36	<0.01	0.02	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	118	518
ABJ-0011	Produced Water Storage Tank	-	-	-	-	0.01	0.06	-	-	-	-	-	-	0.02	0.08	NA	NA
ABJ-0012	Condensate Storage Tank	-	-	-	-	1.37	5.99	-	-	-	-	-	-	0.02	0.09	NA	NA
ABJ-0014	Blowdown Storage Tank	-	-	-	-	<0.01	<0.01	-	-	-	-	-	-	<0.01	<0.01	NA	NA
ZZZ-0060	Vapor Destruction Unit	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	10	46
LR-1	Liquids Loading Rack	-	-	-	-	0.47	1.2	-	-	-	-	-	-	<0.01	<0.01	7	0
FUG	Fugitive Emissions	-	-	-	-	0.02	0.07	-	-	-	-	-	-	<0.01	<0.01	1	5
Total	Total Facility PTE	0.10	0.43	0.08	0.38	1.87	7.34	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.17	137	569

REGULATORY APPLICABILITY

The following rules apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the proposed fuel burning unit (BAP-0110) is below 10 MMBTU/hr. Therefore, this unit is exempt from the aforementioned sections of 45CSR2. However, Chevron would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

The purpose of this rule is to prevent and control air pollution from combustion of refuse.

Chevron has one (1) enclosed combustion device at the Curry site. The enclosed combustion device is subject to section 4, emission standards for incinerators. The enclosed combustion device has negligible particulate matter emissions. Therefore, the facility's enclosed combustion device should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the enclosed combustion device and the hours of operation. The facility will also monitor the flame of the enclosed combustion device and record any malfunctions that may cause no flame to be present during operation.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the proposed fuel burning unit (BAP-0110) is below 10 MMBTU/hr. Therefore, this unit is exempt from the aforementioned sections of 45CSR10.

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)

45CSR13 applies to this source due to the fact that Chevron is defined as a “stationary source” under 45CSR13 Section 2.24.a, which states that an owner or operator is subject to any substantive requirement of an emission control rule promulgated by the Secretary. Chevron’s enclosed combustion device is subject to 45CSR6. Chevron has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (construction).

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source and not subject to 45CSR30. Chevron is required to keep their Certificate to Operate current.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 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 following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart:

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

The gas wells that currently exist at the Curry Site were drilled principally for the production of natural gas and were done so after August 23, 2011. Therefore, these wells would be considered affected facilities under this subpart. The compliance date for these hydraulically fractured wells is October 15, 2012. Chevron is required under §60.5410 to submit an initial notification, initial annual report, maintain a log of records for each well completion, and maintain records of location and method of compliance. §60.5420 requires Chevron demonstrate continuous compliance by submitting reports and maintaining records for each completion operation.

- b. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the Curry Site. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- c. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no reciprocating compressors at the Curry Site. Therefore, all requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would not apply.

d. Pneumatic Controllers

- 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 which commenced construction after August 23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.
- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

There are no continuous bleed gas-driven pneumatic controllers with bleed rates greater than 6 standard cubic feet per hour (scfh) at the Curry Site. The pneumatic controllers are either intermittent bleed or continuous low bleed devices with a bleed rate of less than 6 scfh. Therefore, there are no applicable requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO that would apply.

- 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.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.
- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the Curry Site are controlled by an enclosed combustion device and emit less than 6 tpy of VOC. Therefore, Chevron is not required by this section to further reduce VOC emissions by 95%.

- f. The group of all equipment, except compressors, within a process unit is an affected facility.
- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
 - Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.
 - The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The Curry Site is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.
- Each sweetening unit that processes natural gas is an affected facility; and
 - Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.
 - Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.
 - Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the Curry Site. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

The following rules do not apply to the facility:

40CFR60 Subpart 60.18 (General Control Device and Work Practice Requirements)

40CFR60.18 refers to flares but makes no mention of vapor combustors, which are essentially enclosed combustion devices. Therefore, Chevron is not subject to this standard.

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The tanks that Chevron has proposed to install are 63.60 cubic meters each. Therefore, Chevron would not be subject to this rule.

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or Before August 23, 2011. The Curry Site was constructed after August 23, 2011 and is not a natural gas processing plant, therefore, Chevron would not be subject to this rule.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

On September 30, 2013, EPA approved a redesignation request and State Implementation Plan (SIP) revision submitted by the State of West Virginia. The West Virginia Department of Environmental Protection (WVDEP) requested that the West Virginia portion of the Wheeling, WV–OH fine particulate matter (PM_{2.5}) nonattainment area (“Wheeling Area” or “Area”) be redesignated as attainment for the 1997 annual PM_{2.5} national ambient air quality standard (NAAQS).

The Curry Natural Gas Production Site is located in Marshall County, which is located in this metropolitan statistical area and is an attainment county for all pollutants. Therefore the NPP is not subject to 45CSR19.

As shown in the table below, Chevron is not subject to 45CSR14 or 45CSR19 review.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Curry PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	0.38	No
Nitrogen Oxides	250	NA	0.43	No
Sulfur Dioxide	250	NA	<0.01	No
Particulate Matter 2.5	250	NA	0.03	No
Ozone (VOC)	250	NA	7.34	No
Greenhouse Gas (CO ₂ e)	100,000	NA	569	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. However, due to the concentrations emitted, detailed toxicological information is not included in this evaluation.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as seen in the table listed in the Regulatory Discussion Section.

SOURCE AGGREGATION

“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 and adjacent properties, and are under the control of the same person. The Curry Site is located in Marshall County and will be operated by Chevron.

1. The Curry Site will operate under SIC code 1311 (Crude Petroleum and Natural Gas Extraction). There are surrounding wells and compressor stations operated by Chevron that share the same two-digit major SIC code of 13 for oil and gas exploration and production. Therefore, the Curry Site does share the same SIC code as the wells and surrounding compressor stations.
2. “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 closest Chevron property to the Curry site is approximately 0.6 mile away. Operations separated by these distances do not meet the common sense notion of a plant. However, there is Williams Ohio Valley Midstream (OVM) equipment present at the Curry site.

3. Chevron is the sole operator of the Curry Site. The production wells at the Curry site send natural gas and condensate/produced water to other entities. The condensate/produced water may be stored in storage tanks and trucked off-site for processing, or may be pumped off-site by pipeline. The condensate/produced water is gathered and processed by either Williams OVM or Ergon which currently contracts with sites that are not pipeline equipped. Williams and Ergon process condensate/produced water at these sites regardless of the Chevron well sites. Chevron has no operational control over any equipment ownership stake in any processing equipment owned or operated by any natural gas processor downstream of the Curry site. All employees at the Curry site are under the exclusive direction of Chevron and have no reporting authority to any other entity. In addition, no work forces are shared between the three (3) companies. Chevron owns and operates a production system, and Williams OVM and Ergon own and operate gathering and processing systems for gas and condensate. Companies like Williams OVM and Ergon are not producers, and they independently operate whatever equipment they need to achieve their business goals. Chevron is and will be responsible for any decisions to produce or shut-in wellhead facilities and has no control over the equipment installed, owned, and operated by Williams OVM or Ergon. Therefore, these facilities are not under common control.

The Curry site does share the same industrial grouping with other nearby facilities. However, the facilities in question are not under common control. Therefore, the emissions from these two (2) facilities should not be aggregated in determining major source or PSD status.

MONITORING OF OPERATIONS

Chevron will be required to perform the following monitoring associated with this permit application:

1. Monitor and record quantity of natural gas consumed for all combustion sources.
2. Monitor the presence of the vapor destruction unit pilot flame with a thermocouple or equivalent.
3. Monitor opacity from all fuel burning units.
4. Monitor the tanks to ensure that all vapors are sent to vapor destruction unit.

Chevron will be required to perform the following recordkeeping associated with this modification application:

1. Maintain records of the amount of natural gas consumed in each combustion source.
2. 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
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain records of the visible emission opacity tests conducted per the permit.
5. Maintain a record of all PTE HAP calculations for the entire facility.
6. The records shall be maintained on site or in a readily available off-site location maintained by Chevron for a period of five (5) years.
7. Monitor the tanks to ensure that the tanks vapors will be sent to vapor destruction unit.
8. Monitor the storage tanks and liquids loading rack throughput.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Chevron's Curry Site meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Marshall County location should be granted a 45CSR13 construction permit for this proposed permitting action.

Jerry Williams, P.E.
Engineer

Date