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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3150A
Plant ID No.:	017-00027
Applicant:	EQT Gathering, LLC
Facility Name:	Saturn Station
Location:	Central Station, Doddridge County
NAICS Code:	211111
Application Type:	Modification
Received Date:	December 11, 2015
Engineer Assigned:	David Keatley
Fee Amount:	$3,500.00
Date Fees Received:	January 6, 2016
Complete Date:	March 27, 2017
Due Date:	June 25, 2017
Applicant Ad Date:	January 12, 2016
Newspaper:	*The Herald Record*
UTM's:	Easting: 515.529 km Northing: 4349.753 km Zone: 17
Description:	Permit R13-3150A will supersede and replace permit R13-3150. The permittee proposes increase the throughput of natural gas through dehydration units RSV-2 and RSV-3 and increase the waste gas to thermal oxidizer TO-1, TO-2, and TO-3, and permit TO-4 as a non-emergency unit. The permittee also proposes installing and operating one (1) 4,000-gallon methanol tank. The permittee proposes removing: two (2) 1.54-mmBtu/hr stabilizer heaters, one (1) 250-gallon used water tank, one (1) 2,000-gallon lube oil tank, one (1) 2,000-gallon cylinder oil tank, and one (1) 4,200-gallon used oil tank.

PROCESS DESCRIPTION

Natural gas enters the compressor station via pipeline. The natural gas goes through two (2) sets of two (2) slug catchers where pipeline liquids are sent to two (2) inlet separators. The liquid from the separators is sent to four (4) 8,820-gallon condensate tanks (T10, T12, T16, and T17). Vapors from the condensate tanks will be controlled by one (1) 41.00-mmBtu/hr thermal oxidizer TO-4. The facility has three (3) 30,000-gallon pressurized tanks to accept condensate,

but are currently not used and the liquid exits the facility via pipeline.

The gas from the slug catchers then enters compression and enters the coalescing filter that removes oil and free liquids. The gas is compressed to raise the pressure of the natural gas by one of seven (7) compressors. The compressors are powered by five (5) 2,370-bhp Caterpillar G3608 engines and two (2) 4,735-bhp Caterpillar G3616 engines. After compression the natural has its water content reduced by triethlyene glycol (TEG) dehydration units. The natural gas flows countercurrent through one of the respective glycol contact towers (65 mmscfd, RSV-1; 130 mmscfd, RSV-2; and 130 mmscfd, RSV-3) where TEG circulates and absorbs the water out of the natural gas stream. The rich TEG from the tower goes to a flash tank to allow volatile organic to vaporize. The liquid from the flash tanks flow to a regenerator where water is boiled out of the TEG. The regenerators are heated by a respective reboiler (1.54 mmBtu/hr, RBV-1; 1.54-mmBtu/hr, RBV-2; and 2.31-mmBtu/hr, RBV-3). Each dehydration unit is controlled (both still vent and flash tank) by a respective 3.62 mmBtu/hr thermal oxidizer TO-1, TO-2, and TO-3. The gas from the contact towers is then heated by three (3) 0.38 mmBtu/hr fuel gas heaters. The gas stream is regulated and the measured via an ultrasonic meter and exits the facility via transmission pipeline. The five (5) 200-KW Capstone C200 microturbines which provide electrical power for the facility. The facility also has various tanks to support the operation of this facility.

SITE INSPECTION

A site inspection was conducted by Doug Hammell, from DAQ's Enforcement Section on April 8, 2015. The facility was in compliance at the time of the site inspection.

Directions as given in the permit application are as follows:

Take US Route 50 west from Clarksburg. Turn right onto CR 11 and travel approximately 2 miles. Entrance to the facility is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Table 1: Calculation Methodology for Modified Emission Units

Emission Point ID#	Process Equipment	Calculation Methodology
RSV-2	130 mmscfd TEG Dehydrator Flash Tank (At least 50% of Flash Tank Vapors Will be Used in Reboiler as Fuel)	GRI-GLYCalc 4.0
RSV-3	130 mmscfd TEG Dehydrator Still Vent	GRI-GlyCalc 4.0
TO-4	41 mmBtu/hr Flare (Controlling Four Condensate Tanks)	E&P Tanks
T27	4,000 gallon Methanol Tank	TANKS 4.0.9d

Table 2: New/Modified Maximum Controlled PTE

Emission Point	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
TO-2	Thermal Oxidizer 3.62 mmBtu/hr (Controlling RSV-2)	Nitrogen Oxides	0.30	1.30
		Carbon Monoxide	0.25	1.09
		Sulfur Dioxide	<0.01	0.01
		Total Particulate Matter	0.02	0.10
		Volatile Organic Compounds	2.13	9.32
		Benzene	0.07	0.31
		Toluene	0.17	0.72
		Xylenes	0.21	0.92
		n-Hexane	0.06	0.26
		CO_2e	424	1,855
TO-3	Thermal Oxidizer 3.62 mmBtu/hr (Controlling RSV-3)	Nitrogen Oxides	0.30	1.30
		Carbon Monoxide	0.25	1.09
		Sulfur Dioxide	<0.01	0.01
		Total Particulate Matter	0.02	0.10
		Volatile Organic Compounds	2.13	9.32
		Benzene	0.07	0.31
		Toluene	0.17	0.72
		Xylenes	0.21	0.92
		n-Hexane	0.06	0.26
		CO_2e	424	1,855
TO-4	Thermal Oxidizer 41.0 mmBtu/hr (Controlling Produced Fluids Tanks T10, T12, T16, and T17)	Nitrogen Oxides	3.37	14.75
		Carbon Monoxide	2.83	12.39
		Sulfur Dioxide	0.02	0.09
		Total Particulate Matter	0.26	1.12
		Volatile Organic Compounds	3.71	16.25
		Benzene	0.01	0.04
		Toluene	0.01	0.05
		Xylenes	<0.01	0.02
		CO_2e	4,810	21,069

Table 3: Facility Wide PTE

Pollutant	Annual Emissions (tons/year)
Nitrogen Oxides	125.67
Carbon Monoxide	62.08
Volatile Organic Compounds	138.54
Particulate Matter-10	8.94
Sulfur Dioxide	0.71
Formaldehyde	11.86
Acetaldehyde	5.87
Acrolein	3.61
Benzene	1.11
Methanol	1.85
Ethylbenzene	0.11
n-Hexane	2.05
Toluene	2.25
Xylenes	2.70
Total HAPs	32.69
Carbon Dioxide Equivalent	154,601

REGULATORY APPLICABILITY

The following rules and regulations were reviewed due to this modification.

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

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 activities involving incineration of refuse.

The facility has (2) two existing enclosed combustor (TO-1, TO-2) at the site and are proposing the installation of two (2) new enclosed combustors (TO-3, TO-4). The facility's enclosed combustors are subject to the emission standards for particulate matter and opacity requirements set forth in section 4. Allowable hourly particulate matter emissions from the vapor combustors are calculated using the following formula (Section 4.1).

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

Table 18: Allowable Particulate Emissions from TO-1, TO-2, TO-3 and TO-4

Emission Unit ID	Maximum Fuel Capacity (Waste Gas & Natural Gas) (scf/hr)	Feed to Incinerator (ton/hr)	Allowable Hourly PM Emissions (lb/hr)
TO-1	4,022	0.11	0.62
TO-2	9,210	0.26	1.42
TO-3	2,200	0.26	1.42
TO-4	24,900	0.70	3.8

Note: Natural Gas Density based on 0.056 lb/ft^3

Table 19: Proposed Particulate Emissions from TO-1, TO-2, TO-3 and TO-4

Emission Unit ID	Particulate Matter Emissions (lb/hr)
TO-1	0.02
TO-2	0.02
TO-3	0.02

TO-4	0.26

The facility will demonstrate compliance with this rule by monitoring the amount of waste gas combusted in the thermal oxidizers and the conducting monthly Method 22 visual emission checks of the thermal oxidizers.

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 EQT exceeds the regulatory emission threshold for criteria pollutants of 6 lb/hr and 10 ton/year for NOx and VOCs for the proposed changes. EQT paid the $1,000 application permit fee, $1,000 NSPS fee and $2,500 NESHAP fee. The facility is subject to "Notice Level A" requirements of this rule, which requires the facility to publish a Class I legal advertisement. The applicant published a Class I legal advertisement in *The Herald Record* (Doddridge County Publication) on October 8, 2013. The agency will publish an additional Class I legal advertisement in *The Herald Record* (Doddridge County Publication) to notify the intent to approve the modification permit.

45CSR16 (Standard of Performance for New Stationary Sources)

This rule establishes and adopts standards of performance for new stationary sources promulgated by the U.S. E.P.A pursuant to section 111(b) of the federal Clean Air Act, as amended.

The facility is subject to 40 CFR 60 Subpart JJJJ and Subpart OOOO. See these sections for requirements.

45CSR30 (Requirements for Operating Permits)

This rule provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. All fees collected pursuant to this rule shall be expended solely to cover all reasonable direct and indirect costs required to administer the Title V operating permit program and accounted for in accordance with this rule.

The facility is defined as a major stationary source per section 2.26. The facility is a major source because they have the potential to emit NOx and VOCs greater than 100 tons per year (tpy). In addition, the facility is a major source because they have the potential to emit formaldehyde greater than 10 tpy and total hazardous air pollutants greater than 25 tpy. The facility will be required to apply for an operating permit per the regulation and pay the associated fees per this regulation.

45CSR34 (Emission Standards for Hazardous Air Pollutants)

This rule establishes and adopts a program of national emission standards for hazardous air pollutants and other regulatory requirements promulgated by the U.S. EPA pursuant to 40 CFR Part 61, 63 and section 112 of the federal Clean Air Act, as amended.

The facility is subject to 40 CFR 63 Subpart ZZZZ and Subpart HH. See these sections for applicable requirements.

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

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

Table 20: Proposed Engine Specifications

Emission Unit ID	**Emission Unit Description (Make, Model, Serial No.)**	**Year Installed**	**Design Capacity**
CE007	Caterpillar 3616 Compressor Engine	2014	4,735 hp / 1,000 rpm
CE008	Caterpillar 3616 Compressor Engine	2014	4,735 hp / 1,000 rpm

The proposed engines at the station will be 4-stroke, lean burn spark ignition RICE manufactured after July 1, 2007 (§60.4230(a)(4)(i)). The engines will be equipped with an oxidation catalyst which is guaranteed by the manufacturer to achieve a 93% reduction in CO, 83% reduction in formaldehyde emissions and a 50% reduction in VOC emissions. The engines must meet the following emissions limits (§60.4233(e)).

Table 21: Emission Standards per 40 CFR 60 Subpart JJJJ for Proposed Engines

Engine Type and Fuel	**Maximum engine power**	**Manufacture Date**	**Emission Standards g/HP-hr**		
			NOx	CO	VOC
Non-Emergency SI Natural Gas	HP ≥ 500 HP	7/1/2010 and After	1.0	2.0	0.7
CE007 & CE008	4,735 HP	2013	0.5	0.19	0.41

The existing engines at the station are 4-stroke, lean burn spark ignition RICE and manufactured after July 1, 2007. The engines are equipped with oxidation catalyst. The engines must meet the following emissions limits (§60.4233(e)).

Table 22: Emission Standards per 40 CFR 60 Subpart JJJJ for Existing Engines

Engine Type and Fuel	Maximum engine power	Manufacture Date	Emission Standards g/HP-hr		
			NOx	CO	VOC
Non-Emergency SI Natural Gas	HP ≥ 500 HP	From 7/1/2010 until before 7/1/10	2.0	4.0	1.0
Non-Emergency SI Natural Gas	HP ≥ 500 HP	7/1/10 and After	1.0	2.0	0.7
CE001 and CE002	2,370 HP	2009	0.50	0.19	0.31

CE003, CE004, and CE006	2,370 HP	2012	0.50	0.19	0.31

The engines will demonstrate compliance with the emission standards set forth in this subpart with the installed catalyst (which will be set as a federally enforceable requirement in the permit).

EQT will demonstrate compliance with this subpart for the non-certified engines in accordance with §60.4243(b)(2)(ii), which requires the facility to maintain and operate the engines in a manner consistent with good air pollution control practices for minimizing emissions. Additionally, EQT will be required to conduct an initial performance test and subsequent compliance testing every 8,760 hours or three years, whichever comes first to demonstrate compliance with the emissions standards (§60.4244).

Records of all notification submitted to comply with this subpart, maintenance conducted on the engines, and performance testing will be maintained in accordance with §60.4245(a). Initial notification of construction commencement will be submitted as required in §60.7(a)(1) and §60.4245(c), and performance testing results will be reported as required in §60.4245(d).

See Permit, R13-3150A, for complete list of requirements.

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 (SO_2) 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.

There are no gas wells at this facility. Therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOO would not apply.

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 Saturn Compression Facility. 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 reciprocating internal combustion engines located at the Saturn Compression Facility that were constructed after August 23, 2011. Therefore, the requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would apply. The facility would be required to perform the following:

- Replace the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months.
- Demonstrate initial compliance by continuously monitoring the number of hours of operation or track the number of months since the last rod packing replacement.
- Submit the appropriate start up notifications.
- Submit the initial annual report for the reciprocating compressors.
- Maintain records of hours of operation since last rod packing replacement, records of the date and time of each rod packing replacement, and records of deviations in cases where the reciprocating compressor was not operated in compliance.

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.

EQT's pneumatic controllers at this facility are air driven and are not subject to this section of this regulation.

- Each pneumatic controller located between the wellhead and a natural gas processing plant must have a bleed rate less than or equal to 6 standard cubic feet per hour (scfh).

- Each pneumatic controller must be tagged with the month and year of installation, reconstruction, or modification, and identification information that allows traceability to the records for that controller.

- Submit the appropriate start up notifications.

- Submit the applicable annual reports for pneumatic controllers.

- Maintain records of the date, location and manufacturer specifications for each pneumatic controller, records of the demonstration that the used of pneumatic controllers with a natural gas bleed rate greater than 6 scfh are required and the reasons why, records of the manufacturer's specifications indicating that the controller is designed such that the natural gas bleed rate is less than or equal to 6 scfh, records of deviations in cases where the pneumatic controllers was not operated in compliance.

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 proposed produced water storage vessels at the site commenced construction after the applicability date and are required to calculate the VOC emissions from the storage vessels. The pipeline liquid tanks are not subject to the requirements of this section of this regulation because they have the potential to emit less than 6 tpy of VOC from each tank.

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 Saturn Compression Facility 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 (H_2S) 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 Saturn Compression Facility. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

40CFR63 Subpart HH (National Emissions Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities)

This subpart applies to the owners and operators of the emission points, specified in paragraph (b) of this section that are located at oil and natural gas production facilities that meet the specified criteria in paragraphs (a)(1) and either (a)(2) or (a)(3) of this section. The Saturn compressor station is a facility that processes upgrades and stores hydrocarbon liquids (§63.760(a)(2)).

Facilities that are major or area sources of hazardous air pollutants (HAP) as defined in §63.761 if this subpart. Major source, as used in this subpart, shall have the same meaning as in §63.2, except that, for facilities that are production field facilities, only HAP emissions from glycol dehydration units and storage vessels shall be aggregated for a major source determination. The Saturn compressor station is a field production facility that processes gas prior to the point of custody transfer. When taking into consideration HAP emissions only from dehydration units and storage tanks, the site is an area source of HAP emissions for the purpose of this subpart. Therefore, the facility would be considered an area source of HAP emissions (total hazardous air pollutants less than 25 tpy) (The total aggregate for storage tanks and dehydration units is 6.67 tpy).

At area sources, the affected source includes each triethylene glycol (TEG) dehydration unit located at a facility that meets the criteria specified in paragraph (a) of this section (§63.760(b)(2)). Controlled emissions from the (TEG) dehydration unit are less than 1 tpy of benzene. Sources with benzene emissions less than 1.0 tpy are subject to limited requirements. The 1.0 tpy benzene limit may be evaluated after federally enforceable controls for the purpose of this exemption. EPA determined that GACT for these sources is no additional control if federally enforceable controls are in place. These sources are subject to the following requirements under this rule.

1. §63.764(e)(1)(ii) benzene concentration exemption
2. §63.772(b)(2) determination of benzene emissions
3. §63.774(d)(1)(ii) – maintenance or records to support the determination of exemption.

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

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (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 two proposed CAT 3616 compressor engines at the Saturn Compressor Station will be classified as new spark ignition engines at a major source of HAP. The emission limitations for the engines are included in 40 CFR 63.6600 and Table 2a. The operating limitations are included in Table 2b and the continuous parametric monitoring system requirements included in 40 CFR 63.6625(b). The initial performance demonstration must be conducted with 180 days of startup per 40 CFR 636610(a). The initial notification requirements are included in 40 CFR 63.6645(c) and the notification on compliance status requirements are included in 40 CFR 63.6645(h). Semiannual reporting requirements are included in 40 CFR 63.6645. The recordkeeping requirements are included in 40 CFR 63.66555(a), (b) and (d).

The existing engines at the facility, per §63.6595(b)(2), stationary RICE for which construction commenced before an area source becomes a major source of HAP must be in compliance with the provisions that are applicable to RICE located at major sources within 3 years after the area source becomes a major source of HAPs.

See Permit R13-3150A for a list of requirements.

The following rules and regulations do not apply.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) ***(non-applicability)***

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

Section 2.40 defines "Major Modification" as any physical change in or change in the method of operation of a major stationary source which results in: a significant emissions increase (as defined in subsection 2.75) of any regulated NSR pollutant (as defined in subsection 2.66); and a significant net emissions increase of that pollutant from the major stationary source. Any significant emission increase (as defined at subsection 2.75) from any emissions units or net emissions increase (as defined in subsection 2.46) at a major stationary source that is significant for volatile organic compounds or NOx shall be considered significant for ozone.

Section 2.43 "Major Stationary Source" means:

Section 2.43 defines a major stationary source as any stationary source as any of the stationary sources listed in Section 2.43.a that have the potential to emit 100 tpy or more

of a regulated air pollutant as a major stationary source. The facility is a natural gas production facility and this is not listed in section 2.43.a.

Section 2.43.b states the any stationary source which emits or has the potential to emit, two hundred fifty (250) tons per year or more of any regulated NSR pollutant; or

Section 2.43.c states any physical change at a stationary source, not otherwise qualifying under subdivision 2.43.a as a major stationary source, if the change itself would constitute a major stationary source.

Section 2.43.d states a major source that is major for volatile organic compounds or NOx shall be considered major for ozone.

Section 2.75 defines a significant emissions increase for a regulated NSR pollutant, an increase in emissions that is significant for that pollutant as defined in section 2.74.

Section 2.80 of this regulation discusses methods to calculate GHGs and the definition of significant and major stationary source for GHGs.

Beginning January 2, 2011, the pollutant GHGs is subject to regulation if:

Section 2.80.d.1. The stationary source is a new major stationary source for a regulated NSR pollutant that is not GHGs, and also will emit or will have the potential to emit 75,000 tpy CO2e or more; or

The source is not a major stationary source for a regulated NSR pollutant that is not GHGs.

Section 2.8.0.d.2. The stationary source is an existing major stationary source for a regulated NSR pollutant that is not GHGs, and also will have an emissions increase of a regulated NSR pollutant, and an emission increase of 75,000 tpy CO2e or more; and,

The source is not an existing major stationary source for regulated NSR pollutant that is not GHGs and is not increase CO2e by 75,000 tpy.

Beginning July 1, 2011, in addition to the provision in subdivision 2.80.d, the pollutant GHGs shall also be subject to regulation:

Section 2.80.e.1. At a new stationary source that will emit or have the potential to emit 100,000 tpy CO2e or

The facility is an existing stationary source that is increases its emissions.

Section 2.80.e.2. At an existing stationary source that emits or has the potential to emit 100,000 tpy CO2e when such stationary source undertakes a physical change or change in the method of operation that will result in an emission increase of 75,000 tpy CO2e or more.

The facility is an existing stationary source that emits 100,000 tpy CO2e, but the proposed increase in emissions of GHG is not 75,000 tpy.

Currently, the Saturn Compressor Station is a minor source of air pollutants. The increase from the modification proposed at the Saturn Compressor Station would also define the facility as a minor source under 45CSR14 (less than 250 tpy of any regulated NSR pollutant). The facility is not proposing a modification that the change itself would constitute a major stationary source (modification that results in any regulated air pollutant greater than 250 tpy or 75,000 tpy of GHGs).

Table 23: PSD Applicability Table

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy) Doddridge Co. is Attainment**	**Saturn Expansion Project Increase (tpy)**	**45CSR14 or 45CSR19 Review Required?**
Carbon Dioxide Equivalent	100,000	NA	18,114	No
Carbon Monoxide	250	NA	11.20	No
Nitrogen Oxides	250	NA	13.33	No
Sulfur Dioxide	250	NA	0.08	No
Ozone (VOC)	250	NA	-2.33	No
Particulate Matter (TSP, PM10, PM2.5)	250	NA	1.01	No

40CFR60 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) ***(non-applicability)***

The affected facility to which this subpart applies is 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.

This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 (19,812.9 gallons) but less than 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

T08, T09 and T11 are above 19,812.9 gallons. However, the tanks have an operating pressure of 50 to 200 psig depending on ambient temperature and exposure to direct sunlight. The maximum allowable working pressure of these vessels is 250 psig. This subpart does not apply to pressure vessels designed to operate in excess of 204.9 kPa (29.61 psi) and without emissions to the atmosphere (§60.110(d)(2)). Since there are no emissions vented to a control device from this tank or to the atmosphere, the tanks are not subject to this subpart.

40CFR60 Subpart GG (Standards of Performance for Stationary Gas Turbines) ***(non-applicability)***

The provisions of this subpart are applicable to the following affected facilities: All stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on lower heating value of the fuel fired.

The facility's proposed microturbines are less than 10 MMBtu/hr and therefore are not subject to the requirements of this subpart (§60.330(a)). 200kW = 682,248.40 Btu/hr = 0.68 MMBtu/hr

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984 and on or Before August 23, 2011) ***(non-applicability)***

The provisions of this subpart apply to affected facility in onshore natural gas processing plants. Natural gas processing plant is defined any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products (§60.631). The Saturn Compressor Station is not a natural gas processing plant and therefore not subject to the requirements of this subpart.

40CFR60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engine) ***(non-applicability)***

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this subpart.

The facility's existing and proposed engines onsite are spark ignited internal combustion RICE. Therefore, the requirements of this subpart do not apply.

40CFR60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) ***(non-applicability)***

This subpart establishes emission standards and compliance schedules for the control of emissions from stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005.

This subpart applies to owners or operators of stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the higher heating value of the fuel (§60.4305(a)).

The microturbines are less than 10 MMBtu/hr and therefore, not subject to the requirements of this rule. 200kW = 682,248.40 Btu/hr = 0.68 MMBtu/hr

40CFR63 Subpart YYYY (National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines) ***(non-applicability)***

Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at

major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

Section §63.6090(b)(3), Subcategories with limited requirements, states that a new stationary combustion turbine with a rated peak power output of less than 1.0 megawatt (MW) at International Organization for Standardization (ISO) standard day conditions, which is located at a major source, does not have to meet the requirements of this subpart and of subpart A of this part. This determination applies to the capacities of individual combustion turbines, whether or not an aggregated group of combustion turbines has a common add-on air pollution control device. No initial notification is necessary, even if the unit appears to be subject to other requirements for initial notification.

The mircoturbines are each rated for 200 KW (0.2 MW). Therefore the facility is not subject to the requirements of this subpart.

40CFR63 Subpart DDDDD (National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters) ***(non-applicability)***

This subpart establishes national emission limitations and work practices standards for hazardous air pollutants (HAP) emitted for industrial, commercial, and institutional boilers and process heaters located at major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards.

This facility is considered a natural gas production facility because this facility is prior to the custody transfer point (before the liquid extraction plant). This facility is not a major source of HAPs because the emissions from the glycol dehydration units and storage vessels are less than the 25 tons/year threshold (6.67 tons/year).

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will various non-criteria regulated pollutants emitted from the combustion and processing of natural gas. Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NOx), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM10), Particulate Matter less than 2.5 microns (PM2.5), 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 in the Regulatory Applicability section.

The majority of the non-criteria pollutants emitted by EQT's Saturn Compressor Station are defined as HAPs. HAPs are 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. 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 http://www.epa.gov/iris/. A list of each individual HAP emitted from the facility may be found in the application, R13-3150A.

MONITORING OF OPERATIONS

- Monitor all catalytic oxidizer control devices for the reciprocating engines, See Section 5.2. of Permit R13-3150A.
- Monitor the amount of natural gas consumed in each reciprocating engine.
- Monitor the hours of operation of each reciprocating engine.
- Perform all monitoring requirements that apply to 40 CFR 60 Subpart JJJJ, See Section 6.6. of Permit R13-3150A.
- Perform all monitoring requirements that apply to 40 CFR 63 Subpart ZZZZ, See Section 7.6. of Permit R13-3150A.
- Perform all monitoring requirements that apply to 40 CFR 60 Subpart OOOO, See Section 8.4. of Permit R13-3150A.
- Monitor the amount of natural gas consumed in each microturbine.
- Monitor the hours of operation of each microturbine.
- Monitor the throughput of wet natural gas fed to the dehydration system.
- Monitor the throughput of gas to the enclosed flares (TO-1, TO-2, TO-3).
- Monitor the presence of a flame in the enclosed flares (TO-1, TO-2, TO-3) using a thermocouple or any other equivalent device to detect the presence of a flame.
- Monitor the parameters for the glycol dehydration units (RSV-1, RSV-2, RSV-3), See

Section 10.2.4. of Permit R13-3150A.

- Monitor the combustion temperature of the enclosed flares (TO-1, TO-2, TO-3)
- Monitor the opacity from the enclosed flares (TO-1, TO-2, TO-3)
- Monitor the opacity, at the request of the Director, from the process heaters.
- Monitor the throughput to the Produced Water Tank on a monthly basis.
- Monitor the throughput to the enclosed flare (TO-4).
- Monitor the combustion temperature of the enclosed flare (TO-4)
- Monitor the opacity from the enclosed flare (TO-4)

CHANGES TO PERMIT R13-3150

Major changes to the previous permit are described and section renumbering were done as appropriate. Section 6.1.2. was removed because this facility is not an area source. Part of section 6.2.1. was removed because the engines are not certified. Section 6.2.1., now includes emission standards for engines CE001 and CE002. Sections 6.3.1., 6.3.3., and 6.3.4. were removed because they don't apply to this facilities engines. Section 6.4.2. was removed because none of this facilities engines combust propane. Section 6.4.3. was removed because the engines are not controlled with NSCR catalysts. Part of Table 7.3.2.(b) was removed because it did not apply to the engines at this facility. Part of Table 7.5.2. was removed because it did not apply to the engines at this facility. Sections 7.5.3. and 7.5.4. were removed because it does not apply to the engines at this facility. Part of table 7.5.6. was removed because it does not apply to the engines at this facility. The engines at this facility use oxidation catalysts and section 7.5.11. has been removed. Section 7.5.12. and section 7.5.13 were removed because these sections were removed from the regulation. Section 7.6.1. was removed because the engines at this facility did not to elect to install CEMS. Section 7.6.3., the temperature measurement device calibration was changed to annually because CFR 63 Subpart ZZZZ was changed. Part of section 7.8.7. was removed because it did not apply to the engines at this facility. Section 7.10.4. was removed because the engines at this facility use CMS to comply with emission or operating limitations. Part of section 7.12.1 did not apply to the engines at this facility and was removed. Section 8.3.2. was removed because this was removed from the regulation. Section 12 and section 13 were removed because this facility is not subject to those regulations.

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 Regulatory Discussion Section.

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 EQM should be granted a Modification permit registration for Saturn Station.

David Keatley
Permit Writer – NSR Permitting

May 12, 2017

Date