west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A176
Plant ID No.:	051-00214
Applicant:	Trans Energy, Inc.
Facility Name:	Goshorn Well Pad
Location:	Cameron, Marshall County
NAICS Code:	211111
Application Type:	Class II General Permit
Received Date:	September 16, 2015
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$1,500.00
Date Received:	September 17, 2015
Complete Date:	February 8, 2016
Due Date:	December 5, 2015
Applicant Ad Date:	September 24, 2015
Newspaper:	*Moundsville Daily Echo*
UTM's:	Easting: 532.912 km Northing: 4,407.381 km Zone: 17
Description:	Application for a natural gas well pad consisting of four (4) wells, four (4) gas production units, seven (7) produced water tanks, and truck loading.

DESCRIPTION OF PROCESS

Natural Gas (methane, ethane, propane, etc.) comes from four (4) high pressure wells and are piped to suction field separators and Gas Processing Units which removes most of the water entrained in the gas stream by disturbance of the gas flow inside the separators. The water and trace amounts of oil/condensate is dumped out of the separators using high pressure gas to two (2) 400 bbl tanks, four (4) 210 bbl tanks and one (1) 100 bbl tank.

Site equipment will entail four (4) well heads, four (4) GPU/Separators, two (2) 400 bbl, four (4) 210 bbl and one (1) 100 bbl tanks and truck loading.

Representative samples of water were taken from the Dewhurst pad at a sample port before the dump valve and analyzed to determine a GWR. This data was used to calculate VOC emission from water flash to the tanks. The GPU emissions were determined using AP-42 and Tanks 4.0.9 was used to estimate working and breathing losses from the tanks. Emissions from truck loading are sent to the atmosphere.

SITE INSPECTION

A site inspection was performed by Alfred Carducci of the Northern Panhandle Regional Office on September 25, 2013. "Initial drilling and fracking operations are completed. Workers were in the process of drilling out the plug near 9,000 feet below the surface. No well pad equipment has been brought to the site as of yet. The nearest residence is approximately 2,600 feet away. The drill pad is located in a secluded wooded area."

From Cameron, go west on Main Street for 0.9 miles; keep left to stay on Main Street for 0.1 miles; continue onto Grapevine Road for 1.5 miles; turn right onto Goshorn Ridge Road for 1.0 miles; continue onto Goshorn Road C/R 62 for 1.1 miles; Turn left onto access drive for 0.5 miles to the site.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions listed below were calculated by Trans Energy and reviewed for accuracy by the writer. GPU emissions were calculated using AP-42 emission factors. Storage tank and loading emissions were calculated using Gas to Water Ratio method, TANKS 4.0. and AP-42.

Emission Unit	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
1S-4S (4) 0.75 mmBtu/hr Gas Production Units (Combined)	Nitrogen Oxides	0.29	1.27
	Carbon Monoxide	0.25	1.08
	Volatile Organic Compounds	0.02	0.07
	Sulfur Dioxide	<0.01	0.01
	Particulate Matter-10	0.02	0.10
	CO_2e	353	1,546

5S-11S Condensate/P. Water Tanks (Combined)	Volatile Organic Compounds	0.51	2.25
	Total HAPs	<0.01	<0.01
12S Liquids Loading	Volatile Organic Compounds	1.20	5.24
	Total HAPs	<0.01	<0.01
Fugitives 13S	Volatile Organic Compounds	0.02	0.07
	Total HAPs	<0.01	<0.01

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

Pollutant	**Facility Wide Emissions (tons/year)**
Nitrogen Oxides	2.79
Carbon Monoxide	3.28
Volatile Organic Compounds	45.53
Particulate Matter-10/2.5	2.31
Sulfur Dioxide	0.01
Total HAPs	1.65
Carbon Dioxide Equivalent	2,952

REGULATORY APPLICABILITY

The proposed Trans Energy natural gas production facility is subject to substantive requirements in the following state and federal air quality rules and regulations: 45CSR2, and 45CSR13. Each applicable rule (and ones that have reasoned non-applicability), and Trans Energy's compliance therewith, will be discussed in detail below.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

The Gas Production Units (1S-4S) have been determined to meet the definition of a "fuel burning unit" under 45CSR2 and are, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of the unit is less than 10 mmBtu/hr, it is not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

Pursuant to 45CSR2, Section 3.1, the line heaters are subject to an opacity limit of 10%. Proper maintenance and operation of the unit (and the use of natural gas as fuel) should keep the opacity of the unit well below 10% during normal operations.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The construction of the Goshorn natural gas production facility does not have a potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY and, therefore, pursuant to §45-13-2.24, the facility is not defined as a "stationary source" under 45CSR13. Therefore, Trans Energy is not required to obtain a permit registration under 45CSR13 for the construction and operation of the natural gas production facility, however, Trans Energy is electing to register the Goshorn Facility under the G70-A General Permit.

As required under §45-13-8.3 ("Notice Level A"), Trans Energy placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on September 24, 2015 in *The Moundsville Daily Echo.*

45CSR22 Air Quality Management Fee Program

The Goshorn Facility is not subject to 45CSR30. The facility is subject to 40CFR60 Subpart OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source, therefore, the facility is not subject and will pay its annual fees through the Rule 22 program.

40 CFR 60, Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

Subpart OOOO applies to facilities that commence construction, reconstruction, or modification after August 23, 2011 (October 15, 2012 for well completions). Since the Goshorn pad will begin operation after August 23, 2011 it is subject to the requirements of Subpart OOOO. The tanks at the Goshorn facility will utilize a vapor recovery unit. Even with the VRU in place, the tanks will have the potential to emit more than 6 tpy of VOC's, therefore the tanks will be subject to the rule. The site will also include pneumatic controllers that were ordered and installed after August 23, 2011 with a bleed rate equal to or less that 6 scfd, therefore the controllers will not be subject to the applicable provisions of Subpart OOOO. The gas wells at the Goshorn pad will also be affected facilities subject to Subpart OOOO.

Non Applicability Determinations

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

Pursuant to the exemption given under §45-10-10.1, as the MDHI of the Gas Production Units (1S-4S) are less than 10 mmBtu/hr, the units are not subject to the substantive sections of 45CSR10.

45CSR14: ***Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.***

45CSR19: ***Permits for Construction and Major Modification of Major Stationary Sources which Cause or Contribute to Nonattainment.***

As shown in the following table, facility-wide potential-to-emit of the Goshorn natural gas production facility is below the levels that would define the source as "major" under 45CSR14 and, therefore, the construction evaluated herein is not subject to the provisions of 45CSR14 or 45CSR19.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Goshorn PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	1.08	No
Nitrogen Oxides	250	NA	1.27	No
Sulfur Dioxide	250	NA	0.01	No
Particulate Matter 2.5	250	NA	0.10	No
Ozone (VOC)	250	NA	7.49	No

Because the Trans Energy (Well Pad Equipment & Tanks) and Williams (TEG Dehydrator) facilities will operate under the same two digit SIC code (here group 13), the questions are whether the operations are on contiguous or adjacent property and are under common control. Although the operations are located in close proximity, there is separation of more than 700 feet in many instances, there are non-environmental-regulatory reasons explaining this proximity. In addition, Trans Energy and Williams operations are not under the control of the same person or persons under common control. They each will separately operate their own equipment, and there is no strict interdependency but rather a contractual relationship between an upstream and midstream operator (this is a common circumstance, unique in nature to the oil and gas industry).

1. Located on Contiguous or Adjacent Properties

Emissions activities must be located on contiguous or adjacent property to be considered a single source. In keeping with the fact-specific nature of the aggregation analysis, there is no exact distance that would cause two activities to be considered contiguous. Physical proximity is the main, if not only, factor for determining whether properties are contiguous or adjacent, and consideration of functional interdependence of two activities is improper in assessing this criterion. Some of the natural gas well pads for which Trans Energy seeks permits—the Goshorn site in particular, features Trans Energy equipment and Williams equipment adjacent on the same well pad. This well pad facility does NOT meet
the common sense notion of a plant. A plant constitutes that each piece of equipment is essential to the operation of each other. In the Goshorn Well Pad circumstance, the wells can produce gas, and the water separators GPUs (Gas Processing Units/Separators) can separate the entrained water from the gas stream, and the tanks are positioned to store the water separated from the wells, but each piece of equipment can work and function interdependently of each other without the encompassing the use of the adjacent Williams TEG Dehydrator. The contiguous/adjacency criterion would not be met and such equipment could not be aggregated for permitting purposes. With respect to these situations where the Trans Energy equipment and Williams equipment are located directly on the same well pad, we must consider the myriad of technical and regulatory reasons
that drive a siting determination. Moreover, it is important to recognize that, although equipment may be located on contiguous or adjacent property, that proximity should not be used as a basis for supporting a positive finding under the separate, common-control criterion (discussed below). Indeed, the co- or nearbylocation of such equipment is a function of terrain and siting requirements in West Virginia. These are selected based upon non-environmental regulatory requirements. Site selections are to minimize the number of wells, and on negotiated agreements, such as surface-use agreements, pipeline agreements, and rights-of-way agreements with surface right owners who seek to minimize the site footprint and to consolidate equipment that might otherwise have been
separately located. In summary, although spatial limitations of available drilling and production sites, terrain requirements, and a desire to minimize agreements with landowners drive the location of gathering equipment nearby wells, this in no way should be used to support aggregation of separately owned and operated equipment for permitting purposes.

2. Common Control

Even if equipment is located at a contiguous/adjacent location, if there is separate ownership and operation, and the operations are not under the control of the same person or persons under common control, the sources remain separate. This factor alone comes to the conclusion that the sources may not be aggregated in determining permitting applicability.

Although "common control" is not defined in the rules, source specific determinations and guidance have informed its meaning since EPA issued the underlying regulations in

1980. EPA has identified three alternative methods of establishing common control for purposes of source aggregation under Clean Air Act Titles I and V:
(1) Common Ownership;
(2) Operational control; and
(3) Control relationship.

As to the first method, here, Trans Energy and Williams do not have common ownership. As to the second, Trans Energy does not have decision-making authority over William's operations, nor does Williams have any such control over Trans Energy's operations, and there is no voting interest of one company in the other. With respect to the third method of analyzing "common control"—looking at the "control relationship"—this effectively captures the concept in the SEC guidance of "indirect" control. EPA has identified several factors that it considers, which include several that militate against aggregation here.

- EPA focuses on whether the facilities share common workforces, plant managers, security forces, corporate executive officers, or board of executives. They do not here.
- EPA also considers whether the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions. They do not here also.
- Another factor is whether the facilities share equipment, other property, or pollution control equipment. Here, they will not. Although the equipment at the Goshorn site may be co-located, it will not be shared. Moreover, it is important to recognize that this separately owned and operated equipment is to be located near to each other due to the space and other considerations discussed above, not for a control purpose. It was William's decision not to utilize a centralized gas gathering system, not Trans Energy's, which resulted in colocation. Thus, a common control interest is not present here as well.
- Yet another factor is whether the managing entity of one facility will be able to make decisions that affect pollution control at the other facility, and whether the facilities will share intermediates, products, byproducts, or other manufacturing equipment. Here, those factors are again not present—one will provide the service of gathering while the other produces. Trans Energy and Williams are individually responsible for compliance with air
quality control requirements and liability for any violations. Although contracts are in place for Williams to dry gas utilizing their TEG Dehydrator for Trans Energy produced gas, Williams expects, as opportunities arise, to receive gas from other producers in the future, and does Trans Energy reserve the right to have its gas gathered or processed by other facilities. Trans Energy will be responsible for any decisions to produce or shut-in
wellhead facilities and will have no control over the equipment installed, owned, and operated by Williams. Moreover, if a well is shut in, for example, Williams could use its dehydration equipment to serve other wells in the area. These characteristics are not consistent with sources under common control. It would therefore be erroneous for DAQ to conclude that, in the face of all the indications of lack of common control noted above, because Williams equipment is currently servicing only the Trans Energy

Goshorn wells, a real control relationship exists. Such a simplistic conclusion would be inappropriate in
light of the complexities of this industry and the information provided on terrain and footprint limitations. Basically, shared locations are driven primarily by footprint and other non-air quality regulatory issues. It is important to realize that a "source determination" cannot be a one direction, it applies to all emissions units in a complete two way street.
If Williams is determined to be an independent source because of its ability to handle gas from multiple customers, then Trans Energy must also be a separate source. Under the Clean Air Act, emissions units are either part of one stationary source or they are not. To conclude otherwise would require DAQ to continually determine how much of Trans Energy's emissions must be allocated to the Williams source. The above conclusion is further supported upon consideration of the terms of a standard Gas Gathering Agreement (GGA), which clearly indicates separate operations:

- The agreement is a transaction between unrelated parties.
- The GGA provides for the construction of a pipeline and ancillary equipment to gather the gas, which includes the dehydration equipment Williams needs to meet its contractual obligations. Because this equipment is part of the overall gas gathering system, and it is clear that the system overall should not be aggregated with the wells, and treating this equipment separately from the system would be inappropriate.
- Trans Energy has the right to withdraw a well from the agreement if it determines it would not be economical to use the Williams dehydrator to move its gas.
- The GGA makes it clear that the location of the gathering equipment at the well site is for the convenience of the gatherer in constructing its gathering system and not for the producer's sake, explicitly indicating that the producer can reject the gatherer's location at the well site if there is not sufficient space.
- The GGA addresses commingling of gas from other producers subject to certain quality requirements, referencing "all sources in Gatherer's system," indicating that Williams is not captive to Trans Energy in this situation and that a control relationship does not exist.

Considering those factors here, the parties negotiated an arms-length arrangement, they do not have any operational or ownership control over each other's facilities, and each remains free to contract with other parties in the future. In sum, there is no direct control and there should be no finding of indirect control between these parties.

Determination

For the above reasons, emissions from the Trans Energy production sources at the Goshorn Well pad site and from the Williams dehydration equipment (e.g., their dehydration units, and ancillary equipment) should not be aggregated for purposes of determining applicability of Clean Air Act Title I or Title V permitting programs or West Virginia's air permitting regulations. Even if the sources are at Contiguous/adjacent property, these operations are separately owned and operated and are not under the control of the same person or persons under common control.

45CSR30: Requirements for Operating Permits

Trans Energy is not subject to 45CSR30. The Goshorn Pad is subject to 40CFR60 Subparts JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source. Please see Source Aggregation Section above where emissions from the Goshorn Pad and the McIntyre Pad are listed and do not exceed 45CSR30 major source thresholds.

40 CFR 60 Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

Pursuant to §60.110b, 40 CFR 60, Subpart Kb applies to "each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984." The largest storage tanks located at the Goshorn facility are each 16,800 gallons, or 63.5 m^3. Therefore, Subpart Kb does not apply to any of the storage tanks.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the Goshorn natural gas production facility and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) standards promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. Trans Energy included the following HAPs as emitted in substantive amounts in their emissions estimate: Benzene, n-Hexane, Toluene, and Trimethylpentane The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC	No	Inadequate Data
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	No	Inadequate Data
Xylene	VOC	No	Inadequate Data
Trimethylpentane	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at www.epa.gov/iris.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions from the proposed Goshorn natural gas production facility are less than applicability thresholds that would define the proposed facility as a "major stationary source" under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature of the proposed construction, modeling was not required under 45CSR13, Section 7.

MONITORING OF OPERATIONS

The following substantive monitoring, compliance demonstration, and record-keeping requirements (MRR) shall be required:

- For the purposes of demonstrating compliance with maximum limit for the aggregate production of condensate/liquids from the wells set forth in Section 4.0 of the general permit registration, Trans Energy shall be required to monitor and record the monthly and rolling twelve month total of condensate/liquids (in gallons) produced in the wells. Monitoring and recording the monthly and rolling twelve month total of condensate/liquids (in gallons) unloaded from the storage tanks can be used to show compliance with this requirement.

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

  (1) Conduct an initial Method 22 visual emission observation on the heater treaters to determine the compliance with the visible emission provisions. Trans Energy shall be required to take a minimum of two (2) hours of visual emissions observations on the line heaters.

  (2) Conduct monthly Method 22 visible emission observations of the heater treater stack to ensure proper operation for a minimum of ten (10) minutes each month the line heaters are in operation.

  (3) In the event visible emissions are observed in excess of the limitations given under Section 7.5 of the G70-A general permit, Trans Energy shall be required to take immediate corrective action.

- Trans Energy shall be required to maintain records of all visual emission observations pursuant to the monitoring required under Section 7.2 of the G70-A general permit including any corrective action taken.

- Trans Energy shall be required to report any deviation(s) from the allowable visible emission requirement for any emission source discovered during observations using 40CFR Part 60, Appendix A, Method 9 or 22 to the Director of the Division of Air Quality as soon as practicable, but in any case within ten (10) calendar days of the occurrence and shall include at least the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

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

RECOMMENDATION TO DIRECTOR

Information supplied in the registration application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that general permit registration G70-A176 for the construction of a natural gas production facility near Cameron, Marshall County, be granted to Trans Energy, Inc.

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

2/24/16
DATE