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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3239
Plant ID No.:	017-00149
Applicant:	Rover Pipeline LLC
Facility Name:	Sherwood Compressor Station
Location:	Near Smithburg, Doddridge County
NAICS Code:	486210
Application Type:	Construction
Received Date:	March 2, 2015
Engineer Assigned:	Joe Kessler
Fee Amount:	$2,000
Date Received:	March 9, 2015
Complete Date:	April 1, 2015
Due Date:	June 30, 2015
Applicant's Ad Date:	March 13, 2015
Newspaper:	*The Doddridge Independent*
UTM's:	Easting: 526.395 km Northing: 4,346.439 km Zone: 17
Latitude/Longitude:	39.26689/-80.69403
Description:	Construction of a natural gas compressor station.

DESCRIPTION OF PROCESS

Rover Pipeline LLC (Rover) is proposing to construct a natural gas compressor station to be located approximately 2.66 miles southeast of Smithburg, Doddridge County, WV. The proposed Sherwood Compressor Station will consist of three (3) Caterpillar G3616 4-Stroke Lean Burn (4SLB) 4,735 horsepower (hp) compressor engines, one (1) 957 hp Caterpillar C15 ACERT Diesel Emergency Generator (500 kW_e), one (1) 0.51 mmBtu/hr CIG Flameless Gas Infrared Heater, and seven (7) storage tanks.

Natural gas produced in area wells (operated by different companies) will enter into the facility and, after passing through an inlet separator to removed any liquids (slop) accumulated in the pipelines, will be compressed by the engines. All of the slop removed in the inlet separator is

routed to 12,600 gallon Slop Storage Tank (TK-1). There are six (6) other storage tanks (TK-2 through TK-7) used for bulk storage (waste water, new/used coolant, new/used oil). Volatile Organic Compound (VOC) emissions from the tanks are, based on the nature of the materials stored, considered insignificant.

The gas, compressed in the engines (CE-1S through CE-3S), is directed to outlet separators and then into to the sales pipeline. The compressor engines are each controlled (CO - 93%, VOCs - 50%, and formaldehyde - 76%) by a Miratech Model SP-PTHIT-72S3624x61-18x2/30-XH4B2 oxidation catalyst (CC-1 through CC-3). Any final liquids removed in the outlet separators are sent to the slop tank.

A 0.51 mmBtu/hr natural gas-fired CIG Flameless Gas Infrared Heater (HTR-1) will be used in the fuel gas system to prevent the formation of hydrates and to minimize condensate dropout from the pressure reduction.

Additionally, the facility will utilize two truck loadouts (LOAD-1, LOAD-2) to remove slop and wastewater from the site (estimated to be a maximum of 30,000 gallons/year of each liquid). Emissions from the load-out operations will be uncontrolled. One 500 kW_e Caterpillar C15 ACERT 975 hp emergency generator (GE-1) will be used to produce backup power. This unit will operate no more than 500 hours in non-emergency situations.

SITE INSPECTION

On April 2, 2015, the writer conducted an inspection of the proposed location of the Sherwood Compressor Station. The proposed Sherwood site is located in a rural area of Doddridge County approximately 2.66 miles southeast of Smithburg, WV off of Eibs Camp Road (County Route 18/6). The writer was accompanied on the inspection by Mr. Cameron Long, an employee with Energy Transfer Company (parent company of Rover). Observations from the inspection include:

- The proposed facility will lie atop a hill approximately 2.66 miles southeast of Smithburg, WV off of Eibs Camp Road in Doddridge County. The area is mountainous and rural in nature with scattered homes and farms within several miles of the proposed location. Much natural gas construction activity (pipelines, well-heads, etc.) is located in the area;

- At the time of the inspection, Rover had not begun any construction on the site. Prior to any construction, much earthwork will be needed to be done to flatten the top of the hill for the station pad; and

- The occupied dwelling located nearest to the proposed site is approximately 0.25 miles south of the proposed site at the base of the hill along CR 18/6. The dwelling immediately adjacent to the site at the end of CR 18/6 has been purchased by Rover and is not occupied.

The following is a picture of the proposed location of the Sherwood Compressor Station taken on the day of the inspection:

Directions: [Latitude: 39.26689, Longitude:-80.69403] From the intersection of United States (US) Route 50 and SR 18, travel south on SR 18 for approximately 4.5 miles and turn left onto Eibs Camp Road (County Route 18/6). Follow CR 18/6 for 1.1 miles to the compressor station at the top of the hill. Note: At the time of the inspection, the compressor station was not yet built and the company representative noted that new access road may be built to provide access to the site from the north.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Compressor Engines

Potential emissions from each of the three (3) Caterpillar G3616 4SLB 4,735 hp compressor engines (CE-1E through CE-3E) were based on post-control emission factors provided by the oxidation catalyst vendor, the engine vendor, and as given in AP-42, Section 3.2 (AP-42 is a database of emission factors maintained by USEPA). Hourly emissions were based on the (as calculated using a fuel heat rating of 7,491 Btu/hp-hr) maximum design heat input (MDHI) of the

engines of 35.47 mmBtu/hr and the maximum hp rating. All hourly emissions were increased by a 10% safety factor to account for potential short-term fluctuations in emissions. Annual emissions were based on 8,760 hours of operation per year. The following table details the potential-to-emit (PTE) of each compressor engine:

Table 1: Per-Compressor Engine PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO[(1)]	0.1925 g/hp-hr	Catalyst Vendor	2.21	8.80
NO_X[(1)]	0.50 g/hp-hr (controlled)	Engine Vendor	5.74	22.86
$PM_{2.5}$[(2)]	19.41 x 10^{-3} lb/mmBtu	AP-42, Table 3.2-3	0.76	3.02
PM_{10}[(2)]	19.41 x 10^{-3} lb/mmBtu	AP-42, Table 3.2-3	0.76	3.02
PM[(2)]	19.41 x 10^{-3} lb/mmBtu	AP-42, Table 3.2-3	0.76	3.02
SO_2	5.88 x 10^{-4} lb/mmBtu	AP-42, Table 3.2-3	0.02	0.09
VOCs[(1)]	0.315 g/hp-hr (controlled)	Catalyst Vendor	3.62	14.40
Total HAPs	Various	AP-42, Table 3.2-3	1.06	4.24
Formaldehyde[(1)]	0.062 g/hp-hr (controlled)	Catalyst Vendor	0.71	2.83

(1) Based on post-control emission factor provided by the oxidation catalyst vendor.
(2) Includes condensables as calculated by the writer.

Emergency Generator

Potential emissions from the 957 hp Caterpillar C15 ACERT Diesel Emergency Generator (GE-1) were based on information provided by the vendor and on factors obtained from AP-42, Section 3.4. Diesel with a maximum sulfur content of 0.5% was used in the calculation of SO_2. Hourly emissions based on the rated horsepower of the unit and increased by a safety factor of 10%. Annual emissions were based on 500 hours per year of operation.

Table 2: Emergency Generator PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO	0.40 g/bhp-hr	Vendor	0.93	0.21
NO_X	5.74 g/bhp-hr	Vendor	13.32	3.03
$PM_{2.5}$[(1)]	0.018 g/bhp-hr	Vendor	0.04	0.01
PM_{10}[(1)]	0.018 g/bhp-hr	Vendor	0.04	0.01
PM[(1)]	0.018 g/bhp-hr	Vendor	0.04	0.01
SO_2	0.0004 lb/bhp-hr	AP-42, Table 3.4-1	0.42	0.10
VOCs[(1)]	0.01 g/bhp-hr	Vendor	0.02	0.01
Total HAPs	Various	AP-42, Table 3.4-3, 4	0.01	0.002

(1) Includes condensables.

Fuel Gas Pre-Heater

Combustion emissions from the natural gas-fired 0.51 mmBtu/hr CIG Flameless Gas Infrared Heater (HTR-1) were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. Hourly emissions were based on the MDHI of the unit (0.51 mmBtu/hr) and annual emissions were based on an annual operation of 8,760 hours. A natural gas heat content value of 1,106 Btu/ft^3 was used in the calculations.

Storage Tanks

Rover provided an estimate of the uncontrolled emissions produced from the seven (7) storage tanks (TK-1 through TK-7) using the TANKS 4.09d program (working/breathing losses) as provided under AP-42, Section 7. The total emissions from each fixed roof storage tank are the combination of the calculated "breathing loss" and "working loss." The breathing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Standing losses are independent of storage tank throughput while working losses are dependent on throughput.

Hourly emissions (not calculated by TANKS) were based on the calculated breathing losses as divided by 8,760 hours/yr plus the working losses divided by two hours of emptying/filling per year (extremely conservative). Annual emissions were as calculated by the TANKS program and based on specific throughputs of each tank. Based on the low-VOC material stored, potential emissions from the storage tanks were small: total emissions from all storage tanks 0.72 lbs/hr and less than 0.01 tons/year.

Truck Loadouts

Air emissions from slop and wastewater truck loading (LOAD-1, LOAD-2) occur as fugitive emissions generated by displacement of vapors when loading trucks. The emission factor used to generate the VOC emissions is based on Equation (1) of AP-42 Section 5.2-4. In this equation, Rover used variables specific to the liquids loaded and to the method of loading - in this case "submerged filling - dedicated normal service." Additionally, worst-case annual emissions were based on a maximum loading rate of 30,000 gal/year of wastewater and 30,000 gal/year of slop. Worst case hourly emissions were based on loading 9,000 gallons/hour. As the wastewater and slop have very low VOC concentrations and low vapor pressures, potential maximum emissions from the truck loadouts are small: total emissions from all loadout operations is 1.34 lbs/hr and less than 0.01 tons/year.

Fugitives

Rover calculated two sources of fugitive emissions at the proposed Sherwood Compressor Station: equipment leaks and maintenance and emergency events. Each will be discussed below:

Equipment Leaks

Rover based their VOC /HAP fugitive equipment leak calculations on emission factors taken from the document EPA-453/R-95-017 - "Protocol for Equipment Leak Emission Estimates" Table 2-4 (VOCs) and proposed component counts for the facility. No control efficiencies, as based on a Leak Detection and Repair (LDAR) protocol, were applied. Gas streams were estimated to contain 2% VOC by weight and liquid streams were conservatively estimated to contain 100% VOCs by weight.

Maintenance and Emergency Events

Rover also included in their fugitive emission estimate a certain number of scenarios where natural gas is released for emergency or maintenance purposes. Those included were compressor blowdown events (36 events/year), compressor engine starter vents (105 events/year), and "pigging" events (3 events/year). A 2% VOC-by weight percentage was used for the release natural gas.

Emissions Summary

Based on the above estimation methodologies, which are determined to be reasonable, the PTE of the proposed Sherwood Compressor Station is given in Attachment A to this evaluation.

REGULATORY APPLICABILITY

The proposed Sherwood Compressor Station is subject to the following substantive state and federal air quality rules and regulations: 45CSR2, 45CSR13, 40 CFR 60 Subparts IIII and JJJJ, and 40 CFR 63, Subpart ZZZZ. Each applicable rule (and those that have questionable non-applicability) and Rover'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

Pursuant to the definition of "fuel burning unit" under 45CSR2 ("producing heat or power by indirect heat transfer"), 45CSR2 does not apply to the compressor engines or the emergency generator.

The CIG Flameless Gas Infrared Heater has been determined to meet the definition of a "fuel burning unit" under 45CSR2 and is, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of the heater is less than 10 mmBtu/hr, the unit 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 heater is 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.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides (NON APPLICABILITY)

Pursuant to the definition of "fuel burning unit" under 45CSR10 ("producing heat or power by indirect heat transfer"), the limitations on fuel burning units under 45CSR10 do not apply to the compressor engines or emergency generator.

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting H_2S concentrations in process gas streams. The only potential applicability of 45CSR10 to the Sherwood Compressor Station is the limitations on fuel burning units. The CIG Flameless Gas Infrared Heater has been determined to meet the definition of a "fuel burning unit" under 45CSR10. However, pursuant to the exemption given under §45-10-10.1, as the MDHI of the heater is less than 10 mmBtu/hr, the unit is not subject to the limitations on fuel burning units under 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

The proposed construction of the Sherwood Compressor Station has a potential to emit in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant (see Attachment A) and, therefore, pursuant to §45-13-2.24, the proposed facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Rover is required to obtain a permit under 45CSR13 for the construction and operation of the facility.

As required under §45-13-8.3 ("Notice Level A"), Rover placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The ad ran on March 13, 2015 in *The Doddridge Independent* and the affidavit of publication for this legal advertisement was submitted on March 25, 2015.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration - (NON APPLICABILITY)

The Sherwood Compressor Station is proposed to be located in Doddridge County, WV. Doddridge County is classified as "in attainment" with all National Ambient Air Quality Standards. Therefore, as the facility is not a "listed source" under §45-14-2.43, the individual major source applicability threshold for all individual pollutants is 250 TPY. As given above in Attachment A, the facility-wide PTE of the proposed Sherwood Compressor Station is less than 250 TPY for all criteria pollutants. Therefore, the facility is not defined as a "major stationary source" under 45CSR14 and the rule does not apply.

45CSR27: To Prevent and Control the Emissions of Toxic Air Pollutants - (NON APPLICABILITY)

Pursuant to §45-27-3.1, the "owner or operator of a plant that discharges or may discharge a toxic air pollutant into the open air in excess of the amount shown in the Table A [of 45CSR27]

shall employ [Best Available Technology] at all chemical processing units emitting the toxic air pollutant." As shown in Attachment A, the aggregate PTE of formaldehyde generated by the compressor engines is greater than 0.5 TPY - greater than the 1,000 pound per year threshold given in Table A of 45CSR27. However, internal combustion engines do no meet the definition of "chemical processing units" under §45-27-2.4 and, therefore, they are not subject to BAT under 45CSR27.

45CSR30: Requirements for Operating Permits - (NON APPLICABILITY)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The proposed Sherwood Compressor Station does not meet the definition of a "major source under §112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Attachment A) of any regulated pollutant does not exceed 100 TPY. Additionally, the facility-wide PTE does not exceed 10 TPY of any individual HAP or 25 TPY of aggregate HAPs.

However, as the facility is subject to two New Source Performance Standard (NSPS) - 40 CFR 60, Subparts IIII and JJJJ - and one Maximum Achievable Control Technology (MACT) rules - 40 CFR 63, Subpart ZZZZ, the facility would, in most cases, be subject to Title V as a "deferred source." However, pursuant to §60.4200(c), §60.4230(c), and §63.6585(d), respectively, as a non-major "area source," Rover is not required to obtain a Title V permit for the proposed facility. Therefore, the Sherwood Compressor Station is not subject to 45CSR30.

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)

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 proposed for the Sherwood Compressor Station are each 12,800 gallons, or 48 m^3. Therefore, Subpart Kb does not apply to any storage tanks at the proposed facility.

40 CFR 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

Rover's three (3) Caterpillar G3616 4SLB 4,735 hp compressor engines proposed for the Sherwood Compressor Station are defined under 40 CFR 60, Subpart JJJJ as stationary spark-ignition internal combustion engines (SI ICE) and are each, pursuant to §60.4230(a)(4)(i), subject to the applicable provisions of the rule. Pursuant to §60.4233(e): "Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE." Therefore, as the proposed Rover's compressor engines are greater than 100 hp, each engine must comply with the emission standards under Table 1 for

"Non-Emergency SI ICE ≥ 500 hp manufactured after July 1, 2010:" NO_x - 1.0 g/HP-hr, CO - 2.0 g/HP-hr, and VOC - 0.7 g/HP-hr. The emission standards and the proposed compliance therewith of the engines are given in the following table:

Table 3: Caterpillar G3616 Subpart JJJJ Compliance

Pollutant	Standard (g/HP-hr)	Uncontrolled Emissions (g/bhp)(1)	Control Percentage	Controlled Emissions (g/bhp)(1)	JJJJ Compliant?
NO_x	1.0	0.50	0.00%	0.50	Yes
CO	2.0	2.75	93.00%	0.19	Yes
VOC	0.7	0.63	50.00%	0.32	Yes

(1) Based on the Miratech Model SP-PTHIT-72S3624x61-18x2/30-XH4B2 oxidation catalyst specification sheet included in the permit application.

The Caterpillar G3616 is not a "certified" engine under Subpart JJJJ so Rover will have to show compliance with the emission standards pursuant to §60.4243(b)(2)(ii): conducting an initial performance test and thereafter conducting subsequent performance testing every 8,760 hours or 3 years, whichever comes first, to demonstrate compliance. Performance testing requirements are given under §60.4244 of Subpart JJJJ. Rover will additionally have to meet all applicable monitoring, recording, and record-keeping requirements under Subpart JJJJ.

40 CFR 60, Subpart OOOO: Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution (NON APPLICABILITY)

On April 27, 2012, the USEPA issued a final rule (with amendments finalized on August 16, 2012, September 23, 2013, and December 31, 2014) that consists of federal air quality standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry that were previously not regulated at the federal level. Each potentially applicable section of Subpart OOOO is discussed below.

Compressor Engines - (NON APPLICABILITY)

Pursuant to §60.5365(c), "[e]ach 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" that is constructed after August 23, 2011 is subject to the applicable provisions of Subpart OOOO. According to information provided by Rover, as the Sherwood Compressor Station is located after the point of custody transfer, the compressor engines are not applicable to this section of Subpart OOOO.

Pneumatic Controllers - (NON APPLICABILITY)

Pursuant to §60.5365(d)(2), "[f]or the natural gas production segment (between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not including natural gas processing plants), 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" that is constructed after August 23, 2011 is subject to the applicable provisions of

Subpart OOOO. According to information provided by Rover, as the Sherwood Compressor Station is located after the point of custody transfer, any pneumatic controllers are not applicable to this section of Subpart OOOO.

Storage Tanks - (NON APPLICABILITY)

Pursuant to §60.5365(e), for "[e]ach 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" that is constructed after August 23, 2011 and, pursuant to §60.5395 has "VOC emissions equal to or greater than 6 tpy" must meet the control requirements under §60.5395 as of October 15, 2013. The substantive requirement is to "reduce VOC emissions by 95.0 percent or greater." Rover's storage tanks are potential applicable to this section of Subpart OOOO. However, the PTE of each storage tank is far below 6 TPY and, therefore, the storage tanks are not subject to Subpart OOOO.

40 CFR 60, Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII of 40 CFR 60 is the NSPS for stationary compression ignition internal combustion engines (diesel fired engines). Section §60.4200 states that "provisions of [Subpart IIII] are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE)." Specifically, §60.4200(a)(2) states that Subpart IIII applies to "[o]wners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

Rover has proposed Caterpillar C15 ACERT 957 hp (714 kW_m) emergency generator manufactured after 2006 that is subject to Subpart IIII. Based on the Tier 2 standards for owner/operators of emergency generator CI ICE under §60.4205, the following table details the emission standards for the engine:

Table 4: Subpart IIII Standards

Duty	Size (hp)	Displacement (L/cyl)	Source	Emission Standards - g/kW-hr (g/hp-hr)		
				NMHC + NO_x	CO	PM
Emergency	957	<10	§80.112, Table 1[(1)]	6.4 (4.7)	3.5 (2.6)	0.20 (0.15)

(1) Logic train is as follows: §60.4205(b) ➜ §60.4202(a)(2) ➜ §80.112/§80.113.

The proposed engine's PTE will meet the above emission standards for CO - 0.40 g/hp-hr and PM - 0.018 g/hp-hr. While the individual NO_x emission rate of this engine (5.74 g/hp-hr) is

above the standard, it is below the family emission limits under Table 2 of §80.112 (7.82 g/hp-hr). Compliance with these standards are met primarily by, pursuant to §60.4211(c), "purchasing an engine certified to the emission standards." Rover has provided information showing this engine is certified as in compliance with the Tier 2 emission standards under §80.112.

40 CFR 63 Subpart ZZZZ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

On June 1, 2013 the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart ZZZZ. As the Sherwood Compressor Station is defined as an area source of HAPs (see Attachment A), the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

> An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§63.6590(c)(1) specifies that "[a] new or reconstructed stationary RICE located at an area source" is defined as a RICE that shows compliance with the requirements of Subpart ZZZZ by "meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines." Pursuant to §63.6590(a)(2)(iii), a "stationary RICE located at an area source of HAP emissions is new if [the applicant] commenced construction of the stationary RICE on or after June 12, 2006." The engines proposed for the Sherwood Compressor Station are each defined as a new stationary RICE (application states manufacture date of all engines will be in 2016) and, therefore, will show compliance with Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subparts IIII and JJJJ. Compliance with these rules are discussed above.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed Sherwood Compressor Station 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 and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits 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. The proposed Sherwood Compressor Station has the potential to emit the following HAPs in non-insignificant amounts: Acetaldehyde, Acrolein, Benzene, Toluene, Methanol, n-Hexane, and Formaldehyde. The following table lists each HAP's PTE and carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 5: Potential HAPs - Carcinogenic Risk

HAPs	Type	PTE (tons/yr)	Known/Suspected Carcinogen	Classification
Acetaldehyde	VOC	1.95	Yes	B2 - Probable Human Carcinogen
Acrolein	VOC	1.20	No	Inadequate Data
Benzene	VOC	0.12	Yes	Category A - Known Human Carcinogen
Toluene	VOC	0.10	No	Inadequate Data
Methanol	VOC	0.58	No	No Assessment Available
n-Hexane	VOC	0.26	No	Inadequate Data
Formaldehyde	VOC	8.56	Yes	B1 - Probable Human Carcinogen

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 of the proposed facility are less than applicability thresholds that would define the proposed facility as "major" under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature and location of the proposed source, an air quality impacts modeling analysis was not required under 45CSR13, Section 7.

SOURCE AGGREGATION

Classifying multiple facilities as one "stationary source" under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of "Building, structure, facility, or installation" as given in §45-14-2.13 and §45-19-2.12. The definition states:

"Building, Structure, Facility, or Installation" means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same "Major Group" (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

The Sherwood Compressor Station is located in Doddridge County and will be operated by Rover. The following discussion will look at each point in the definition above.

1. SIC Code

   The Sherwood Compressor Station will operate under SIC code 4923 (Natural Gas Distribution). There is one other compressor station operated by Rover that shares the same two-digit major SIC code of 49 for natural gas transmission. The Majorsville Compressor Station is located in Marshall County and is approximately 50 miles away. According to Rover, these compressor stations will operate on different lateral pipelines.

2. Contiguous or Adjacent

   "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.

   There are no Rover properties in question that are considered to be on contiguous or adjacent property with the Sherwood Compressor Station. The closest Rover property is located approximately 50 miles from the proposed facility. The land between these sites is not owned or managed by Rover. Operations separated by these distances do not meet the common sense notion of a plant. Therefore, the properties in question are not considered to be on contiguous or adjacent property. The Sherwood Compressor Station is located approximately one (1) mile from the existing Columbia Gas Transmission compressor station. MarkWest also operates a natural gas processing plant nearby.

3. Common Control

   The natural gas well sites that supply the incoming natural gas streams to the Sherwood Compressor Station are not owned and operated by Rover. Furthermore, the nearby gas processing plant is owned by a separate company (Mark West).

Because the facilities are not considered to be on contiguous or adjacent properties and are not under common control, the emissions from the Sherwood Compressor Station should not be aggregated with other facilities in determining the facility-wide PTE.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

Rover will be required to perform the following monitoring:

- Monitor and record quantity of natural gas consumed for all engines and combustion sources; and
- Monitor all applicable requirements of 40CFR60 Subparts IIII and JJJJ.

Rover will be required to perform the following recordkeeping:

- Maintain records of the amount of natural gas consumed and hours of operation for all engines and combustion sources;
- Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location;
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit;
- Maintain records of the visible emission opacity tests conducted per the permit;
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment;
- Maintain records of all applicable requirements of 40CFR60 Subparts IIII and JJJJ; and
- The records shall be maintained on site or in a readily available off-site location maintained by Rover for a period of five (5) years.

PERFORMANCE TESTING OF OPERATIONS

The only substantive performance testing requirements are for the Caterpillar G3616 as given under 40 CFR 60, Subpart JJJJ: conducting an initial performance test and thereafter conducting subsequent performance testing every 8,760 hours or 3 years, whichever comes first, to demonstrate compliance with the NO_x, CO, and VOC emission limits given therein.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the

Director the issuance of a Permit Number R13-3239 to Rover Pipeline LLC for the proposed construction and operation of the Sherwood Compressor Station located near Smithburg, Doddridge County, WV.

Joe Kessler, PE
Engineer

Date