



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3206
Plant ID No.: 051-00150
Applicant: Williams Ohio Valley Midstream
Facility Name: Burch Ridge Station
Location: Proctor, Marshall County
SIC Code: 1321 (Natural Gas Liquids Extraction)
NAICS Code: 213112 (Support Activities for Oil and Gas Operations)
Application Type: Modification
Received Date: September 5, 2014
Engineer Assigned: Laura Jennings
Fee Amount: \$4,500
Date Received: September 11, 2014
Complete Date: November 13, 2014
Due Date: February 8, 2015
Applicant Ad Date: September 5, 2014
Newspaper: *Moundsville Daily Echo*
UTM's: Easting: 517.3 km Northing: 4,400.0 km Zone: 17S
latt/long: Latitude: 39°45'0.00" Longitude: -80°47'54.5"
Description: Modify and replace the existing G35-A080 permit to provide for a new refrigeration skid, inclusive of Ethylene Glycol (EG) dehydration [DSV-03] and oil heater [HTR-01]; new microturbine electricity generators [CT-01 thru CT-10]; new diesel-fired emergency generator engine [GE-01]; new VOC combustors [01-/02-COMB] to control existing TEG Dehydrator Flash Tanks [DFT-01/-02] and regenerator/still vents [DSV-01/-02]; and Remove existing compressor engine.

DESCRIPTION OF PROCESS

Project Overview:

Williams Ohio Valley Midstream LLC (OVM) has submitted an application for a 45CSR13 modification permit for the existing Burch Ridge Compressor Station located east of Burch Ridge Road, approximately 2.2 miles northeast of Proctor, Marshall County.

A new refrigeration project is planned for the site to remove natural gas liquids (NGL) from the inlet gas stream. Accordingly, this application has been prepared and submitted to request the following modifications to the existing facility.

The OVM Burch Ridge compressor station is currently permitted to construct and operate:

- Four (4) 1,380 bhp Caterpillar (CAT) 3516B Compressor Engines (CE-01 thru 04)
- Two (2) 40.0 MMscfd TEG Dehydration units, each with: flash tank (DFT-01 and -02), regenerator/still vent (DSV-01 and -02), and 1.11 MMBtu/hr reboiler (RBV-01 and -02)
- Two (2) 210 Produced Water/Condensate Storage Tanks (TK-01 and -02)
- Other Ancillary equipment and operations with De-minims emissions

It is requested to modify/replace the existing G35-A080 permit to R13-3206 to provide for:

- a new refrigeration skid, inclusive of:
 - One (1) 60. MMscfd Ethylene Glycol (EG) Dehydration (DSV-03)
 - One (1) 9.70 MMBtu/hr Oil Heater (HTR-10)
- Ten (10) new 200 kWe microturbine electricity generators (CT-01 thru CT-10)
- Two (2) BTEX Skids (for each TEG Dehy Unit Still Vent) (01- and 02-BTEX)
- Two (2) new 4.50 MMBtu/hr MESSCO 42" VOC Combustors (01-/02-COMB) that will control:
 - The existing TEG Dehydrator Flash Tanks (DFT-01/-02) and Regenerator/Still Vents (DSV-01/-02)
 - The existing produced water/condensate storage tanks (TK-01/-02)
- One (1) dispersion stack (vents refrig. Plant SSM blowdown emissions)
- Remove one (1) existing compressor engine (CE-04)
- New diesel-fired emergency generator engine (GE-01)

The emission units table provided in this section includes all emission units that will be permitted at the facility.

New / Modified Equipment Discussion:

Emergency Generator Engine - The diesel-fired 86 bhp (50 kW) Cummins 4BTY3.9-G3 (GE-01)(4E) engine will be utilized at the facility to drive an electrical generator. The backup generator engine will be used in the event of loss of purchase power and also during readiness and maintenance checks.

TEG Dehydrators - Two (2) TEG Dehydrators will be utilized at the facility. The dehydrators are each comprised of a contactor/ absorber tower (no vented emissions), flash tank (DFT-01 and -02)(7E, 8E), and Regenerator/ Still Vent (DSV-01 and -02)(10E, 11E).

The TEG dehydrators are used to remove water vapor from the inlet wet gas stream to meet pipeline specifications. In the dehydration process, the wet inlet gas stream flows through a contactor tower where the gas is contacted with lean glycol. The lean glycol

absorbs the water in the gas stream and becomes rich glycol laden with water and trace amounts of hydrocarbons.

The rich glycol is then routed to a flash tank where the glycol pressure is reduced to liberate the lighter end hydrocarbons. The lighter end hydrocarbons are routed from the flash tank and either used as fuel or sent to a VOC combustor for destruction. The desired operating scenario is to recycle the flash tank off-gas and use as fuel; however, if this cannot be accomplished, or if the fuel system is down, the flash tank off-gas will be sent to a VOC combustor (01- and 02-COMB).

The rich glycol is then sent from the flash tank to the regenerator/ still where the TEG is heated to drive off the water vapor and any remaining hydrocarbons. Once boiled, the glycol is returned to a lean state and used again the process. The regenerator/ still emissions are controlled by a BTEX Skid (01- and 02-BTEX), including a condenser and a system to route the non-condensable emissions to the "flame zone" of the reboiler for \geq 95% destruction.

Ethylene Glycol (EG) Refrigeration System - The 60.0 MMscfd Ethylene Glycol (EG) Dehydrator (DSV-03)(13E) will be used in the refrigeration plant to prevent hydrate formation. This system uses the EG in a similar loop that a dehydrator would except that EG is not used to remove water, instead it is used to make sure that any liquids that fall out of the gas do not freeze.

Oil Heater - The 9.70 MMBtu/hr Oil Heater (HTR-01)(14E) will be utilized at the facility to supply process heat for the refrigeration plant, inclusive of the stabilizer reboiler and ethylene glycol reboiler.

Electrical Power Generation - The ten (10) 200 kWe Capstone C200 natural gas fueled micro turbines (CT-01 thru -10)(15E thru 24E) will be used to generate electricity for on-site needs.

Produced Water/ Condensate Storage Tanks - The 210 bbl produced water/ condensate storage tanks (TK-01 and -02)(25E and 26E) receive liquids from the dehydrator and inlet filter. Liquids removed through the dehydration process are cooled, condensed, and sent to the atmospheric storage tanks. The inlet separator removes entrained fluids (primarily water) and these liquids are also sent to the atmospheric storage tanks.

A Virtual Materials Group Simulator (VSIM) process simulation was completed, indicating the presence of flash gas emissions. Accordingly, these flash gas emissions will be sent to a VOC Combustor (01- and 02-COMB) for destruction.

VOC Combustors - Two (2) 4.5 MMBtu/hr VOC combustors (01- and 02-COMB)(28E and 29E) with \geq 98% efficiency will be used to control emissions from the produced water/ condensate storage tanks (TK-01 and -02) and TEG Dehydrator Flash Tank (DFT-01 and -02) off-gas streams (when the TEG Dehydrator Flash Tank off-gas is not used as reboiler fuel).

Emission Units Table:

Emission Unit ID	Emission Point ID	Description	Installed	Capacity	Type of Change	Control
CE-01	1E	Caterpillar (CAT)G3516B Engine	2013	1,380 bhp	Existing	01-OxCat
CE-02	2E	Caterpillar (CAT)G3516B Engine	2013	1,380 bhp	Existing	02-OxCat
CE-03	3E	Caterpillar (CAT)G3516B Engine	TBD	1,380 bhp	Existing	03-OxCat
CE-04	n/a	Caterpillar (CAT)G3516B Engine 4SLB	2013	1,380	Remove	
GE-01	4E	Cummins Backup Generator Engine	TBD	86 bhp	NEW	n/a
RPC	5E	Rod Packing/Crankcase Leaks	2013	n/a	Existing	n/a
SSM	6E	Startup/ Shutdown/ Maintenance Blowdown (BD)	2013	n/a	Existing	n/a
DFT01	7E	Exterran TEG Dehydrator - Flash Tank	2013	40.0 MMscfd	Modified	01-/02-COMB
DSV-01	8E	Exterran TEG Dehydrator - Regenerator Still Vent	2013	40.0 MMscfd	Modified	01-BTEX*
RBV-01	9E	TEG Dehydrator - Reboiler Vent	2013	1.11 MMBtu/hr	Existing	n/a
DFT-2	10E	Exterran TEG Dehydrator - Flash Tank	2013	40.0 MMscfd	Modified	01-/02-COMB
DSV-02	11E	Exterran TEG Dehydrator - Regenerator Still Vent	2013	40.0 MMscfd	Modified	02-BTEX*
RBV-02	12E	TEG Dehydrator - Reboiler Vent	2013	1.11 MMBtu/hr	Existing	n/a
DSV-03	13E	EG Regenerator/Still Vent (Refrigeration Plant)	TBD	60.0 MMscfd	New	n/a
HTR-01	14E	Oil Heater (Refrigeration Plant)	TBD	9.70 MMBtu/hr	New	n/a
CT-01	15E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-02	16E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a

CT-03	17E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-04	18E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-05	19E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-06	20E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-07	21E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-08	22E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-09	23E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
CT-10	24E	Capstone C200 MicroTurbine Electricity Generator	TBD	200 kWe	New	n/a
TK-01	25E	Produced Water/ Condensate - Storage Tank	2013	210 bbl	Modified	01-/02- COMB
TK-02	26E	Produced Water/ Condensate - Storage Tank	2013	210 bbl	Modified	01-/02- COMB
TLO	27E	Produced Water/ Condensate Truck Load- Out	2013	21,900 bbl/yr	Existing	n/a
01-COMB	28E	Messco 42" VOC Combustor	2015	4.50 MMBtu/hr	New	n/a
02-COMB	29E	Messco 42" VOC Combustor	2015	4.50 MMBtu/hr	New	n/a
FUG-G	30E	Piping and Equipment Fugitives - Gas	2013	n/a	Existing	n/a
FUG-L	31E	Piping and Equipment Fugitives - Liquid	2013	n/a	Existing	n/a
TK-03	32E	Water and Oil Storage Tank	TBD	4,200 gal	New	n/a
TK-04	33E	Lube Oil Storage Tank	2013	500 gal	Existing	n/a
TK-05	34E	Used Oil Storage Tank	2013	300 gal	Existing	n/a

TK-06	35E	Methanol Storage Tank	2013	220 gal	Existing	n/a
TK-07	36E	Lube Oil Storage Tank	2013	500 gal	Existing	n/a
TK-08	37E	Used Oil Storage Tank	2013	300 gal	Existing	n/a
TK-09	38E	Methanol Storage Tank	2013	220 gal	Existing	n/a
TK-10	39E	Lube Oil Storage Tank	2013	500 gal	Existing	n/a
TK-11	40E	Used Oil Storage Tank	2013	300 gal	Existing	n/a
TK-12	41E	Methanol Storage Tank	2013	220 gal	Existing	n/a
TK-13	42E	Lube Oil Storage Tank	2013	500 gal	Existing	n/a
TK-14	43E	Used Oil Storage Tank	2013	300 gal	Existing	n/a
TK-15	44E	Methanol Storage Tank	2013	220 gal	Existing	n/a
TK-16	45E	Diesel Storage Tank	TBD	250 gal	New	n/a

* The 01- and 02-BTEX Skids vent thru the "Flame Zone" of the Reboilers (RBV-01 and -02)

Pollution Control Devices

Control Device ID	Description	Pollutant Controlled	Minimum Control Efficiency
01-OxCAT thru 03-OxCat	Catalytic Converter with Oxidation Catalyst; EMIT Technologies; Model No. ELS-3050Z-1416F-30CEO-241	Carbon Monoxide (CO)	≥ 93%
		Non-methane, Non-ethane hydrocarbons (NMNEHC)	≥ 35%
		Formaldehyde (HCHO)	≥ 76%
01-COMB and 02-COMB	MESSCO 42" Combustor with 42 MSCFD max capacity	Volatile Organic Compounds (VOC)	98%
01-BTEX and 02-BTEX	JATCO BTEX Eliminator	Volatile Organic Compounds (VOC)	95%

SITE INSPECTION

Michael Wade from DAQ's Compliance and Enforcement Section located at the Wheeling Field Office in conjunction with this application and he was accompanied by Mr. Bill Thompson of Williams OVM. Mr Thompson indicated that several of the pieces being permitted may not actually be installed, including the generator and the refrigeration units. The vapor combustor unit is on-site but not operational.

Directions from PA-2 in Proctor, WV:

Head NE on Wells Hill Road for approximately 2.4 miles; turn right onto Waynes Ridge Road for approximately 0.8 miles; turn left onto Burch Ridge Road for approximately 0.6 miles; entrance to site is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

New or modified potential emission calculations were reviewed and verified by the writer. Emission units that are existing and currently registered to the G35-A general permit were verified against the current permitted emission limits. Emissions were calculated with the method provided in the emissions summary table. As needed, additional explanation follows.

Annual emissions for the Cummins 4BT 3.9-G3 diesel fueled 86 bhp (50 kW) emergency generator engine [GE-01] are based on 500 hours/year operation.

Rod packing and crankcase [RPC] emissions calculations are based upon 40CFR98, Subpart W (Petroleum and Natural Gas Systems) and manufacturer's data.

Startup, Shutdown and Maintenance [SSM] emissions include unburned fuel resulting from "cold-start" of the idle gas-fired engine; purged natural gas from the compressor and associated piping and equipment; maintenance activities include filter dryer changes and compressor blowdowns. The starting gas quantity and blowdown gas quantity are engineering estimates. The calculations assume three (3) facility-wide blowdowns each week.

The TEG dehydration potential emissions include a 20% contingency that has been added to the GRI-GLYCalc model results [DFT-01, DFT-02, DSV-01, DSV-02] to account for potential future changes in gas quality.

The AspenTech HYSYS model output for the 60 MMscfd EG Refrigeration System [DSV-03] shows zero VOC and HAP emissions; however, a safety factor was added. The safety factor is approximately 4% based on the uncontrolled TEG dehydrator system with a smaller design capacity.

The emission factors for the Capstone microturbines [CT-01 thru CT-10] that were provided by the manufacturer are based on 100% load. The manufacture did not provide emission factors for less than 100% load. It is known within the industry that NOx and CO emissions increase when turbines are not loaded to at least 80%. From past experience, the applicant has found that the NOx and CO could double at lower load conditions. It is anticipated that the microturbines will not always be loaded to 80%. For these reasons, the emission factors provided by the manufacture for 100% load conditions have been doubled to account for lower loads.

The component count fugitive emissions were calculated using EPA factors for Oil and Gas

Production Operations. The component counts are from a similar site (Stillwagoner CS) from the site-specific P&IDs.

Emissions Summary Table:

Emission Unit ID	Emission Point ID	Control Device	Regulated Pollutant	Controlled Potential Emissions		Calculation Method
				lb/hr	tpy	
CE-01 thru CE-03 (EACH)	1E thru 3E	01- thru 03- OxCat	NO _x	1.52	6.66	Mfg. Data
			CO	0.64	2.82	Mfg. Data
			VOC	2.14	9.36	Mfg. Data
			SO _x	0.01	0.03	AP-42
			PM ₁₀ /PM _{2.5}	0.11	0.50	AP-42
			Formaldehyde	0.28	1.22	Mfg. Data
			n-Hexane	0.01	0.04	AP-42
			Benzene	<0.01	0.01	AP-42
			Toluene	<0.01	0.01	AP-42
			Ethylbenzene	<0.01	<0.01	AP-42
			Xylenes	<0.01	0.01	AP-42
			Total HAP	0.42	1.84	Sum
			CO ₂ e	1,749	7,659	Mfg Data; 40CFR98
GE-01	4E	None	NO _x	2.67	0.67	AP-42
			CO	0.57	0.14	AP-42
			VOC	0.22	0.05	AP-42
			SO _x	0.18	0.04	AP-42
			PM ₁₀ /PM _{2.5}	0.19	0.05	AP-42
			Formaldehyde	0.04	0.01	AP-42
			Benzene	<0.01	<0.01	AP-42
			Toluene	<0.01	<0.01	AP-42
			Ethylbenzene	<0.01	<0.01	AP-42
			Xylenes	<0.01	<0.01	AP-42
			Total HAP	0.04	0.01	AP-42
			CO ₂ e	99	25	40CFR98

Rod Packing and Crankcases	5E	None	VOC	2.82	12.33	Mfg. Data
			Total HAP	0.08	0.36	Mfg. Data
			CO ₂ e	264	1,158	40CFR98
Startup/ Shutdown/ Maintenance/ Blowdown	6E	None	VOC	n/a	30.58	EE
			n-Hexane	n/a	0.46	EE
			Total HAP	n/a	0.52	EE
			CO ₂ e	n/a	2,456	EE
DFT-01 and DFT-02 (EACH)	7E and 10E	01-COMB and 02-COMB	VOC	0.56	2.43	GLYCalc
			n-Hexane	0.01	0.05	GLYCalc
			Benzene	<0.01	<0.01	GLYCalc
			Toluene	<0.01	<0.01	GLYCalc
			Ethylbenzene	<0.01	<0.01	GLYCalc
			Xylenes	<0.01	<0.01	GLYCalc
			Total HAP	0.02	0.07	GLYCalc
			CO ₂ e	28	122	GLYCalc
DSV-01 and DSV-02 (EACH)	8E and 11E	01-BTEX and 02-BTEX	VOC	0.25	1.10	GLYCalc
			n-Hexane	0.01	0.03	GLYCalc
			Benzene	0.01	0.05	GLYCalc
			Toluene	0.03	0.11	GLYCalc
			Ethylbenzene	<0.01	0.01	GLYCalc
			Xylenes	<0.01	0.20	GLYCalc
			Total HAP	0.09	0.39	GLYCalc
			CO ₂ e	0.48	2.11	GLYCalc
RBV-01 and RBV-02 (EACH)	9E and 12E	none	NO _x	0.11	0.48	AP-42
			CO	0.09	0.40	AP-42
			VOC	0.01	0.03	AP-42
			SO _x	<0.01	<0.01	AP-42
			PM ₁₀ /PM _{2.5}	0.01	0.04	AP-42
			Formaldehyde	<0.01	<0.01	AP-42
			n-Hexane	<0.01	<0.01	AP-42
			Benzene	<0.01	<0.01	AP-42
			Toluene	<0.01	<0.01	AP-42

			Ethylbenzene	<0.01	<0.01	AP-42
			Xylenes	<0.01	<0.01	AP-42
			Total HAP	<0.01	<0.01	AP-42
			CO ₂ e	130	570	40CFR98
DSV-03	13E	none	VOC	1.14	5.00	HYSYS
			n-Hexane	0.11	0.50	HYSYS
			Benzene	0.11	0.50	HYSYS
			Toluene	0.11	0.50	HYSYS
			Ethylbenzene	0.11	0.50	HYSYS
			Xylenes	0.11	0.50	HYSYS
			Total HAP	0.57	2.50	HYSYS
			CO ₂ e	2	9	HYSYS
HTR-01	14E	none	NO _x	0.95	4.17	AP-42
			CO	0.80	3.51	AP-42
			VOC	0.05	0.23	AP-42
			SO _x	<0.01	0.03	AP-42
			PM ₁₀ /PM _{2.5}	0.07	0.32	AP-42
			Formaldehyde	<0.01	<0.01	AP-42
			n-Hexane	0.02	0.08	AP-42
			Benzene	<0.01	<0.01	AP-42
			Toluene	<0.01	<0.01	AP-42
			Total HAP	0.02	0.08	AP-42
			CO ₂ e	1,136	4,989	40CFR98
			CT-01 thru CT-10 (EACH)	15E thru 24E	None	NO _x
CO	0.44	1.93				Mfg. Data
VOC	0.02	0.09				Mfg. Data
SO _x	0.01	0.03				AP-42
PM ₁₀ /PM _{2.5}	0.02	0.07				AP-42
Formaldehyde	<0.01	0.01				AP-42
Total HAP	<0.01	0.01				AP-42
CO ₂ e	251	1,101				40CFR98

TK-01 and TK-02 (Total)	25E and 26E	01-COMB and 02-COMB	VOC	1.91	8.36	ProMax
			n-Hexane	0.02	0.10	ProMax
			Benzene	0.02	0.10	ProMax
			Toluene	0.02	0.10	ProMax
			Ethylbenzene	0.02	0.10	ProMax
			Xylenes	0.02	0.10	ProMax
			Total HAP	0.24	1.04	ProMax
TLO	27E	None	VOC	n/a	3.23	AP-42
			n-Hexane	n/a	0.16	AP-42
			Benzene	n/a	0.16	AP-42
			Toluene	n/a	0.16	AP-42
			Ethylbenzene	n/a	0.16	AP-42
			Xylenes	n/a	0.16	AP-42
			Total HAP	n/a	0.81	AP-42
COMB-01 and COMB-02 Combustion Emissions (Each)	28E and 29E	N/A	NO _x	0.31	1.34	AP-42
			CO	1.67	7.29	AP-42
			VOC	0.02	0.11	AP-42
			SO _x	<0.01	0.01	AP-42
			PM ₁₀ /PM _{2.5}	0.03	0.15	AP-42
			n-Hexane	0.01	0.03	AP-42
			Total HAP	0.01	0.14	AP-42
			CO ₂ e	527	2,308	40CFR98

Fugitive Emissions Table:

Fugitive Emission Source	Emission Point ID	Regulated Pollutant	Maximum Potential Emissions	
			lb/hr	tpy
Equipment Leaks - Gas/Vapor	30E	VOC	1.00	4.40
		n-Hexane	0.02	0.07
		Total HAP	0.02	0.08
		CO ₂ e	107	468
Equipment Leaks - Light Liquid	31E	VOC	2.13	9.33
		n-Hexane	0.33	1.42

		Total HAP	0.37	1.60
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Total Facility PTE:

Regulated Pollutant	Existing Maximum Potential to Emit (TPY)*	Proposed Maximum Potential to Emit (TPY) without fugitives	Proposed Maximum Potential to Emit (TPY) with fugitives	Change in PTE (with fugitives) (TPY)
NO _x	27.38	35.46	35.46	8.08
CO	11.90	46.76	46.76	34.86
VOC	55.10	96.07	109.80	54.77
SO ₂	0.14	0.53	0.53	0.39
PM ₁₀ /PM _{2.5}	1.80	2.88	2.88	1.08
Formaldehyde	4.88	3.87	3.87	-1.01
n-Hexane	0.58	1.77	3.26	2.68
Benzene	0.20	1.05	1.08	0.88
Toluene	0.40	1.18	1.22	0.82
Ethylbenzene	0.16	0.91	0.95	0.79
Xylenes	0.60	1.32	1.36	0.76
Total HAP	6.78	11.32	13.00	7.03
CO ₂ e	21,734	48,630	49,098	27,364

* The existing PTE is taken from the engineering evaluation for G35-A080

AGGREGATION DISCUSSION

To determine major source status, a three-part analysis is used to determine whether emissions from two or more facilities should be aggregated and treated as a single source. The three prongs include: belonging to the same major industrial grouping; and are located on one or more contiguous or adjacent properties; and are under common control.

Same Industrial Grouping:

The subject facility will operate under SIC code 1321 (Natural Gas Liquids Extraction). The upstream gas production wells operate under SIC code 1311 (Crude Petroleum and Natural Gas). Therefore, the subject facility shares the same two-digit major SIC code of 13 as the upstream gas production wells.

Contiguous or Adjacent:

The determination of whether two or more facilities are “contiguous” or “adjacent” is made on a case-by-case basis. The term contiguous is defined in the dictionary as being in

actual contact; touching along a boundary or at a point. The term adjacent is defined in the dictionary as not distant, nearby, having a common endpoint or border.

The subject facility processes gas produced from multiple upstream production wells located in northern West Virginia. Williams' business model is to construct scalable capacity that contemplates additional production from multiple operators and the initial configuration is merely a foundation for additional opportunities in the area. Although the location of the subject facility is in close proximity to one or more nearby upstream production sources, the subject facility does not need to be located in the immediate vicinity of the nearby wells in order to operate properly and was selected for reasons unrelated to the location of the production wells.

Common Control:

Williams OVM operates under its parent company The Williams Companies, Inc. (Williams) and is the sole operator of the subject facility. The closest Williams operated facility to the subject facility is the Corley compressor station, which is located approximately 1.7 miles away. The production wells that send natural gas to the subject facility are owned and operated by other companies, which are unaffiliated with Williams. Williams has no ownership stake in the production wells that may send natural gas to the subject facility.

Furthermore, neither Williams OVM, nor Williams, exercise operational control over any equipment owned or operated by a natural gas producer upstream of the subject facility. All employees at the subject facility are under the exclusive direction of Williams and are not under the control of any other entity. Similarly, Williams has no authority over employees of the production wells. These companies operate wholly independent of one another. No employees are expected to shuttle back and forth between the subject facility and any production well.

At this time, contracts are in place for the subject facility to process natural gas produced from multiple upstream production wells located throughout the region. As future commercial opportunities are identified, the subject facility will potentially receive gas from other producers. Williams will not have ownership or control of any future wellhead facilities. The producers are, and will be responsible for, any decisions to produce or shut-in wellhead facilities and have no control over the equipment installed, owned, and operated by Williams. Similarly, Williams cannot control the installation or operation of any equipment located at a well site that may be considered an air contamination source.

Conclusion:

The three-prong test has not been met. There is no common control with any of the upstream wells. Additionally, the subject facility and the upstream production wells, considered together, do not meet the common sense notion of a plant because the subject facility is expected to service multiple production wells and because the facility was selected for reasons unrelated to the location of the production wells. Therefore, the facilities should not be aggregated to determine major source status. Williams OVM, Burch Ridge Compressor Station should continued to be treated as a single source.

REGULATORY APPLICABILITY

Applicable State Regulations. The following regulations apply to the modified facility. If the modification did not impact existing applicability, it is not addressed.

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

The applicant is not subject to the weight emission standard for particulate matter set forth in 45 CSR2-4.1 because the Oil Heater (Refrigeration Plant) [HTR-01] is less than 10 MMBtu/hr; however, they are subject to the 10% opacity based on a six minute block average. Compliance will be demonstrated by complying with permit requirements. The applicant is using natural gas as fuel; therefore, meeting the 10% opacity requirements should not be a problem.

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

The applicant is adding two VOC combustors [01-COMB and 02-COMB] to the facility that are subject to this rule. The VOC combustors will use natural gas as its fuel and therefore will have negligible particulate matter emissions and is expected to be in compliance by being in compliance with the permit requirements.

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

The Oil Heater (Refrigeration Plant) [HTR-01] has a maximum design heat input of less than 10 MMBtu/hr and are therefore exempt from sections 3, 6, and 8.

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

The applicant is subject to this rule because the facility increase in VOC and NOX emissions exceed the modification thresholds of 6.0 lb/hr and 10 tpy and the individual HAP emissions increase exceeds the modification threshold.

Williams has demonstrated compliance with 45CSR13 by submitting a complete modification permit application, placing a legal advertisement in the *Moundsville Daily Echo* on September 5, 2014, and paying the applicable fees.

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

The facility is subject to 45CSR16 by reference of 40 CFR 60, Subparts JJJJ and OOOO.

45CSR22 AIR QUALITY MANAGEMENT FEE PROGRAM

The applicant has paid the \$1,000 application fee, the \$1,000 NSPS fee and the \$2,500 NESHAP fee as required by section 3.4.b of this rule because they are subject to both NSPS and NESHAP requirements as described in this regulatory review section.

Additionally, the source is required to maintain their certificate to operate.

45CSR34 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The facility is subject to 45CSR34 by reference of 40 CFR 63, Subparts HH and ZZZZ.

Applicable Federal Regulations. The following regulations apply to the modified facility. If the modification did not impact existing applicability, it is not addressed.

40CFR60, SUBPART OOOO STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION

This subpart was not previously addressed in the G35-A080 general permit registration and therefore is being reviewed for the entire facility with this modification application. The Birch Ridge Compressor was installed in 2013.

EPA published its new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. EPA published final amendments to the subpart on September 23, 2013.

40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart as described below:

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

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.

There are no centrifugal compressors at this facility. Therefore, all requirements regarding centrifugal compressors affected facilities 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.

There are reciprocating compressors [CE-01, CE-02, and CE-03] located at this facility that were constructed after August 23, 2011 according to the definition that applies under NSPS, Subpart OOOO and provided below for reference. They are considered affected facilities under this subpart.

The emergency generator engine [GE-01] does not meet the definition of a reciprocating compressor and therefore, is not considered an affected facility under this subpart.

The requirements regarding reciprocating compressors under Subpart OOOO will apply that were last revised December 31, 2014.

Williams OVM will be required to perform the following:

- Replace the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months or collect emissions from the rod packing using a rod packing collection system;*
- 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.*

Commenced construction is not defined under Subpart OOOO; therefore, the definitions for "commence" and "construction" are the definitions provided in §60.2 (Subpart A).

Commenced means, with respect to the definition of new source in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Construction means fabrication, erection, or installation of an affected facility.

- d. For 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.

The pneumatic controllers have a bleed rate \leq 6 scfh. Therefore, the requirements for pneumatic controllers under Subpart OOOO do not apply.

- e. Each storage vessel affected facility, which is a single storage vessel located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

Subpart OOOO defines a storage vessel as a unit that is constructed primarily of non-earthen 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 days 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 produced water/ condensate storage vessels [TK-01 and TK-02] located at the Burch Ridge Compressor Station will be controlled by VOC Vapor Combustors [01-COMB and 02-COMB] which will reduce the potential to emit to less than 6 tpy of VOC. Therefore, Williams OVM is not required by this section to further reduce VOC emissions by 95%.

- f. The group of all equipment, except compressors, within a process unit is an affected facility.

The Burch Ridge Compressor Station is not a natural gas processing plant; however, the refrigeration plant portion of the facility that includes the Oil Heater [HTR-01] and the 60 MMscfd EG Dehydrator [DSV-03] is considered a gas processing plant.

The Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants apply to the refrigeration plant. Compliance will be demonstrated by complying with permit requirements.

- g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.

There are no sweetening units at the Burch Ridge Compressor Station. Therefore, none of the requirements regarding sweetening units under Subpart OOOO apply.

40 CFR63, SUBPART HH NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS FROM OIL AND NATURAL GAS PRODUCTION FACILITIES

Subpart HH establishes national emission limitations and operating limitations of HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. For area source applicability, the affected source includes each triethylene glycol (TEG) dehydration unit located at a facility that meets the criteria specified in §63.760(a).

The two modified glycol dehydration units [DFT-01/02 and DSV-01/02] are TEG dehydration units located at an area source of HAPs and thus are subject to this subpart. Because the potential benzene emissions are less than 1 tpy, the units are only subject to the recordkeeping requirements that demonstrate exemption from the control requirements of this rule.

Based on the PTE emissions, the applicant will be in compliance with the benzene exception from § 63.764(d) and further compliance will be demonstrated by demonstrating compliance with the recordkeeping requirements provided in the permit.

The new EG dehydration unit is not subject to this subpart. For area sources, only TEG dehydration units can be affected sources.

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

Subpart ZZZZ establishes national emission limitations and operating limitations for 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.

At the time that the G35-A General Permit was issued, DAQ had not taken delegation of the area source requirements of this subpart; therefore, both the existing and the new engines are addressed in this discussion.

Williams OVM is subject to this subpart because they own or operate a stationary RICE at an area source of HAP emissions. For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006 per § 63.6590 (a)(1)(iii) and is new if you commenced construction of the stationary RICE on or after June 12, 2006 § 63.6590 (a)(2)(iii).

The Caterpillar (CAT) G3516B engines [CE-01 thru CE-03] commenced or will commence construction after 6/12/606 and therefore are considered “new”. According to § 63.6590(c)(1), new spark ignited RICE must meet the requirements of this rule by complying with NSPS, Subpart JJJJ. The NSPS, Subpart JJJJ requirements will be included in the permit.

The Cummins 4BT3.9-G.3 86 hp emergency engine [GE-01] has a date of manufacture of January 7, 2000 and is therefore considered an existing engine under this subpart.

The definition of an emergency stationary RICE provided in § 63.6675 is:

Emergency stationary RICE means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.

(1) The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.

(2) The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).

(3) The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii) or (iii) and §63.6640(f)(4)(i) or (ii).

There are no emission limits, no fuel requirements, no operating limits, and no notification requirements, and no reporting requirements for this emergency engine < 100 hp located at an area source of HAP emissions. Compliance to this subpart will be demonstrated by demonstrating compliance with the permit requirements.

Non-applicability determinations. It has been determined that the applicant is not subject to the following rules.

45CSR14

The Williams Burch Ridge Compressor Station is not a major source as defined in § 2.3b because it does not emit or have the potential to emit 250 tpy or more of any regulated NSR pollutant. The facility also does not meet the definition of a major modification as defined in § 2.40 because it is not a major source.

45CSR30 (REQUIREMENTS FOR OPERATING PERMITS)

Williams Burch Ridge Compressor Station is a single stationary source for determining Title V applicability as discussed in the aggregation discussion of this evaluation. The Burch Ridge Compressor Station does not meet the definition of a major source defined in 45CSR30 § 2.26.a because the facility PTE does not include any individual HAP that emits 10 tpy or more nor a combination of HAPs that emit 25 tpy or more.

The Burch Ridge Compressor Station does not meet the definition of a major source defined in 45CSR30 § 2.26.b because there is not any air pollutant subject to regulation that has a PTE of 100 tpy or more. The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source unless it belongs to one of the source categories of listed in 2.26.b. It should be noted that although the EG refrigeration system within the Burch Ridge Compressor Station is considered a natural gas processing facility, the compressor station facility source is not considered a natural gas processing facility (2.26.b.38) and therefore, fugitive emissions are not considered when determining major source status. The VOC PTE without considering fugitive emissions is 96.07 tpy and is less than the 100 tpy threshold.

NSPS, Subpart GG (STANDARDS OF PERFORMANCE FOR STATIONARY GAS TURBINES)

This subpart does not apply because the Capstone C200 microturbines [CT01 thru CT-10] are not stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired and therefore do not meet the applicability requirements per § 60.330(a).

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

Subpart Kb establishes control requirements, testing requirements, monitoring requirements, and recordkeeping and reporting requirements. Subpart Kb applies to any storage vessel with a capacity greater than 19,313 gallons that is used to store volatile organic liquids except that it does not apply to storage

vessels with a capacity greater than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 3.5 kPa or with a capacity greater than 19,813 gallons but less than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

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

NSPS, Subpart IIII (STANDARDS OF PERFORMANCE FOR STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES)

The Cummins 4BT3.9-G3 compression ignition engine [GE-01] was manufactured in January, 2000 which is prior to April 1, 2006; therefore this engine is not subject to this subpart per § 60.4200 (a).

NSPS, Subpart KKKK (STANDARDS OF PERFORMANCE FOR STATIONARY COMBUSTION TURBINES)

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 does not apply because the Capstone C200 microturbines [CT01 thru CT-10] do not have a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel per the applicability requirements of § 60.4305(a).

TOXICITY OF NON-CRITERIA REGULATED POLLUTANT

Ethylene Glycol is a new hazardous air pollutant for the refrigeration plant as discussed in the process description section. Napthalene is a small component of diesel fuel for the emergency generator engine.

Ethylene glycol has many uses, including as antifreeze in cooling and heating systems, in hydraulic brake fluids, and as a solvent. Acute (short-term) exposure of humans to ethylene glycol by ingesting large quantities causes three stages of health effects: central nervous system (CNS) depression, followed by cardiopulmonary effects, and later renal damage. The only effects noted in one study of individuals exposed to low levels of ethylene glycol by inhalation for about a month were throat and upper respiratory tract irritation. Rats and mice chronically (long-term) exposed to ethylene glycol in their diet exhibited signs of kidney toxicity and liver effects. Several studies of rodents exposed orally or by inhalation showed ethylene glycol to be fetotoxic. An epidemiologic study on renal cancer mortality did not find an increased risk for workers exposed to ethylene glycol. EPA has not classified ethylene glycol for carcinogenicity.

Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs. Acute (short-term) exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. EPA has classified naphthalene as a Group C, possible human carcinogen.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required for this source due to the fact that the facility is not considered a "major source" according to 45CSR 14 or 45CSR19.

MONITORING OF OPERATIONS

The following monitoring requirements are included in the permit :

- Records to demonstrate facility wide minor source status on an annual basis
- Catalytic oxidizers and air/fuel ratio for engines CE-01, CE-02, CE-03
- Maintenance records for engines and catalytic reduction devices
- Natural gas usage and hours of operation for engines CE-01, -02, -03
- Hours of operation for the emergency generator engine GE-01
- NSPS, Subpart JJJJ monitoring and recordkeeping requirements CE-01, -02,-03
- GACT, Subpart ZZZZ monitoring and recordkeeping requirements GE-01
- NSPS, Subpart OOOO MRR for CE-01,-02, -03
- Natural gas usage for microturbines CT-01 - CT-10
- Opacity requirements for HTR-01
- Throughput records of condensate/produced water tanks
- Throughput and other monitoring of the dehydration units
- GACT, Subpart HH MRR for the TEG dehydration units
- Monitoring of flame for 01-, 02-COMB and VE monitoring
- Leak detection monitoring for refrigeration plant (NSPS, Subpart OOOO)

CHANGES TO PERMIT G35-A080

In addition to the physical modifications address in this application, the R13-3206 permit will replace the existing G35-A080 registration. The R13-3206 permit will include federal requirements for NSPS, Subparts JJJJ and OOOO that the applicant is currently subject to for existing equipment at the site and that have either been revised or became effective since the G35-A General Permit was issued. The R13-3206 permit will also include area source requirements 40 CFR 63, Subparts HH and ZZZZ that

DAQ had not previously taken delegation of at the time that the G35 - A General Permit was issued.

RECOMMENDATION TO DIRECTOR

It is recommended that permit R13-3206 be granted to Williams Ohio Valley Midstream LLC; Burch Ridge Compressor Station located in Proctor, Marshall County. Based on the information provided in the application, including all supplemental information received, the applicant should be in compliance with all applicable state and federal air regulations.



Laura M. Jennings
Permit-Engineer

3/19/15

Date