Mountaineer Keystone

January 18, 2017

West Virginia – Dept. of Environmental Protection
Division of Air Quality
Beverly McKeone, NSR Manager
601 57th Street, SE
Charleston, WV 25304

Reference: General Permit Registration Modification
PDC West Compressor Station
G35-A107B Plant ID # 033-00187
Clarksburg, Harrison County, West Virginia

Dear Ms. McKeone:

MK Midstream Holdings, LLC is submitting this General Permit G-35D Registration Modification (1 paper copy and 2 PDF copies on a CD) for the PDC West Compressor Station facility, Plant ID # 033-00187, located in Clarksburg, Harrison County, West Virginia. This facility currently operates under a G35-A registration issued November 17, 2015 to MK Midstream Holdings LLC which includes equipment at three locations: Goff Compressor Station, Goff M&R and Cather Compression Station.

As requested, the permit modification includes information regarding existing emission sources and modifications under the G35-D application. Please note the required $4,000 permit fee has already been submitted with a previous permit application submitted October 21, 2016 that subsequently been withdrawn per a letter received from the West Virginia DEP dated December 12, 2016.

The purpose of this modification is to 1) increase the flow rate of the two existing Dehydration Units to 67 mmscf/day at the Goff M&R 2) replace two engines (CE-3R and CE-4R) with two engines of the same make and model (CE-7R and CE-8R) and 3) add Tanks TK-3, 4, and 5. Once these changes are made the following equipment will be located at the facility.

Engines:

- CE-1R Caterpillar G3516B LE Compressor Engine – Goff Compressor Station
- CE-2R Caterpillar G3516B LE Compressor Engine – Goff Compressor Station
- CE-5R Caterpillar G3608TALE Compressor Engine – Cather Compressor Station
- CE-6R Caterpillar G3606TALE Compressor Engine – Cather Compressor Station
- CE-7R Caterpillar G3516B LE Compressor Engine – Goff Compressor Station
- CE-8R Caterpillar G3516B LE Compressor Engine – Goff Compressor Station

Dehydration Units:

- RSV-1 Exterran Dehydration Unit 2012, 67 mmscf/day-Goff M&R
- RBV-1 Exterran Reboiler 2012, 1.0 mm BTU/Hr -Goff M&R
- RSV-2 Exterran Dehydration Unit 2013, 67 mmscf/day-Goff M&R
- RBV-2 Exterran Reboiler Unit 2013, 1.0 mm BTU/Hr -Goff M&R

Tanks:

- TK-1, TEG/Produced Liquid – Goff M&R
- TK-2, Oil Catch Storage Tank – Goff Compressor Station
- TK-3, Produced Liquid – Goff Compressor Station
- TK-4, Stormwater/Leaked Oils – Cather Compressor Station
- TK-5, Stormwater/Leaked Oils – Cather Compressor Station

Please note, the combined potential emissions from the listed equipment do not exceed major facility thresholds.

MK Midstream Holdings, LLC would like to take this time to notify the Department that the paperwork to rename "PDC West Compressor Station" (as it is listed currently in the Certificate to Operate for Plant ID # 033-00187), to "Goff West Compressor Station" is in the process of being submitted. "Goff West Compressor Station" will still include the facilities identified in the first paragraph above: Goff Compressor Station, Goff M&R and Cather Compression Station.

Please feel free to contact me at 724-940-1112, if the WVDEP-DAQ has any questions regarding the information in this General Permit Registration Modification.

Sincerely,
Mountaineer Keystone, LLC

Meghan M.B. Yingling
Environmental Compliance Manager

cc: Stacey Lucas, Vice President, HSE, Mountaineer Keystone LLC
William Veigel, Director of Production, Mountaineer Keystone LLC
Thomas S. Seguljic, PE, HRP Associates, Inc.

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G35-D GENERAL PERMIT REGISTRATION APPLICATION

PREVENTION AND CONTROL OF AIR POLLUTION IN REGARD TO THE CONSTRUCTION, MODIFICATION, RELOCATION, ADMINISTRATIVE UPDATE AND OPERATION OF NATURAL GAS COMPRESSOR AND/OR DEHYDRATION FACILITIES

☐CONSTRUCTION
X MODIFICATION
☐RELOCATION
☐CLASS I ADMINISTRATIVE UPDATE
☐CLASS II ADMINISTRATIVE UPDATE

SECTION 1. GENERAL INFORMATION

Name of Applicant (as registered with the WV Secretary of State's Office):
MK MIDSTREAM HOLDINGS, LLC

Federal Employer ID No. (FEIN):47-1919654

Applicant's Mailing Address: 65 PROFESSIONAL PLACE SUITE 200

City:BRIDGEPORT	State: WV	ZIP Code:26330

Facility Name: PDC WEST COMPRESSOR STATION

Operating Site Physical Address:50 E. DAVISSON RUN RD. CLARKSBURG, HARRISON COUNTY, WV
If none available, list road, city or town and zip of facility.

City:CLARKSBURG	Zip Code:26302	County:HARRISON

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: 39.275550
Longitude: -80.403099

SIC Code: 1311 NAICS Code: 211111	**DAQ Facility ID No. (For existing facilities)** 03-00187

CERTIFICATION OF INFORMATION

This G35-DGeneral Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of the Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. **Any administratively incomplete or improperly signed or unsigned G35-D Registration Application will be returned to the applicant. Furthermore, if the G35-D forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.**

I hereby certify that is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Division of Air Quality immediately.

I hereby certify that all information contained in this G35-DGeneral Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible.

Responsible Official Signature:
Name and Title: Stacey Lucas, Vice President, Health Safety and Environment Phone:724-940-1118
Fax:
Email:slucas@mkeystone.com Date: 1/17/17

If applicable:
Authorized Representative Signature:
Name and Title: Phone: Fax:
Email: Date:

If applicable:
Environmental Contact
Name and Title:Meghan M.B. Yingling, Environmental Compliance Manager Phone:724-940-1112 Fax:
Email:myingling@mkeystone.com Date: 1-17-17

OPERATING SITE INFORMATION	
Briefly describe the proposed new operation and/or any change(s) to the facility: The purpose of this modification is to increase the flow rate on the two existing Dehydration Units to 67 mmscf/day on the Goff M&R, to replace two engines (CE-3R and CE-4R) with two engines of the same make and model (CE-7R and CE-8R), and add TK-3, TK-4, and TK-5.	
Directions to the facility: From I-79 South; (1.) At exit 119, take ramp right for US-50 West toward Clarksburg, Travel 7.0 miles (2.) Turn left onto WV-98/Old US 50 / Sun Valley Rd. travel 0.4 miles (3.) turn left to stay on WV-98 and ravel 0.3 miles (4.) arrive at the PDC West Compressor Station on the right.	
ATTACHMENTS AND SUPPORTING DOCUMENTS	
I have enclosed the following required documents:	
Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22). ☐ Check attached to front of application. ☐ I wish to pay by electronic transfer. Contact for payment (incl. name and email address): ☐ I wish to pay by credit card.Contact for payment (incl. name and email address): X $500 (Construction, Modification, and Relocation)☐$300 (Class II Administrative Update) X $1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO and/or OOOOa[1] X $2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH[2] *PLEASE NOTE $4,000 FEE WAS SUBMITTED UNDER PREVIOUS WITHDRAWN PERMIT APPLICATION* [1] Only one NSPS fee will apply. [2] Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ. *NSPS and NESHAP fees apply to new construction or if the source is being modified.*	
☐Responsible Official or Authorized Representative Signature (if applicable)	
X Single Source Determination Form **(must be completed in its entirety)**– Attachment A	
☐Siting Criteria Waiver (if applicable) – Attachment B	X Current Business Certificate – Attachment C
X Process Flow Diagram – Attachment D	X Process Description – Attachment E
X Plot Plan – Attachment F	X Area Map – Attachment G
X G35-D Section Applicability Form – Attachment H	X Emission Units/ERD Table – Attachment I
X Fugitive Emissions Summary Sheet – Attachment J	
X Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment K	
X Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment L	
X Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment M	
X Tanker Truck Loading Data Sheet (if applicable) – Attachment N	
X Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment O	
X Pneumatic Controllers Data Sheet – Attachment P	
X Centrifugal Compressor Data Sheet – Attachment Q	
X Reciprocating Compressor Data Sheet – Attachment R	
X Blowdown and Pigging Operations Data Sheet – Attachment S	
☐ Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment T	
X Emission Calculations (please be specific and include all calculation methodologies used) – Attachment U	
X Facility-wide Emission Summary Sheet(s) – Attachment V	
X Class I Legal Advertisement – Attachment W	
X One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

All attachments must be identified by name, divided into sections, and submitted in order.

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

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 Source Determination Rule for the oil and gas industry was published in the Federal Register on June 3, 2016 and will become effective on August 2, 2016. EPA defined the term "adjacent" and stated that equipment and activities in the oil and gas sector that are under common control will be considered part of the same source if they are located on the same site or on sites that share equipment and are within ¼ mile of each other.

Is there equipment and activities in the same industrial grouping (defined by SIC code)?
Yes X No ☐

Is there equipment and activities under the control of the same person/people?
Yes X No ☐

Is there equipment and activities located on the same site or on sites that share equipment and are within ¼ mile of each other?
Yes ☐ No X

Please see the Attached Discussion for Further Detail

Attachment A Cont.

To determine if aggregation of facilities is appropriate, the following three-prong test must be completed;

1. The sources belong to a single major industrial grouping (same two-digit major SIC code);

The Compressor Stations and well pads are both listed as SIC Code 1311 which includes:

Establishments primarily engaged in operating oil and gas field properties. Such activities may include exploration for crude petroleum and natural gas; drilling, competing, and equipping wells; operation of separators, emulsion breakers, distilling equipment, and field gathering lines for crude petroleum; and all other activities in the preparation of oil and gas up to the point of shipment from the producing property. This industry includes the production of oil through the mining and extraction of oil from oil sands and the production of gas and hydrocarbon liquids through gasification, liquid faction, and pyrolysis at the mine site.

2. The sources are under common control of the same person (or persons under common control); The sources are under common control of the same person (or persons under common control) since Mountaineer Keystone is the majority owner of the Goff West Station and Mountaineer Keystone employees work and manage both the well pads and Goff Compressor Station.
3. The sources are located on one or more “contiguous or adjacent” properties
   The WPA has established that any operations within ¼ mile are considered contiguous or adjacent. The noted wellpads are located greater than ¼ mile from the Goff West Station.

In summary, since the facilities are greater than ¼ mile apart, the Single source determination does not apply.

ATTACHMENT C–CURRENT BUSINESS CERTIFICATE

If the applicant is a resident of West Virginia, the applicant should provide a copy of the current Business Registration Certificate issued to them from the West Virginia Secretary of State's Office. If the applicant is not a resident of the State of West Virginia, the registrant should provide a copy of the Certificate of Authority/Authority of LLC/Registration. This information is required for all sources to operate a business in West Virginia regardless of whether it is a construction, modification, or administrative update.

If you are a new business to West Virginia and have applied to the West Virginia Secretary of State's Office for a business license, please include a copy of your application.

Please note: Under the West Virginia Bureau of Employment Programs, 96CSR1, the DAQ may not grant, issue, or renew approval of any permit, general permit registration, or Certificate to Operate to any employing unit whose account is in default with the Bureau of Employment Programs Unemployment Compensation Division.

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
MK MIDSTREAM HOLDINGS, LLC
65 PROFESSIONAL PL 200
BRIDGEPORT, WV 26330-1889

BUSINESS REGISTRATION ACCOUNT NUMBER: **2306-9776**

This certificate is issued on: **02/19/2015**

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

The person or organization identified on this certificate is registered to conduct business in the State of West Virginia at the location above.

This certificate is not transferrable and must be displayed at the location for which issued

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them. CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

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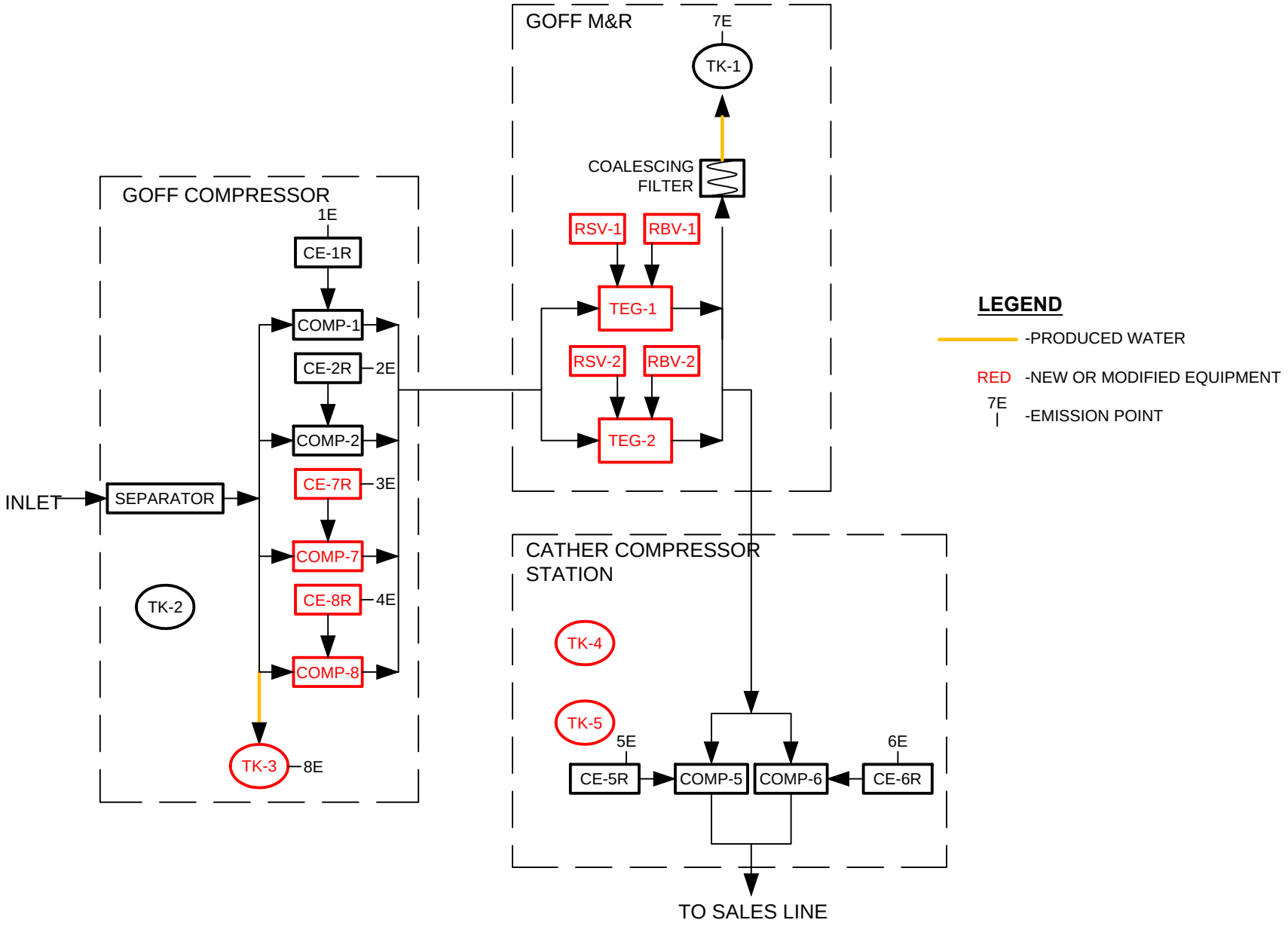
ATTACHMENT D – PROCESS FLOW DIAGRAM

Provide a diagram or schematic that supplements the process description of the operation. The process flow diagram must show all sources, components or facets of the operation in an understandable line sequence of operation. The process flow diagram should include the emission unit ID numbers, the pollution control device ID numbers, and the emission point ID numbers consistent with references in other attachments of the application. For a proposed modification, clearly identify the process areas, emission units, emission points, and/or control devices that will be modified, and specify the nature and extent of the modification.

Use the following guidelines to ensure a complete process flow diagram:

- The process flow diagram shall logically follow the entire process from beginning to end.
- Identify each emission source and air pollution control device with proper and consistent emission unit identification numbers, emission point identification numbers, and control device identification numbers.
- The process flow lines may appear different for clarity. For example, dotted lines may be used for vapor flow and solid lines used for liquid flow and arrows for direction of flow.
- The process flow lines may be color coded. For example: new or modified equipment may be red; old or existing equipment may be blue; different stages of preparation such as raw material may be green; and, finished product or refuse, another color.



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PROCESS FLOW DIAGRAM

PDC WEST COMPRESSOR STATION

MK MIDSTREAM HOLDINGS, LLC
FACILITY ID 033-00187

SCALE:	NONE
ISSUE DATE:	01/06/2017
PROJECT NUMBER:	MOU7000.AC

ATTACHMENT D

SHEET NO.

ATTACHMENT E – PROCESS DESCRIPTION

Provide a detailed written description of the operation for which the applicant is seeking a permit. The process description is used in conjunction with the process flow diagram to provide the reviewing engineer a complete understanding of the activity at the operation. Describe in detail and order the complete process operation.

Use the following guidelines to ensure a complete Process Description:

- The process flow diagram should be prepared first and used as a guide when preparing the process description. The written description shall follow the logical order of the process flow diagram.
- All emission sources, emission points, and air pollution control devices must be included in the process description.
- When modifications are proposed, describe the modifications and the effect the changes will have on the emission sources, emission points, control devices and the potential emissions.
- Proper emission source ID numbers must be used consistently in the process description, the process flow diagram, the emissions calculations, and the emissions summary information provided.
- Include any additional information that may facilitate the reviewers understanding of the process operation.

The process description is required for all sources regardless of whether it is a construction, modification, or administrative update.

Pipeline quality natural gas (dry) is supplied to six (6) 1380 BHP Caterpillar Internal combustion engine (CE-1R, CE-2R, CE-5R, CE-6R, CE-7R and CE-8R) each equipped Oxidation Catalytic Converters, for emission reductions.
The engines drive compressors to move the natural gas through a pipeline into two (2) 67 MMCFD Tri-Ethylene Glycol (TEG) Dehydrators (TEG-1 and TEG-2) for drying the gas to below 7.0lbs/MMSCFD of Water Content and eventually into a sales line.

Produced liquid, which is mainly water with minimal levels of VOCs, from initial separation and dehydration, is stored within tanks TK-1 and TK-3. The produced liquids are transferred from the tanks to trucks via transfer hoses for off-site treatment/disposal. In addition, stormwater collected from the pads and oil collected from the compressors is stored in tanks TK-2, TK-4 and TK-5.

There are fugitive emissions associated with piping connection, valves and controllers. These emissions occur due to potential seepage from connections, flanges and open ended lines.

This permit modification includes:
- Increasing Glycol Dehydration units RSV-1 and RSV-2 from 31 mmscf/day and 45 mmscf/day to 67mmscf/day for both units
- Addition of the following Tanks:
1. TK 3-100 bbl Tank used to collect produced water from Compressor CE-1R, CE-2R, CE-7R and CE-8R located on Goff Compressor Station
2. TK-4 and TK-5 2 50 bbl tanks located on Cather Compressor Station to collect produced water from compressor CE-5R and CE-6R

- Replacement of engines CE-3R and CE-4R with like-kind engines (CE-7R and CE-8R).

ATTACHMENT F – PLOT PLAN

Provide an accurately scaled and detailed Plot Plan showing the locations of all emission units, emission points, and air pollution control devices. Show all emission units, affected facilities, enclosures, buildings and plant entrances and exits from the nearest public road(s) as appropriate. Note height, width and length of proposed or existing buildings and structures.

A scale between 1"=10' and 1"=200' should be used with the determining factor being the level of detail necessary to show operation or plant areas, affected facilities, emission unit sources, transfer points, etc. An overall small scale plot plan (e.g., 1"=300') should be submitted in addition to larger scale plot plans for process or activity areas (e.g., 1"=50') if the plant is too large to allow adequate detail on a single plot plan. Process or activity areas may be grouped for the enlargements as long as sufficient detail is shown.

Use the following guidelines to ensure a complete Plot Plan:

- Facility name
- Company name
- Company facility ID number (for existing facilities)
- Plot scale, north arrow, date drawn, and submittal date.
- Facility boundary lines
- Base elevation
- Lat/Long reference coordinates from the area map and corresponding reference point elevation
- Location of all point sources labeled with proper and consistent source identification numbers

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

DRAWING NAME: S:\Data\M\MOUKE - MOUNTAINEER KEYSTONE\6031 WALLACE RD EXT, WEXFORD, PA\MOU7000AC\Goff Compressor\ATTACHMENT F - PLOT PLAN.dwg LAYOUT: 24 x 36 - SSM PLOT DATE: Jan 17, 2017 - 3:19pm OPERATOR: BOB

NOTE:
LOCATIONS ARE APPROXIMATE AND DRAWING IS NOT FOR CONTRUCTION.

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NORTH

0 50' 100'

REVISIONS

NO.	DATE	DESCRIPTION

DESIGNED: MEW	SCALE: 1" = 100'
DRAWN: BOB	ISSUE DATE: 01/06/2017
REVIEWED: MEW	PROJECT NUMBER: MOU7000.AC
APPROVED: TSS	SHEET SIZE: 24"x36"

P.E. SEAL

PDC WEST COMPRESSOR STATION
MK MIDSTREAM HOLDINGS, LLC
FACILITY 033-00187

PLOT PLAN

ATTACHMENT
F

ATTACHMENT G – AREA MAP

Provide an Area Map showing the current or proposed location of the operation. On this map, identify plant or operation property lines, access roads and any adjacent dwelling, business, public building, school, church, cemetery, community or institutional building or public park within a 300' boundary circle of the collective emission units.

Please provide a 300' boundary circle on the map surrounding the proposed emission units collectively.

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Legend

- Goff Compressor
- Goff M-R
- Cather Compressor
- 300 foot Buffer

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North

0 150 300
Feet

Revisions					
No.					
Date					

Designed By: MEW	Drawn By: BOB	Reviewed By: TSS
Issue Date: 01/06/2017	Project No: MOU7000.AC	Sheet Size: 11x17

Area Map

PDC West
Compressor Station

MK Midstream Holdings, LLC
Facility ID 033-00187

ATTACHMENT

G

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ATTACHMENT H–G35-D SECTION APPLICABILITY FORM

General Permit G35-D Registration
Section Applicability Form

General Permit G35-D was developed to allow qualified applicants to seek registration for a variety of sources. These sources include storage vessels, gas production units, in-line heaters, heater treaters, glycol dehydration units and associated reboilers, pneumatic controllers, centrifugal compressors, reciprocating compressors, reciprocating internal combustion engines (RICEs), tank truck loading, fugitive emissions, completion combustion devices, flares, enclosed combustion devices, and vapor recovery systems. All registered facilities will be subject to Sections 1.0, 2.0, 3.0, and 4.0.

General Permit G35-D allows the registrant to choose which sections of the permit they are seeking registration under. Therefore, please mark which additional sections that you are applying for registration under. If the applicant is seeking registration under multiple sections, please select all that apply.Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

GENERAL PERMIT G35-D APPLICABLE SECTIONS	
X Section 5.0	Storage Vessels Containing Condensate and/or Produced Water[1]
☐Section 6.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO/OOOOa)
☐Section 7.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO/OOOOa and/or NESHAP Subpart HH
X Section 8.0	Small Heaters and Reboilers not subject to 40CFR60 Subpart Dc
☐Section 9.0	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO/OOOOa)
☐ Section 10.0	Centrifugal Compressor Affected Facility (NSPS, Subpart OOOO/OOOOa)[2]
X Section 11.0	Reciprocating Compressor Affected Facility (NSPS, Subpart OOOO/OOOOa)[2]
X Section 12.0	Reciprocating Internal Combustion Engines, Generator Engines. Microturbine Generators
X Section 13.0	Tanker Truck Loading[3]
X Section 14.0	Glycol Dehydration Units[4]
X Section 15.0	Blowdown and Pigging Operations
X Section 16.0	Fugitive Emission Components (NSPS, Subpart OOOOa)

1 Applicants that are subject to Section 5 may also be subject to Section 6 if the applicant is subject to the NSPS, Subpart OOOO/OOOOa control requirements or the applicable control device requirements of Section 7.

2 Applicants that are subject to Section 10 and 11may also be subject to the applicable RICE requirements of Section 12.

3 Applicants that are subject to Section 13 may also be subject to control device and emission reduction device requirements of Section 7.

4 Applicants that are subject to Section 14may also be subject to the requirements of Section 8 (reboilers).Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 7.

ATTACHMENT I – EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

Include ALL emission units and air pollution control devices/ERDs that will be part of this permit application review. Do not include fugitive emission sources in this table. Deminimis storage tanks shall be listed in the Attachment K table. This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed	Manufac. Date[3]	Design Capacity	Type[4] and Date of Change	Control Device(s)[5]	ERD(s)[6]
CE-1R	1E	Caterpillar G3516B LE Compressor Engine	2011	After 2010	1380 hp/1,400 rpm	Existing	Oxidation Catalyst	1D
CE-2R	2E	Caterpillar G3516B LE Compressor Engine	2011	After 2010	1380 hp/1,400 rpm	Existing	Oxidation Catalyst	2D
CE-7R	3E	Caterpillar G3516B LE Compressor Engine	2017	11/16/2012	1380 hp/1,400 rpm	New	Oxidation Catalyst	3D
CE-8R	4E	Caterpillar G3516B LE Compressor Engine	2017	3/17/2013	1380 hp/1,400 rpm	New	Oxidation Catalyst	4D
CE-5R	5E	Caterpillar G3608 TALE Compressor Engine	2015	4/11/2011	2370 hp/1,000 rpm	Existing	Oxidation Catalyst	5D
CE-6R	6E	Caterpillar G3606 TALE Compressor Engine	2015	12/12/2014	1775 hp/1,000 rpm	Existing	Oxidation Catalyst	6D
TEG-1	RSV-1	Exterran Dehydration Unit	2012	2012	67 mmscf.day	Modified	N/A	NA
TEG-1	RBV-1	Exterran Reboiler	2012	2012	1.0mmBtu/hr	Existing	N/A	NA
TEG-2	RSV-2	Exterran Dehydration Unit	2013	2012	67 mmscf/day	Modified	N/A	NA
TEG-2	RBV-2	Exterran Reboiler	2013	2012	1.0 mmBtu/hr	Existing	N/A	NA
TK-1	7E	TEG/Produced Liquid	2011	2011	210 bbl	Existing	N/A	NA
TK-3	8E	Produced Liquid	2016	2016	100 bbl	New	N/A	NA

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] When required by rule
[4] New, modification, removal, existing
[5] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.
[6] For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

ATTACHMENT J – FUGITIVE EMISSIONS SUMMARY SHEET

Sources of fugitive emissions may include loading operations, equipment leaks, blowdown emissions, etc.
Use extra pages for each associated source or equipment if necessary.

Source/Equipment: Facility-Wide

Leak Detection Method Used	☐Audible, visual, and olfactory (AVO) inspections	☐Infrared (FLIR) cameras	☐Other (please describe)	X None required*

Is the facility subject to quarterly LDAR monitoring under 40CFR60 Subpart OOOOa? X Yes ☐ No. If no, why?

Component Type	Closed Vent System	Count	Source of Leak Factors (EPA, other (specify))	Stream type (gas, liquid, etc.)	Estimated Emissions (tpy)		
					VOC	HAP	GHG (CO_2e)
Pumps	☐ Yes X No	9	13.3 scf/hr/component, Physical Count	X Gas ☐ Liquid ☐ Both	3.16	<0.001	498.15
Valves	☐ Yes X No	205	0.027 scf/hr/component, Valve maintenance records	X Gas ☐ Liquid ☐ Both	0.15	<0.001	23.03
Safety Relief Valves	☐ Yes X No	24	0.040 scf/hr/component, Relief valve test records/component count	X Gas ☐ Liquid ☐ Both	0.16	<0.001	4.00
Open Ended Lines	☐ Yes X No	5	0.061 scf/hr/component, one per tank	X Gas ☐ Liquid ☐ Both	0.01	<0.001	1.27
Sampling Connections	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			
Connections(Not sampling)	☐ Yes X No	496	0.003 scf/hr/component, Drawings	X Gas ☐ Liquid ☐ Both	0.04	<0.001	6.19
Compressors**	☐ Yes X No			☐ Gas ☐ Liquid ☐ Both			
Flanges	☐ Yes ☐ No	292	0.003 scf/hr/component, Drawings	X Gas ☐ Liquid ☐ Both	0.02	<0.001	3.65
Other[1]	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			

[1] Other equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc.

*None required to date, will complete necessary LDAR per the requirements of Subpart OOOOa by June 3, 2017

**Compressor fugitive emissions accounted for in compressor blowdown in Attachment S

Please provide an explanation of the sources of fugitive emissions (e.g. pigging operations, equipment blowdowns, pneumatic controllers, etc.): Pigging operations and equipment blowdowns
Please indicate if there are any closed vent bypasses (include component): NA
Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.) NA

ATTACHMENT K – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for ***each*** new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

□ Composition of the representative sample used for the simulation
□ For each stream that contributes to flashing emissions:
  □ Temperature and pressure (inlet and outlet from separator(s))
  □ Simulation-predicted composition
  □ Molecular weight
  □ Flow rate
□ Resulting flash emission factor or flashing emissions from simulation
□ Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION

1. Bulk Storage Area Name Goff West Compressor Station	2. Tank Name: TK-3
3. Emission Unit ID number TK-3	4. Emission Point ID number: 8E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2016 Was the tank manufactured after August 23, 2011? X Yes ☐ No	6. Type of change: X New construction ☐ New stored material ☐ Other ☐Relocation
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes X No	
7C. Was USEPA Tanks simulation software utilized? ☐ Yes X No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. 210 bbl	
9A. Tank Internal Diameter (ft.) 10	9B. Tank Internal Height (ft.) 15
10A. Maximum Liquid Height (ft.) 12.75	10B. Average Liquid Height (ft.) 12.75
11A. Maximum Vapor Space Height (ft.) 2.25	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume". 210 bbl	
13A. Maximum annual throughput (gal/yr) 458,640	13B. Maximum daily throughput (gal/day) 1,256
14. Number of tank turnovers per year 52	15. Maximum tank fill rate (gal/min) 0.04
16. Tank fill method X Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes X No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): X Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

X Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐Carbon Adsorption[1]

☐Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss (VOC)**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
Produced Liquid							0.0028	0.0121	MB

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: X Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)			
21A. Shell Color: Tan	21B. Roof Color: Tan	21C. Year Last Painted:2015	
22. Shell Condition (if metal and unlined): X No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable			
22A. Is the tank heated? ☐ Yes X No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**			
24. Is the tank a **Vertical Fixed Roof Tank**? X Yes ☐No	24A. If yes, for dome roof provide radius (ft): 4	24B. If yes, for cone roof, provide slop (ft/ft):	
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply X			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐Vapor mounted resilient seal ☐ Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐No			
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):			
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** X Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:		
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes X No			
28. Closed Vent System with Enclosed Combustor? ☐ Yes X No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based: Charleston, WV			
30. Daily Avg. Ambient Temperature (°F):54.75	31. Annual Avg. Maximum Temperature (°F): 65.5		
32. Annual Avg. Minimum Temperature (°F): 44	33. Avg. Wind Speed (mph): 6.3		
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):1123	35. Atmospheric Pressure (psia):14.617		
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F):14.5	36A. Minimum (°F): 52.2	36B. Maximum (°F): 66.7	
37. Avg. operating pressure range of tank (psig): 0.4525	37A. Minimum (psig): 0.2191	37B. Maximum (psig): 0.9075	
38A. Minimum liquid surface temperature (°F):52.2	38B. Corresponding vapor pressure (psia) :0.2191		
39A. Avg. liquid surface temperature (°F):56.3	39B. Corresponding vapor pressure (psia) :0.4525		
40A. Maximum liquid surface temperature (°F):65.7	40B. Corresponding vapor pressure (psia): 0.9075		
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	Produce Liquid 100%		
41B. CAS number:	NA		
41C. Liquid density (lb/gal):	8.33		
41D. Liquid molecular weight (lb/lb-mole):	18.02		
41E. Vapor molecular weight (lb/lb-mole):	18.02		
41F. Maximum true vapor pressure (psia):	1.0		
41G. Maximum Reid vapor pressure (psia):	0.46		
41H. Months Storage per year. From:Jan. To: Dec.	12		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	0/Ambient		

ATTACHMENT K – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for ***each*** new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

□Composition of the representative sample used for the simulation
□For each stream that contributes to flashing emissions:
□ Temperature and pressure (inlet and outlet from separator(s))
□ Simulation-predicted composition
□Molecular weight
□Flow rate
□Resulting flash emission factor or flashing emissions from simulation
□Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION

1. Bulk Storage Area Name: Goff M&R	2. Tank Name: TK-1
3. Emission Unit ID number TK-1	4. Emission Point ID number: 7E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2011 Was the tank manufactured after August 23, 2011? X Yes ☐ No	6. Type of change: ☐ New construction ☐ New stored material X Other ☐Relocation
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes X No	
7C. Was USEPA Tanks simulation software utilized? ☐ Yes X No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. 100 bbl	
9A. Tank Internal Diameter (ft.) 8	9B. Tank Internal Height (ft.) 10
10A. Maximum Liquid Height (ft.) 8.5	10B. Average Liquid Height (ft.) 8.5
11A. Maximum Vapor Space Height (ft.) 2.25	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume". 100 bbl	
13A. Maximum annual throughput (gal/yr) 218,400	13B. Maximum daily throughput (gal/day) 598
14. Number of tank turnovers per year 52	15. Maximum tank fill rate (gal/min)
16. Tank fill method X Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes X No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): X Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

X Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss (VOC)**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
Produced Liquid							0.0076	0.0335	MB

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: X Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)			
21A. Shell Color: Tan	21B. Roof Color: Tan	21C. Year Last Painted: 2015	
22. Shell Condition (if metal and unlined): X No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable			
22A. Is the tank heated? ☐ Yes X No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**			
24. Is the tank a **Vertical Fixed Roof Tank**? X Yes ☐ No	24A. If yes, for dome roof provide radius (ft): 5	24B. If yes, for cone roof, provide slop (ft/ft):	
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply X			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No			
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):			
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** X Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:		
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes X No			
28. Closed Vent System with Enclosed Combustor? ☐ Yes X No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based: Charleston, WV			
30. Daily Avg. Ambient Temperature (°F):54.75	31. Annual Avg. Maximum Temperature (°F) :65.5		
32. Annual Avg. Minimum Temperature (°F): 44	33. Avg. Wind Speed (mph): 6.3		
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): 1123	35. Atmospheric Pressure (psia): 14.617		
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): 14.5	36A. Minimum (°F): 52.2	36B. Maximum (°F): 66.7	
37. Avg. operating pressure range of tank (psig): 0.4525	37A. Minimum (psig): 0.2191	37B. Maximum (psig): 0.9075	
38A. Minimum liquid surface temperature (°F): 52.2	38B. Corresponding vapor pressure (psia): 0.2191		
39A. Avg. liquid surface temperature (°F): 56.3	39B. Corresponding vapor pressure (psia): 0.4525		
40A. Maximum liquid surface temperature (°F): 66.7	40B. Corresponding vapor pressure (psia): 0.9075		
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	Produced Liquid		
41B. CAS number:			
41C. Liquid density (lb/gal):	8.33		
41D. Liquid molecular weight (lb/lb-mole):	18.02		
41E. Vapor molecular weight (lb/lb-mole):	18.02		
41F. Maximum true vapor pressure (psia):	1.00		
41G. Maximum Reid vapor pressure (psia):	0.46		
41H. Months Storage per year. From: January To: December	12		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	O/Ambient		

STORAGE TANK DATA TABLE

List all deminimis storage tanks (i.e. lube oil, glycol, diesel etc.)

Source ID #[1]	Status[2]	Content[3]	Volume[4]
TK-2	EXIST	Oil	4200 (gal)
TK-4	NEW	Stormwater/leaked oils	2100 (gal)
TK-5	NEW	Stormwater/leaked oils	2100 (gal)

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:
   - EXIST Existing Equipment
   - NEW Installation of New Equipment
   - REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, diesel, mercaptan etc.
4. Enter the maximum design storage tank volume in gallons.

ATTACHMENT L – SMALL HEATERS AND REBOILERS NOT SUBJECT TO 40CFR60 SUBPART DC
DATA SHEET

Complete this data sheet for each small heater and reboiler not subject to 40CFR60 Subpart Dc at the facility. ***The Maximum Design Heat Input (MDHI)must be less than 10 MMBTU/hr.***

Emission Unit ID#[1]	Emission Point ID#[2]	Emission Unit Description (manufacturer, model #)	Year Installed/ Modified	Type[3] and Date of Change	Maximum Design Heat Input (MMBTU/hr)[4]	Fuel Heating Value (BTU/scf)[5]
TEG-1	RBV-1	Exterran Reboiler	2012	NA	1.0	1030
TEG-2	RBV-2	Exterran Reboiler	2013	NA	1.0	1030

1 Enter the appropriate Emission Unit (or Source) identification number for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For sources, use 1S, 2S, 3S…or other appropriate designation. Enter glycol dehydration unit Reboiler Vent data on the Glycol Dehydration Unit Data Sheet.

2 Enter the appropriate Emission Point identification numbers for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For emission points, use 1E, 2E, 3E…or other appropriate designation.

3 New, modification, removal

4 Enter design heat input capacity in MMBtu/hr.

5 Enter the fuel heating value in BTU/standard cubic foot.

ATTACHMENT M – INTERNAL COMBUSTION ENGINE DATA SHEET

Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID#[1]	CE-IR	CE-2R	CE-7R
Engine Manufacturer/Model	CAT G3516B	CAT G3516B	CAT G3516B
Manufacturers Rated bhp/rpm	1380/1400	1380/1400	1380/1400
Source Status[2]	ES	ES	NS
Date Installed/ Modified/Removed/Relocated[3]	2011	2011	2017
Engine Manufactured /Reconstruction Date[4]	After 2010	After 2010	11/16/12
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]	X 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ X NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	X 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ X NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	X 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ X NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources
Engine Type[6]	4SLB	4SLB	4SLB
APCD Type[7]	OxCat	OxCat	OxCat
Fuel Type[8]	RG	RG	RG
H_2S (gr/100 scf)	0.025	0.025	0.025
Operating bhp/rpm	1380/1400	1380/1400	1380/1400
BSFC (BTU/bhp-hr)	7301	7301	7301
Hourly Fuel Throughput	11,340 ft^3/hr gal/hr	11,340 ft^3/hr gal/hr	11,340 ft^3/hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)	$MMft^3$/yr 99.3 gal/yr	$MMft^3$/yr 99.3 gal/yr	$MMft^3$/yr 99.3 gal/yr
Fuel Usage or Hours of Operation Metered	Yes X No ☐	Yes X No ☐	Yes X No ☐

Calculation Methodology[9]	**Pollutant[10]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**
Stack Test/Spec Sheet	NO_x	1.06	4.66	1.12	4.92	1.52	6.66
Stack Test/Spec Sheet	CO	0.5161	2.26	0.1822	0.7979	3.70	16.19
Stack Test/Spec Sheet	VOC	0.0304	0.1330	0.0607	0.2660	1.46	6.40
AP-42	SO_2	0.0021	0.0090	0.0021	0.0090	0.0021	0.0090
AP 42	PM_{10}	0.0003	0.0012	0.0003	0.0012	0.0003	0.0012
AP 42	Formaldehyde	0.1853	0.8117	0.1853	0.8117	0.2100	0.9200
AP 42	Total HAPs	0.2534	1.11	0.2534	1.11	0.2781	1.22
AP 42	GHG (CO_2e)	386.18	1691	386.18	1691	386.18	1691

ATTACHMENT M – INTERNAL COMBUSTION ENGINE DATA SHEET

Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID#[1]		CE-8R		CE-5R		CE-6R	
Engine Manufacturer/Model		CAT G3516B		CAT G3608TALE		CAT G3606TALE	
Manufacturers Rated bhp/rpm		1380/1400		2370/1000		1775/1000	
Source Status[2]		NS		ES		ES	
Date Installed/ Modified/Removed/Relocated[3]		2017		2015		2015	
Engine Manufactured /Reconstruction Date[4]		3/17/2013		4/11/2011		12/12/2014	
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]		☓ 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☓ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☓ 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☓ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☓ 40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☓ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	
Engine Type[6]		4SLB		4SLB		4SLB	
APCD Type[7]		OxCat		OxCat		OxCat	
Fuel Type[8]		RG		RG		RG	
H_2S (gr/100 scf)		0.025		0.025		0.025	
Operating bhp/rpm		1380/1400		2370/1000		1775/1000	
BSFC (BTU/bhp-hr)		7,301		6,677		6,697	
Hourly Fuel Throughput		11,340 ft^3/hr gal/hr		17,940 ft^3/hr gal/hr		13,440 ft^3/hr gal/hr	
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		MMft^3/yr 99.3 gal/yr		MMft^3/yr 157.1 gal/yr		MMft^3/yr 117.7 gal/yr	
Fuel Usage or Hours of Operation Metered		Yes ☓ No ☐		Yes ☓ No ☐		Yes ☓ No ☐	
Calculation Methodology[9]	**Pollutant[10]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**
OT(Stack Test/Spec Sheet)	NO_x	1.52	6.66	1.15	5.02	1.48	6.50
OT(Stack Test/Spec Sheet)	CO	3.70	16.19	0.0521	0.2284	0.2734	1.20
OT(Stack Test/Spec Sheet)	VOC	1.46	6.40	0.1043	0.4567	0.1953	0.8552
AP-42	SO_2	0.0021	0.0090	0.0035	0.0155	0.0027	0.0116
AP-42	PM_{10}	0.0003	0.0012	0.0005	0.0020	0.0003	0.0015
AP-42	Formaldehyde	0.2100	0.9200	0.3184	1.39	0.2387	1.05
AP-42	Total HAPs	0.2781	1.22	0.4353	1.91	0.3263	1.43
AP-42	GHG (CO_2e)	386.18	1691	663.22	2,905	496.72	2,176

1 Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc.Microturbine generator engines should be designated MT-1, MT-2, MT-3 etc.If more than three (3) engines exist, please use additional sheets.

2 Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Relocated Source
REM	Removal of Source		

3 Enter the date (or anticipated date) of the engine's installation (construction of source), modification, relocation or removal.

4 Enter the date that the engine was manufactured, modified or reconstructed.

5 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII/JJJJ? If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

6 Enter the Engine Type designation(s) using the following codes:

2SLB	Two Stroke Lean Burn	4SRB	Four Stroke Rich Burn
4SLB	Four Stroke Lean Burn		

7 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	OxCat	Oxidation Catalyst
SCR	Lean Burn & Selective Catalytic Reduction		

8 Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas /Production Gas	D	Diesel

9 Enter the Potential Emissions Data Reference designation using the following codes. Attach all reference data used.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other	(please list)

10 Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

11 PTE for engines shall be calculated from manufacturer's data unless unavailable.

Engine Air Pollution Control Device
(Emission Unit ID#CE-1R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: EMIT	Model #: ELX-4200Z
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

Engine Air Pollution Control Device
(Emission Unit ID#CE-2R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: EMIT	Model #: ELH-4200Z
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

Engine Air Pollution Control Device
(Emission Unit ID#CE-5R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: DCL	Model #: D106-01-4QIT 36
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

Engine Air Pollution Control Device
(Emission Unit ID#CE-6R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: DCL	Model #: DC64L2
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

Engine Air Pollution Control Device
(Emission Unit ID#CE-7R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: EMIT	Model #: ELX-5000Z
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

Engine Air Pollution Control Device
(Emission Unit ID#CE-8R, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☐ No X

☐NSCR ☐SCR X Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:

Manufacturer: DCL	Model #: DC64L2
Design Operating Temperature: 800°F	Design gas volume: 9000 scfm
Service life of catalyst: 3-5 Yr.	Provide manufacturer data? ☐Yes X No
Volume of gas handled: 9042 acfm at 982°F	Operating temperature range for NSCR/Ox Cat: From 600°F to 1250°F
Reducing agent used, if any: NA	Ammonia slip (ppm): NA

Pressure drop against catalyst bed (delta P): 3.5 inches of H_2O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

Over Temperature Warning to Shut Down Automatically

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
☐ Yes XNo

How often is catalyst recommended or required to be replaced (hours of operation)?
26,280 – 43,800 hrs.

How often is performance test required?
X Initial
☐ Annual
X Every 8,760 hours of operation
☐ Field Testing Required
☐ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,

ATTACHMENT N – TANKER TRUCK LOADING DATA SHEET

Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.

Truck Loadout Collection Efficiencies

The following applicable capture efficiencies of a truck loadout are allowed:

- For tanker trucks passing the MACT level annual leak test – 99.2%
- For tanker trucks passing the NSPS level annual leak test – 98.7%
- For tanker trucks not passing one of the annual leak tests listed above – 70%

Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for ***every*** truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. These additional requirements must be noted in the Registration Application and will be noted on the issued G35-D Registration.

Emission Unit ID#: LO-1	Emission Point ID#:	Year Installed/Modified:
Emission Unit Description: Produced Water Tank Truck Loading TK-1, TK-3		
Loading Area Data		
Number of Pumps: NA	Number of Liquids Loaded:	Max number of trucks loading at one (1) time: 1
Are tanker trucks pressure tested for leaks at this or any other location? ☐ Yes ☐ No ☒ Not Required If Yes, Please describe:		
Provide description of closed vent system and any bypasses. NA		
Are any of the following truck loadout systems utilized? ☐ Closed System to tanker truck passing a MACT level annual leak test? ☐ Closed System to tanker truck passing a NSPS level annual leak test? ☐ Closed System to tanker truck not passing an annual leak test and has vapor return?		

Projected Maximum Operating Schedule (for rack or transfer point as a whole)

Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	2	2	2	2
Days/week	1	1	1	1

Bulk Liquid Data (use extra pages as necessary)

Liquid Name	Production Liquid		
Max. Daily Throughput (1000 gal/day)	21.4		
Max. Annual Throughput (1000 gal/yr)	151.2		
Loading Method[1]	BF		
Max. Fill Rate (gal/min)	60		
Average Fill Time (min/loading)	59		
Max. Bulk Liquid Temperature (^{o}F)	80		
True Vapor Pressure[2]	10.2		
Cargo Vessel Condition[3]	C		
Control Equipment or Method[4]	NA		
Max. Collection Efficiency (%)	0		

Max. Control Efficiency (%)		NA		
Max.VOC Emission Rate	Loading (lb/hr)	< 0.0174		
	Annual (ton/yr)	<0.0761		
Max.HAP Emission Rate	Loading (lb/hr)	<0.0010		
	Annual (ton/yr)	<0.0044		
Estimation Method[5]		MB		

1 BF Bottom Fill SP Splash Fill SUB Submerged Fill

2 At maximum bulk liquid temperature

3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)
O Other (describe)

4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)
ECD Enclosed Combustion Device F Flare
TO Thermal Oxidization or Incineration

5 EPA EPA Emission Factor in AP-42 MB Material Balance
TM Test Measurement based upon test data submittal O Other (describe)

ATTACHMENT O – GLYCOL DEHYDRATION UNIT DATA SHEET

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI-GLYCalc™input and aggregate report. Use extra pages if necessary.

Manufacturer: Exterran	Model: HANO-486836035
Max. Dry Gas Flow Rate: 67 mmscf/day	Reboiler Design Heat Input: 1 MMBTU/hr
Design Type: X TEG ☐ DEG☐ EG	Source Status[1]: MS
Date Installed/Modified/Removed[2]: 2017	Regenerator Still Vent APCD/ERD[3]: NA
Control Device/ERD ID#[3]: NA	Fuel HV (BTU/scf): 1020
H_2S Content (gr/100 scf): <0.25	Operation (hours/year): 8760
Pump Rate (scfm): 46.5	
Water Content (wt %) in: Wet Gas:Saturated 0.17 Dry Gas: 0.014	

Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? X Yes ☐ No: If Yes, answer the following:

The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. ☐ Yes X No

The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. X Yes ☐ No

Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? ☐ Yes X No

Is a lean glycol pump optimization plan being utilized? ☐ Yes X No

Recycling the glycol dehydration unit back to the flame zone of the reboiler.
X Yes ☐ No
If yes:
Is the reboiler configured to accept flash drum vapors (straight from the glycol dehydrator)? ☐ Yes X No
Is the reboiler configured to accept still vent vapors (after a condenser)? ☐ Yes X No
Is the reboiler configured to accept both in the same operation? ☐ Yes X No

Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.
☐ Yes X No

What happens when temperature controller shuts off fuel to the reboiler?
X Still vent emissions to the atmosphere.
☐ Still vent emissions stopped with valve.
☐ Still vent emissions to glow plug.

Please indicate if the following equipment is present.
☐ Flash Tank
☐ Burner management system that continuously burns condenser or flash tank vapors

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)
NA	NA

Emissions Data

Emission Unit ID / Emission Point ID[4]	Description	Calculation Methodology[5]	PTE[6]	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)
TEG-1/RBV-1	Reboiler Vent	AP-42	NO_x	0.0971	0.4252
		AP-42	CO	0.0816	0.3572
		AP-42	VOC	0.0053	0.0234
		AP-42	SO_2	0.0006	0.0026

		AP-42	PM_{10}	0.0074	0.0323
		AP-42	GHG (CO_2e)	116.50	510.29
TEG-1/RSV-1	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	0.6765	2.96
		GRI-GlyCalc™	Benzene	0.0006	0.0026
		GRI-GlyCalc™	Toluene	0.0011	0.0048
		GRI-GlyCalc™	Ethylbenzene	0.0018	0.0081
		GRI-GlyCalc™	Xylenes	0.0027	0.119
		GRI-GlyCalc™	n-Hexane	0.0208	0.0909
NA	Glycol Flash Tank	GRI-GlyCalc™	VOC	NA	NA
		GRI-GlyCalc™	Benzene	NA	NA
		GRI-GlyCalc™	Toluene	NA	NA
		GRI-GlyCalc™	Ethylbenzene	NA	NA
		GRI-GlyCalc™	Xylenes	NA	NA
		GRI-GlyCalc™	n-Hexane	NA	NA

1 Enter the Source Status using the following codes:
NS Construction of New Source ES Existing Source
MS Modification of Existing Source

2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.

3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:
NA None CD Condenser FL Flare
CC Condenser/Combustion Combination TO Thermal Oxidizer O Other (please list)

4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

5 Enter the Potential Emissions Data Reference designation using the following codes:
MD Manufacturer's Data AP AP-42
GR GRI-GLYCalc™ OT Other (please list)

6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

ATTACHMENT O – GLYCOL DEHYDRATION UNIT DATA SHEET

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI-GLYCalc™input and aggregate report. Use extra pages if necessary.

Manufacturer: Exterran	Model: HANO-486836035
Max. Dry Gas Flow Rate: 67 mmscf/day	Reboiler Design Heat Input: 1 MMBTU/hr
Design Type: X TEG ☐ DEG☐ EG	Source Status[1]: MS
Date Installed/Modified/Removed[2]: 2017	Regenerator Still Vent APCD/ERD[3]: NA
Control Device/ERD ID#[3]: NA	Fuel HV (BTU/scf): 1020
H_2S Content (gr/100 scf): <0.25	Operation (hours/year): 8760
Pump Rate (scfm): 46.5	
Water Content (wt %) in: Wet Gas:Saturated 0.17 Dry Gas: 0.014	

Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? X Yes ☐ No: If Yes, answer the following:

The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. ☐ Yes X No

The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. X Yes ☐ No

Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? ☐ Yes X No

Is a lean glycol pump optimization plan being utilized? ☐ Yes X No

Recycling the glycol dehydration unit back to the flame zone of the reboiler.
X Yes ☐ No
If yes:
Is the reboiler configured to accept flash drum vapors (straight from the glycol dehydrator)? ☐ Yes X No
Is the reboiler configured to accept still vent vapors (after a condenser)? ☐ Yes X No
Is the reboiler configured to accept both in the same operation? ☐ Yes X No

Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.
☐ Yes X No

What happens when temperature controller shuts off fuel to the reboiler?
X Still vent emissions to the atmosphere.
☐ Still vent emissions stopped with valve.
☐ Still vent emissions to glow plug.

Please indicate if the following equipment is present.
☐ Flash Tank
☐ Burner management system that continuously burns condenser or flash tank vapors

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)
NA	NA

Emissions Data

Emission Unit ID / Emission Point ID[4]	Description	Calculation Methodology[5]	PTE[6]	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)
TEG-2/RBV-2	Reboiler Vent	AP-42	NO_x	0.0971	0.4252
		AP-42	CO	0.0816	0.3572
		AP-42	VOC	0.0053	0.0234
		AP-42	SO_2	0.0006	0.0026
		AP-42	PM_{10}	0.0074	0.0323
		AP-42	GHG (CO_2e)	116.50	510.29

TEG-2/RSV-2	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	0.6765	2.96
		GRI-GlyCalc™	Benzene	0.0006	0.0026
		GRI-GlyCalc™	Toluene	0.0011	0.0048
		GRI-GlyCalc™	Ethylbenzene	0.0018	0.0081
		GRI-GlyCalc™	Xylenes	0.0027	0.119
		GRI-GlyCalc™	n-Hexane	0.0208	0.0909
NA	Glycol Flash Tank	GRI-GlyCalc™	VOC	NA	NA
		GRI-GlyCalc™	Benzene	NA	NA
		GRI-GlyCalc™	Toluene	NA	NA
		GRI-GlyCalc™	Ethylbenzene	NA	NA
		GRI-GlyCalc™	Xylenes	NA	NA
		GRI-GlyCalc™	n-Hexane	NA	NA

1 Enter the Source Status using the following codes:

NS	Construction of New Source	ES	Existing Source
MS	Modification of Existing Source		

2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.

3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:

NA	None	CD	Condenser	FL	Flare	
CC	Condenser/Combustion Combination	TO	Thermal Oxidizer	O	Other	(please list)

4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

5 Enter the Potential Emissions Data Reference designation using the following codes:

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-GLYCalc™	OT	Other	(please list)

6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

ATTACHMENT P – PNEUMATIC CONTROLLERS DATA SHEET

Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?

☐ Yes ☒ No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after September 18, 2015?

☐ Yes ☒ No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?

☐ Yes ☒ No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after September 18, 2015?

☐ Yes ☒ No

Please list approximate number.

ATTACHMENT Q – CENTRIFUGAL COMPRESSOR DATA SHEET

Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?

☐ Yes ☒ No

Please list:

Emission Unit ID#	Compressor Description

Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after September 18, 2015?

☐ Yes ☒ No

Please list:

Emission Unit ID#	Compressor Description

ATTACHMENT R – RECIPROCATING COMPRESSOR DATA SHEET

Are there any reciprocating compressors at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?

☒ Yes ☐ No

Please list:

Emission Unit ID#	Compressor Description
COMP-1	Ariel F35882
COMP-2	Ariel F36217

Are there any reciprocating compressors at this facility that commenced construction, modification or reconstruction after September 18, 2015?

☒ Yes ☐ No

Please list:

Emission Unit ID#	Compressor Description
COMP-5	Ariel F49981
COMP-6	Ariel F49871
COMP-7	Ariel F40297
COMP-8	Ariel F43118

ATTACHMENT S – BLOWDOWN AND PIGGING OPERATIONS DATA SHEET

Will there be any blowdown and pigging operations that occur at this facility?

☒ Yes ☐ No

Please list:

Type of Event	# of Events (event/yr)	Amount Vented per event (scf/event)	MW of vented gas (lb/lb-mol)	Total Emissions (ton/yr)	VOC weight fraction	VOC emissions (ton/yr)
Compressor Blowdown	48	642.9	16.68	0.7173	7%	0.0502
Compressor Startup	6	5000	16.68	0.6974	7%	0.0488
Plant Shutdown	0					
Low Pressure Pig Venting	36	69,444	16.68	58.23	7%	4.08
High Pressure Pig Venting						

Type of Event	# of Events (event/yr)	Amount Vented per event (scf/event)	MW of vented gas (lb/lb-mol)	Total Emissions (ton/yr)	HAP weight fraction	HAPemissions (ton/yr)
Compressor Blowdown	48	642.9	16.68	0.7173	<1%*	<0.0072
Compressor Startup	6	5,000	16.68	0.6974	<1%*	<0.0070
Plant Shutdown	0					
Low Pressure Pig Venting	36	69,444	16.88	58.23	<1%*	<0.5823
High Pressure Pig Venting						

*Laboratory Analysis indicated each analyzed HAP was below laboratory detection limit

ATTACHMENT U–EMISSIONS CALCULATIONS

Provide detailed potential to emit (PTE) emission calculations for criteria and hazardous air pollutants (HAPs) for each emission point identified in the application. For hazardous air pollutants and volatile organic compounds (VOCs), the speciated emission calculations must be included.

Use the following guidelines to ensure complete emission calculations:

- All emission sources and fugitive emissions are included in the emission calculations, as well as all methods used to calculate the emissions.
- Proper emission point identification numbers and APCD and ERD identification numbers are used consistently in the emission calculations that are used throughout the application.
- A printout of the emission summary sheets is attached to the registration application.
- Printouts of any modeling must be included with the emission calculations. The modeling printout must show all inputs/outputs or assumptions that the modeled emissions are based upon.
- If emissions are provided from the manufacturer, the manufacturer's documentation and/or certified emissions must also be included.
- The emission calculations results must match the emissions provided on the emissions summary sheet.
- If calculations are based on a compositional analysis of the gas, attach the laboratory analysis. Include the following information: the location that the sample was taken as representative; the date the sample was taken; and, if the sample is considered representative, the reasons that it is considered representative (same gas field, same formation and depth, distance from actual site, etc.).
- Potential to emit (PTE) from the main or backup control device may be calculated based on the highest emission from a control device that could handle the stream, plus any intrinsic emission such as those from pilot flames.
- Provide any additional clarification as necessary. Additional clarification or information is especially helpful when reviewing modeling calculations to assist the engineer in understanding the basis of assumptions and/or inputs.

Please follow specific guidance provided on the emissions summary sheet when providing the calculations.

Fugitive Emission Calculations

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Fugitive Emission Calculations (See Attachment J)

Density		
Pollutant	Density (kg/m^3)	Density (lb/scf)
VOC	1.38	0.0860
CH4	0.656	0.0409

Emission Factors[1]		
Component Type	Count[5]	(scf /hr/ component)
Pumps	9	13.3
Valves	205	0.027
Safety Relief Valves	24	0.04
Open Ended Lines	5	0.061
Connections	496	0.003
Flanges	292	0.003

Emissions			
Componenty Type	VOC Emissions (tons/yr)[2,3]	Methane (tons/yr)[4]	CO2 eq (tons/yr)
Pumps	3.16	19.93	498.15
Valves	0.15	0.92	23.03
Safety Relief Valves	0.0253	0.16	3.9952
Open Ended Lines	0.01	0.05	1.27
Connections	0.04	0.25	6.19
Flanges	0.02	0.15	3.65
Total	**3.40**	**21.45**	**536.29**

Emissions are calculated as follows:

Emissions = Emission Factor (scf/hr/component) * Component Count * Density (lb/scf) * 8,760 (hrs/yr) * Constituent wt%

CO2e Emissions = Methane Emissions (tons/yr) * 25 (GWP)

[1] Emission Factors for Pumps, Valves. Safety Relief Valves, and Open Ended Lines taken from 40 CFR 98 Table W-1A. Flanges emission factor assumed to be equal to Connections emission factor

Notes:

[2] VOC calculated using gas analysis average of VOCs

[3] VOC weight % approximated to be 7% of fugitive emissions based on gas analysis

[4] Methane weight % assumed to be about 93% of fugitive emissions

[5] Component counts were either taken from maintenance records or physiclaly counted on drawings or at the site

Tank Emission Calculations

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
TK-3 Emission Calculation (See Attachment K)

TK-3 - 210bbl Capacity

Throughput[2]	bbl/yr	gal/yr	L/yr
	10,920	458,640	1,735,952

Compound	Concentration[1] (ug/L)	Emissions (g/yr)	Emissions (lbs/yr)	Emissions (lbs/hr)	Emissions (tons/yr)
Methane	18000	31,247	68.89	0.0079	0.0344
Ethane	2400	4,166	9.19	0.0010	0.0046
Ethene	0.26	0.4513	0.0010	1.14E-07	4.98E-07
Propane	150	260.39	0.5741	6.55E-05	0.0003
iso-Butane	7.5	13.02	0.0287	3.28E-06	1.44E-05
n-Butane	17	29.51	0.0651	7.43E-06	3.25E-05
Benzene	260	451.35	0.9951	0.0001	0.0005
Toluene	240	416.63	0.9185	0.0001	0.0005
Ethylbenzene	11	19.10	0.0421	4.81E-06	2.10E-05
m,p-Xylene	50	86.80	0.1914	2.18E-05	9.57E-05
o-Xylene	27	46.87	0.1033	1.18E-05	5.17E-05

GHG Total	-	62,494	137.78	0.0157	0.0689
CO2eq	-	3,124,714	6,889	0.7864	3.44
VOC Total	-	10,981	24.21	0.0028	0.0121
HAPS Total	-	2,041	4.50	0.0005	0.0023

Emissions are calculated as follows:

Emissions = Throughput (L/yr) * Concentration (ug/L)

[1] Concentrations of Produced Liquid is based on analytical results dated November 11, 2016

[2] The tank is fully unloaded once per week (52 weeks/yr * 210 bbl = 10,920 bbl/yr)

Assumptions:

- All VOC, HAPS, and GHG present in the Produced Liquid is emitted
- Produced liquid is mostly water with minimal amounts of VOC, HAPS, and GHG
- VOC, HAPS, and GHG totals from the above calculation is doubled for each tank in the facility total to overestimate any other potential VOCs not detected in the analytical results

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
TK-1 Emission Calculation (See Attachment K)

TK-1 - 100bbl Capacity

Throughput[2]	bbl/yr	gal/yr	L/yr
	5,200	218,400	826,644

Compound	Concentration[1] (ug/L)	Emissions (g/yr)	Emissions (lbs/yr)	Emissions (lbs/hr)	Emissions (tons/yr)
Methane	10000	8,266	18.22	0.0021	0.0091
Ethane	12000	9,920	21.87	0.0025	0.0109
Propane	4300	3,555	7.84	0.0009	0.0039
iso-Butane	440	363.72	0.8019	9.15E-05	0.0004
n-Butane	780	644.78	1.42	0.0002	0.0007
Toluene	860	710.91	1.57	0.0002	0.0008

GHG Total	-	16,533	36.45	0.0042	0.0182
CO2eq	-	826,644	1,822	0.2080	0.9112
VOC Total	-	30,387	66.99	0.0076	0.0335
HAPS Total	-	1,422	3.13	0.0004	0.0016

Emissions are calculated as follows:

Emissions = Throughput (L/yr) * Concentration (ug/L)

[1] Concentrations of Produced Liquid is based on analytical results dated November 11, 2016

[2] The tank is fully unloaded once per week (52 weeks/yr * 100 bbl = 5,200 bbl/yr)

Assumptions:

- All VOC, HAPS, and GHG present in the Produced Liquid is emitted
- Produced liquid is mostly water with minimal amounts of VOC, HAPS, and GHG
- VOC, HAPS, and GHG totals from the above calculation is doubled for each tank in the facility total to overestimate any other potential VOCs not detected in the analytical results

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Produced Liquid Analysis

November 11, 2016

Michael Michalski
Ryan Environmental
5793 W Memorial Veteran's Hwy
Bridgeport, WV 26330

RE: **161028_MKM_COMET&GOLFF**
Pace Workorder: 20814

Dear Michael Michalski:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, October 31, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 11/11/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 18

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
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Phone: (412) 826-5245
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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

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SAMPLE SUMMARY

Workorder: 20814 161028_MKM_COMET&GOLFF

Lab ID	Sample ID	Matrix	Date Collected	Date Received
208140001	161028_MKM_COMET_TANKS386&387	Water	10/28/2016 10:45	10/31/2016 08:30
208140002	161028_MKM_COMETCOMP_TANK500	Water	10/28/2016 11:05	10/31/2016 08:30
208140003	161028_WEST GOFF M&R_TANK2680	Water	10/28/2016 12:05	10/31/2016 08:30
208140004	161028_WEST GOFF COMP_TANK2937	Water	10/28/2016 12:35	10/31/2016 08:30
208140005	161028_WEST GOFF COMP_TANK2936	Water	10/28/2016 12:50	10/31/2016 08:30

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PROJECT SUMMARY

Workorder: 20814 161028_MKM_COMET&GOLFF

Workorder Comments

Some of the results contained within this report have been determined for Pace Analytical Energy Services (PAES), using subcontracted laboratory services. The final report delivered to PAES has been provided and must be consulted to properly identify any quality nonconformance issues that were encountered during the testing process.

The samples 20814 (0001-0005) were collected in an alternate container type, than that assigned to PAES method RSK175. Sample container was not preserved.

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ANALYTICAL RESULTS

Workorder: 20814 161028_MKM_COMET&GOLFF

Lab ID: **208140003** Date Received: 10/31/2016 08:30 Matrix: Water

Sample ID: **161028_WEST GOFF M&R_TANK2680** Date Collected: 10/28/2016 12:05

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: EPA RSK175			Analytical Method: EPA RSK175					
Methane	**18000**	ug/l	50	1.9	100	11/4/2016 11:17	AK	d,B
Ethane	**2400**	ug/l	20	0.50	100	11/4/2016 11:17	AK	d
Ethene	**0.26**	ug/l	0.20	0.0070	1	11/3/2016 11:40	AK	
Propane	**150**	ug/l	0.20	0.0080	1	11/3/2016 11:40	AK	
iso-Butane	**7.5**	ug/l	0.40	0.018	1	11/3/2016 11:40	AK	
n-Butane	**17**	ug/l	0.40	0.017	1	11/3/2016 11:40	AK	
Subcontracted Work - SCPG								G
Analysis Desc: SW-846 8260B			Analytical Method: SW-846 8260B					
Benzene	**260**	ug/L	1.0	0.16	1	11/10/2016 13:56	PAS	s
Toluene	**240**	ug/L	1.0	0.13	1	11/10/2016 13:56	PAS	s
Ethylbenzene	**11**	ug/L	1.0	0.23	1	11/10/2016 13:56	PAS	s
m,p-Xylene	**50**	ug/L	2.0	0.32	1	11/10/2016 13:56	PAS	s
o-Xylene	**27**	ug/L	1.0	0.22	1	11/10/2016 13:56	PAS	s

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Workorder: 20814 161028_MKM_COMET&GOLFF

Lab ID: **208140005** Date Received: 10/31/2016 08:30 Matrix: Water

Sample ID: **161028_WEST GOFF COMP_TANK2936** Date Collected: 10/28/2016 12:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: EPA RSK175		Analytical Method: EPA RSK175						
Methane	**10000**	ug/l	50	1.9	100	11/4/2016 11:38	AK	d,B
Ethane	**12000**	ug/l	20	0.50	100	11/4/2016 11:38	AK	d
Ethene	**0.20 U**	ug/l	0.20	0.0070	1	11/3/2016 12:01	AK	
Propane	**4300**	ug/l	20	0.80	100	11/4/2016 11:38	AK	d
iso-Butane	**440**	ug/l	0.40	0.018	1	11/3/2016 12:01	AK	
n-Butane	**780**	ug/l	0.40	0.017	1	11/3/2016 12:01	AK	
Subcontracted Work - SCPG								G
Analysis Desc: SW-846 8260B		Analytical Method: SW-846 8260B						
Benzene	**580 U**	ug/kg	580	160	1	11/9/2016 19:32	PAS	s
Toluene	**860**	ug/kg	580	180	1	11/9/2016 19:32	PAS	s
Ethylbenzene	**580 U**	ug/kg	580	120	1	11/9/2016 19:32	PAS	s
m,p-Xylene	**1200 U**	ug/kg	1200	220	1	11/9/2016 19:32	PAS	s
o-Xylene	**580 U**	ug/kg	580	120	1	11/9/2016 19:32	PAS	s

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ANALYTICAL RESULTS QUALIFIERS

Workorder: 20814 161028_MKM_COMET&GOLFF

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
G	Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282
s	Subcontracted; for any related quality nonconformance see additional report(s)
B	The analyte was detected in the associated blank.
d	The analyte concentration was determined from a dilution.
D1	The duplicate relative percent difference (RPD) exceeded laboratory control limits.

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QUALITY CONTROL DATA

Workorder: 20814 161028_MKM_COMET&GOLFF

QC Batch: DISG/5718 Analysis Method: EPA RSK175

QC Batch Method: EPA RSK175

Associated Lab Samples: 208140001, 208140002, 208140003, 208140004, 208140005

METHOD BLANK: 45239

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Methane	ug/l	0.023J	0.50	B
Ethane	ug/l	0.20 U	0.20	D1
Ethene	ug/l	0.20 U	0.20	
Propane	ug/l	0.20 U	0.20	
iso-Butane	ug/l	0.40 U	0.40	
n-Butane	ug/l	0.40 U	0.40	

LABORATORY CONTROL SAMPLE & LCSD: 45240 45241

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Methane	ug/l	44	45	42	101	94	85-115	7.2	20	B
Ethane	ug/l	83	85	79	102	95	85-115	7.1	20	D1
Ethene	ug/l	78	82	75	105	97	85-115	7.9	20	
Propane	ug/l	120	120	110	99	92	85-115	7.3	20	
iso-Butane	ug/l	160	160	140	97	91	85-115	6.4	20	
n-Butane	ug/l	160	150	140	96	87	85-115	9.8	20	

SAMPLE DUPLICATE: 45250 Original: 208030002

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
RISK						
Methane	ug/l	0.28	0.23	19	20	B
Ethane	ug/l	0.023	0.017	31	20	D1
Ethene	ug/l	0.026	0.026	0	20	
Propane	ug/l	0	0	0	20	
iso-Butane	ug/l	0	0	0	20	
n-Butane	ug/l	0	0	0	20	

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QUALITY CONTROL DATA

Workorder: 20814 161028_MKM_COMET&GOLFF

SAMPLE DUPLICATE: 45251 Original: 208030004

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
RISK						
Methane	ug/l	0.25	0.23	10	20	B
Ethane	ug/l	0.12	0.14	9.8	20	D1
Ethene	ug/l	0.22	0.26	17	20	
Propane	ug/l	0	0	0	20	
iso-Butane	ug/l	0	0	0	20	
n-Butane	ug/l	0	0	0	20	

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QUALITY CONTROL DATA

Workorder: 20814 161028_MKM_COMET&GOLFF

QC Batch: DISG/5721 Analysis Method: EPA RSK175

QC Batch Method: EPA RSK175

Associated Lab Samples: 208140001, 208140003, 208140004, 208140005

METHOD BLANK: 45275

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Methane	ug/l	0.021J	0.50	B
Ethane	ug/l	0.20 U	0.20	
Propane	ug/l	0.20 U	0.20	

LABORATORY CONTROL SAMPLE & LCSD: 45276 45277

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Methane	ug/l	44	45	44	101	99	85-115	2	20	B
Ethane	ug/l	83	85	83	102	99	85-115	3	20	
Propane	ug/l	120	120	120	98	96	85-115	2.1	20	

SAMPLE DUPLICATE: 45278 Original: 208000001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
RISK						
Methane	ug/l	2300	2300	1.7	20	d,B

SAMPLE DUPLICATE: 45279 Original: 208000006

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
RISK						
Methane	ug/l	3400	3400	1.3	20	d,B

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QUALITY CONTROL DATA QUALIFIERS

Workorder: 20814 161028_MKM_COMET&GOLFF

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
D1	The duplicate relative percent difference (RPD) exceeded laboratory control limits.
d	The analyte concentration was determined from a dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 20814 161028_MKM_COMET&GOLFF

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
208140001	161028_MKM_COMET_TANKS386&387			EPA RSK175	DISG/5718
208140002	161028_MKM_COMETCOMP_TANK500			EPA RSK175	DISG/5718
208140003	161028_WEST GOFF M&R_TANK2680			EPA RSK175	DISG/5718
208140004	161028_WEST GOFF COMP_TANK2937			EPA RSK175	DISG/5718
208140005	161028_WEST GOFF COMP_TANK2936			EPA RSK175	DISG/5718
208140001	161028_MKM_COMET_TANKS386&387			EPA RSK175	DISG/5721
208140003	161028_WEST GOFF M&R_TANK2680			EPA RSK175	DISG/5721
208140004	161028_WEST GOFF COMP_TANK2937			EPA RSK175	DISG/5721
208140005	161028_WEST GOFF COMP_TANK2936			EPA RSK175	DISG/5721
208140001	161028_MKM_COMET_TANKS386&387			SW-846 8260B	SCPG/3050
Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282					
208140002	161028_MKM_COMETCOMP_TANK500			SW-846 8260B	SCPG/3050
Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282					
208140003	161028_WEST GOFF M&R_TANK2680			SW-846 8260B	SCPG/3050
Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282					
208140004	161028_WEST GOFF COMP_TANK2937			SW-846 8260B	SCPG/3050
Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282					
208140005	161028_WEST GOFF COMP_TANK2936			SW-846 8260B	SCPG/3050
Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282					

Reboiler Emission Calculations

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
TEG-1/RBV-1 and TEG-2/RBV-2 Emission Summary
Criteria Pollutants (See Attachment L)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	8,504,854

Emission Factors[1]	
	(1) Reboiler[2]
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	7.60
Sulfur Dioxide	0.6000
Oxides of Nitrogen	100.00
PM-10	7.60
VOC	5.50
Carbon Monoxide	84.00
Lead	0.0005
CO2 Equiv	120,000

Emissions			
	(1) Reboiler[2]		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	64.64	0.0074	0.0323
Sulfur Dioxide	5.10	0.0006	0.0026
Oxides of Nitrogen	850.49	0.0971	0.4252
PM-10	64.64	0.0074	0.0323
VOC	46.78	0.0053	0.0234
Carbon Monoxide	714.41	0.0816	0.3572
Lead	0.0043	4.85E-07	2.13E-06
CO2 Equiv	1,020,583	116.50	510.29

Emissions are calculated as follows:

Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from AP-42 Tables 1.4-1

Notes:

- Above emissions are for one reboiler
- Emissions assume 8,760 hours of operation for the reboiler per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

[2] Each Reboiler rating: 1 MMBtu/hr

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
TEG-1/RBV-1 and TEG-2/RBV-2 Emission Summary
HAPS (See Attachment L)

Emissions are calculated as follows:
Emissions = Volume of Gas (ft^3) * Emission Factor ($lbs/10^6\ ft^3$)

[1] Emission Factors from AP-42 Tables 1.4-3 and 1.4-4

Natural Gas Reboiler HAP
ft^3
8,504,854

HAP Emissions			Natural Gas (1) Reboiler		
			(lbs/yr)	(lbs/hr)	(tons/yr)
HAP	CAS No.	Natural Gas[1] ($lbs/10^6\ ft^3$)			
2-Methylnaphthalene	91-57-6	2.40E-05	0.0002	2.33E-08	1.02E-07
3-Methylchloranthrene	56-49-5	1.80E-06	1.53E-05	1.75E-09	7.65E-09
7,12-Dimethylbenz(a)anthracene	-	1.60E-05	0.0001	1.55E-08	6.80E-08
Acenaphthene	83-32-9	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Acenaphthylene	203-96-8	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Anthracene	120-12-7	2.40E-06	2.04E-05	2.33E-09	1.02E-08
Benz(a)anthracene	56-55-3	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Benzene	71-43-2	2.10E-03	0.0179	2.04E-06	8.93E-06
Benzo(a)pyrene	50-32-8	1.20E-06	1.02E-05	1.17E-09	5.10E-09
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.02E-05	1.17E-09	5.10E-09
Benzo(k)fluoranthene	207-08-9	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Chrysene	218-01-9	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.02E-05	1.17E-09	5.10E-09
Dichlorobenzene	25321-22-6	1.20E-03	0.0102	1.17E-06	5.10E-06
Fluoranthene	206-44-0	3.00E-06	2.55E-05	2.91E-09	1.28E-08
Fluorene	86-73-7	2.80E-06	2.38E-05	2.72E-09	1.19E-08
Formaldehyde	50-00-0	7.50E-02	0.6379	7.28E-05	0.0003
Hexane	110-54-3	1.80E+00	15.31	0.0017	0.0077
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.53E-05	1.75E-09	7.65E-09
Naphthalene	91-20-3	6.10E-04	0.0052	5.92E-07	2.59E-06
Phenanathrene	85-01-8	1.70E-05	0.0001	1.65E-08	7.23E-08
Pyrene	129-00-0	5.00E-06	4.25E-05	4.85E-09	2.13E-08
Toluene	108-88-3	3.40E-03	0.0289	3.30E-06	1.45E-05
Arsenic	7440-38-2	2.00E-04	0.0017	1.94E-07	8.50E-07
Beryllium	7440-41-7	1.20E-05	0.0001	1.17E-08	5.10E-08
Cadmium	7440-43-9	1.10E-03	0.0094	1.07E-06	4.68E-06
Chromium	7440-47-3	1.40E-03	0.0119	1.36E-06	5.95E-06
Cobalt	7440-48-4	8.40E-05	0.0007	8.16E-08	3.57E-07
Manganese	7439-96-5	3.80E-04	0.0032	3.69E-07	1.62E-06
Mercury	7439-97-6	2.60E-04	0.0022	2.52E-07	1.11E-06
Nickel	7440-02-0	2.10E-03	0.0179	2.04E-06	8.93E-06
Selenium	7782-49-2	2.40E-05	0.0002	2.33E-08	1.02E-07
		Total:	**16.06**	**0.0018**	**0.0080**

Engine Emission Calculations

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial JEF01233 Emission Summary
CE-1R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	29,858,162

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	0.0794
Sulfur Dioxide	0.6056
Oxides of Nitrogen	312.36
PM-10	0.0794
VOC	8.91
Carbon Monoxide	151.42
CO2 Equiv	113,300

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	2.37	0.0003	0.0012
Sulfur Dioxide	18.08	0.0021	0.0090
Oxides of Nitrogen	9,326	1.01	4.41
PM-10	2.37	0.0003	0.0012
VOC	265.95	0.0300	0.1500
Carbon Monoxide	4,521	0.4800	2.11
CO2 Equiv	3,382,930	386.18	1,691

Emissions are calculated as follows:

Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from AP-42 Table 3.2-2 (PM, PM-10, SO2, CO2e) and the attached stack test (CO, NOx, VOC)

Notes:

- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

Emissions Test Report

Prepared for: MK Midstream
Prepared by: Steve LaRue
Test Date: December 14, 2015

Regulatory Information

Permit #:	G35-A107A
Make:	Caterpillar
Model:	G3516BLE
Unit Number:	2185
Serial Number:	JEF01233 (Run Hrs-32268)
Regulatory Citation	40 CFR 60 Subpart JJJJ
Target Parameter(s)	*NOx, CO, and VOCs*

Contact Information

Test Location

MK Midstream
Goff West
Taylor County, WV

Test Company

Ecotest Energy Services
142 S. Johnson Rd.
Houston, PA 15342

Primary Facility Contact
Kevin Williams
Director of Midstream
MK Midstream
65 Professional Place Suite 200
Bridgeport, WV, 26330
304-848-9130
kwilliams@mkmidstream.com

Company Contact
Tyler Frey
Compliance Specialist
Tyler@Ecotest.us
(570)428-2133

Wayne Philpot
V.P. Operations
Wayne@ecotest.us
(325)348-8070

Introduction

Ecotest Energy Services (Ecotest) has been contracted by MK Midstream, to provide emissions testing on the Caterpillar, G3516BLE Spark-Ignited engine located at the Goff West location in Taylor County, WV. The purpose of this testing was to demonstrate compliance with emission limitations contained in the sites air permit, permit G35-A107A, and 40 CFR 60 subpart JJJJ. There are emissions limitations for the oxides of nitrogen (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) as non-methane non ethane hydrocarbons (NMNEHC).

Testing was conducted in accordance with an approved test protocol from the WV Source Testing Manual and the United States Environmental Protection Agency (USEPA) test methods. Testing for the engine occurred on December 14, 2015 and was conducted by Steve LaRue of Ecotest.

Summary of Test Results

Emissions Summary

Pollutant	pounds / hour		tons / year		g/BHP-hr		ppmvd at 15% O_2	
	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted
CO	0.52	0.48	2.27	2.11	2.00	0.17	270	25
NOx	1.52	1.01	6.66	4.41	1.00	0.35	80	31
VOCs	0.73	0.03	3.20	0.15	0.70	0.01	62	1

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial JEF01237 Emission Summary
CE-2R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	29,858,162

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	0.0794
Sulfur Dioxide	0.6056
Oxides of Nitrogen	329.57
PM-10	0.0794
VOC	17.81
Carbon Monoxide	53.44
CO2 Equiv	113,300

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	2.37	0.0003	0.0012
Sulfur Dioxide	18.08	0.0021	0.0090
Oxides of Nitrogen	9,840	1.07	4.69
PM-10	2.37	0.0003	0.0012
VOC	531.91	0.0600	0.2600
Carbon Monoxide	1,596	0.1700	0.7500
CO2 Equiv	3,382,930	386.18	1,691

Emissions are calculated as follows:
Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from AP-42 Table 3.2-2 (PM, PM-10, SO2, CO2e) and the attached stack test (CO, NOx, VOC)

Notes:

- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

Emissions Test Report

Prepared for: MK Midstream
Prepared by: Steve LaRue
Test Date: December 14, 2015

Regulatory Information

Permit #:	G35-A107A
Make:	Caterpillar
Model:	G3516BLE
Unit Number:	2177
Serial Number:	JEF01237
Regulatory Citation	*40 CRF 60 Subpart JJJJ*
Target Parameter(s)	*NOx, CO, and VOCs*

Contact Information

Test Location

MK Midstream
Goff West
Taylor County, WV

Test Company

Ecotest Energy Services
142 S. Johnson Rd.
Houston, PA 15342

Primary Facility Contact
Kevin Williams
Director of Midstream
MK Midstream
65 Professional Place Suite 200
Bridgeport, WV, 26330
304-848-9130
kwilliams@mkmidstream.com

Company Contact
Tyler Frey
Compliance Specialist
Tyler@Ecotest.us
(570)428-2133

Wayne Philpot
V.P. Operations
Wayne@ecotest.us
(325)348-8070

Introduction

Ecotest Energy Services (Ecotest) has been contracted by MK Midstream, to provide emissions testing on the Caterpillar, G3516BLE Spark-Ignited engine located at the Goff West location in Taylor County, WV. The purpose of this testing was to demonstrate compliance with emission limitations contained in the sites air permit, permit G35-A107A, and 40 CFR 60 subpart JJJJ. There are emissions limitations for the oxides of nitrogen (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) as non-methane non ethane hydrocarbons (NMNEHC).

Testing was conducted in accordance with an approved test protocol from the WV Source Testing Manual and the United States Environmental Protection Agency (USEPA) test methods. Testing for the engine occurred on December 14, 2015 and was conducted by Steve LaRue of Ecotest.

Summary of Test Results

Emissions Summary

Pollutant	pounds / hour		tons / year		g/BHP-hr		ppmvd at 15% O_2	
	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted
CO	0.52	0.17	2.27	0.75	2.00	0.06	270	9
NOx	1.52	1.07	6.66	4.69	1.00	0.37	80	33
VOCs	0.73	0.06	3.20	0.26	0.70	0.02	62	2

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial BEN01121 Emission Summary
CE-5R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	51,278,148

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	0.0794
Sulfur Dioxide	0.6056
Oxides of Nitrogen	195.96
PM-10	0.0794
VOC	17.81
Carbon Monoxide	8.91
CO2 Equiv	113,300

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	4.07	0.0005	0.0020
Sulfur Dioxide	31.06	0.0035	0.0155
Oxides of Nitrogen	10,048	1.06	4.66
PM-10	4.07	0.0005	0.0020
VOC	913.49	0.0800	0.3500
Carbon Monoxide	456.75	0.0500	0.2200
CO2 Equiv	5,809,814	663.22	2,905

Emissions are calculated as follows:
Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from AP-42 Table 3.2-2 (PM, PM-10, SO2, CO2e) and the attached stack test (CO, NOx, VOC)

Notes:

- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

Emissions Test Report

Prepared for: MK Midstream Holdings, LLC
Prepared by: Steve LaRue
Test Date: May 4, 2016

Regulatory Information

Permit #:	G35-A107B
Make:	Caterpillar
Model:	3608
Unit Number:	2657
Serial Number:	BEN01121 (Run Hr-2805)
Regulatory Citation	40 CFR 60 Subpart JJJJ
Target Parameter(s)	*NOx, CO, and VOCs*

Contact Information

Test Location

MK Midstream Holdings, LLC
Cather CS
Harrison County, WV

Test Company

Ecotest Energy Services
142 S. Johnson Rd.
Houston, PA 15342

Primary Facility Contact
Dave Sweeley
MK Midstream Holdings, LLC
65 Professional Place Suite 200
Bridgeport, WV, 26330
724-759-9822
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Company Contact
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(570)428-2133
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(570)428-2133

Wayne Philpot
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Wayne@ecotest.us
(325)348-8070

Introduction

Ecotest Energy Services (Ecotest) has been contracted by MK Midstream, to provide emissions testing on the Caterpillar, 3608 Spark-Ignited engine located at the Cather location in Harrison County, WV. The purpose of this testing was to demonstrate compliance with emission limitations contained in the sites air permit, permit G35-A107B, and 40 CFR 60 subpart JJJJ. There are emissions limitations for the oxides of nitrogen (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) as non-methane non ethane hydrocarbons (NMNEHC).

Testing was conducted in accordance with an approved test protocol from the WV Source Testing Manual and the United States Environmental Protection Agency (USEPA) test methods. Testing for the engine occurred on May 4, 2016 and was conducted by Steve LaRue of Ecotest.

Summary of Test Results

Emissions Summary

Pollutant	pounds / hour		tons / year		g/BHP-hr		ppmvd at 15% O_2	
	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted
CO	1.00	0.05	4.39	0.22	2.00	0.01	270	2
NOx	2.61	1.06	11.44	4.66	1.00	0.22	82	21
VOCs	1.65	0.08	7.21	0.35	0.70	0.02	60	2

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial 4ZS02061 Emission Summary
CE-6R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	38,404,520

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	0.0794
Sulfur Dioxide	0.6056
Oxides of Nitrogen	338.47
PM-10	0.0794
VOC	44.54
Carbon Monoxide	62.35
CO2 Equiv	113,300

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	3.05	0.0003	0.0015
Sulfur Dioxide	23.26	0.0027	0.0116
Oxides of Nitrogen	12,999	0.8600	3.78
PM-10	3.05	0.0003	0.0015
VOC	1,710	0.0400	0.1900
Carbon Monoxide	2,395	0.0600	0.2700
CO2 Equiv	4,351,232	496.72	2,176

Emissions are calculated as follows:

Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from AP-42 Table 3.2-2 (PM, PM-10, SO2, CO2e) and the attached stack test (CO, NOx, VOC)

Notes:

- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

Emissions Test Report

Prepared for: MK Midstream Holdings, LLC
Prepared by: Steve LaRue
Test Date: May 4, 2016

Regulatory Information

Permit #:	G35-A107B
Make:	Caterpillar
Model:	3606
Unit Number:	2669
Serial Number:	4ZS02061 (Run Hr- 2307)
Regulatory Citation	40 CFR 60 Subpart JJJJ
Target Parameter(s)	*NOx, CO, and VOCs*

Contact Information

Test Location

MK Midstream Holdings, LLC
Cather CS
Harrison County, WV

Test Company

Ecotest Energy Services
142 S. Johnson Rd.
Houston, PA 15342

Primary Facility Contact
Dave Sweeley
MK Midstream Holdings, LLC
65 Professional Place Suite 200
Bridgeport, WV, 26330
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(325)348-8070

Introduction

Ecotest Energy Services (Ecotest) has been contracted by MK Midstream, to provide emissions testing on the Caterpillar, 3606 Spark-Ignited engine located at the Cather location in Harrison County, WV. The purpose of this testing was to demonstrate compliance with emission limitations contained in the sites air permit, permit G35-A107B, and 40 CFR 60 subpart JJJJ. There are emissions limitations for the oxides of nitrogen (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) as non-methane non ethane hydrocarbons (NMNEHC).

Testing was conducted in accordance with an approved test protocol from the TX Source Testing Manual and the United States Environmental Protection Agency (USEPA) test methods. Testing for the engine occurred on May 4, 2016 and was conducted by Steve LaRue of Ecotest.

Summary of Test Results

Emissions Summary

Pollutant	pounds / hour		tons / year		g/BHP-hr		ppmvd at 15% O_2	
	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted	Permitted	Emitted
CO	0.75	0.06	3.29	0.27	2.00	0.02	270	3
NOx	1.96	0.86	8.57	3.78	1.00	0.24	82	23
VOCs	1.23	0.04	5.40	0.19	0.70	0.01	60	1

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial JEF02001 Emission Summary
CE-7R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	29,858,162

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	33.38
Sulfur Dioxide	1.96
Oxides of Nitrogen	446.22
PM-10	33.38
VOC	428.37
Carbon Monoxide	892.44
CO2 Equiv	439,333

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	996.00	0.1140	0.4980
Sulfur Dioxide	58.62	0.0067	0.0293
Oxides of Nitrogen	13,320	1.52	6.66
PM-10	996.00	0.1140	0.4980
VOC	12,790	1.46	6.40
Carbon Monoxide	32,380	3.70	16.19
CO2 Equiv	13,117,662	1,497	7,634

Emissions are calculated as follows:
Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from the attached spec sheet. Please note the CO2e emission factor was calculated using the emission provided on the spec sheet.

Notes:
- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

USA COMPRESSION

USA Compression Unit 2408 Caterpillar G3516BLE Engine Emissions

Date of Manufacture	11/16/2012	Engine Serial Number	JEF02001	Date Modified/Reconstructed	Not Any
Driver Rated HP	1380	Rated Speed in RPM	1400	Combustion Type	Spark Ignited 4 Stroke
Number of Cylinders	16	Compression Ratio	8:1	Combustion Setting	Ultra Lean Burn
Total Displacement (in^3)	4211	Fuel Delivery Method	Carburetor	Combustion Air Treatment	T.C./Aftercooled

Raw Engine Emissions (905 LHV BTU/SCF Fuel Gas with little to no H2S)

Fuel Consumption *7442 LHV BTU/bhp-hr or 8255 HHV BTU/bhp-hr*
Altitude *1200 ft*
Maximum Air Inlet Temp *90 F*

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	TPY
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.43		7.39	32.38
Volatile Organic Compounds (VOC or NMNEHC)	0.48		1.46	6.40
Formaldehyde (CH2O)	0.43		1.31	5.73
Particulate Matter (PM) Filterable+Condensable		9.99E-03	1.14E-01	4.98E-01
Sulfur Dioxide (SO2)		5.88E-04	6.70E-03	2.93E-02

	g/bhp-hr [1]	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	472	1436	5705
Methane (CH4)	4.04	12.29	48.83

[1] g/bhp-hr are based on Caterpillar Specifications (GERP) customer supplied fuel gas, 1200 ft elevation, and 90 F Max Air Inlet Temperature. Note that g/bhp-hr values are based on 100% Load Operation. For Air Permitting, it is recommended to add a safety margin to CO, VOC, and Formaldehyde to account for variations in fuel gas composition and load.

[2] Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make amd Model: *EMIT ELX-5000Z-1616F*
Element Type: *EMIT RE-3615Z*
Number of Elements in Housing: *2*
Air/Fuel Ratio Control *Caterpillar ADEM3, NOx Feedback*

	% Reduction	**g/bhp-hr**	**lb/hr**	**TPY**
Nitrogen Oxides (NOx)	0	0.5	**1.52**	**6.66**
Carbon Monoxide (CO)	50	1	**3.70**	**16.19**
Volatile Organic Compounds (VOC or NMNEHC)	0	0.48	**1.46**	**6.40**
Formaldehyde (CH2O)	0	0.43	**1.31**	**5.73**
Particulate Matter (PM)	0	0.037396376	**1.14E-01**	**4.98E-01**
Sulfur Dioxide (SO2)	0	0.002201747	**6.70E-03**	**2.93E-02**

	% Reduction	**lb/hr**	**Metric Tonne/yr**
Carbon Dioxide (CO2)	0	**1436**	**5705**
Methane (CH4)	0	**12.29**	**48.83**

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Serial JEF02167 Emission Summary
CE-8R
Criteria Pollutants (See Attachment M)

Fuel Usage		
Fuel	Units	Total
Natural Gas	ft^3	29,858,162

Emission Factors[1]	
	Engine
Pollutant	Natural Gas (lbs/ 10^6 ft^3)
Particulates	33.38
Sulfur Dioxide	1.96
Oxides of Nitrogen	446.22
PM-10	33.38
VOC	428.37
Carbon Monoxide	892.44
CO2 Equiv	439,333

Emissions			
	Engine		
Pollutant	Natural Gas (lbs/yr)	Natural Gas (lbs/hr)	Natural Gas (tons/yr)
Particulates	996.00	0.1140	0.4980
Sulfur Dioxide	58.62	0.0067	0.0293
Oxides of Nitrogen	13,320	1.52	6.66
PM-10	996.00	0.1140	0.4980
VOC	12,790	1.46	6.40
Carbon Monoxide	32,380	3.70	16.19
CO2 Equiv	13,117,662	1,497	7,634

Emissions are calculated as follows:
Emissions = Volume of Gas (ft^3) * Emission Factor (lbs/10^6 ft^3)

[1] Natural Gas Emission Factors were taken from the attached spec sheet. Please note the CO2e emission factor was calculated using the emission provided on the spec sheet.

Notes:
- Emissions assume 8,760 hours of operation for the engine per year
- Heating value of Natural Gas assumed to be 1030 Btu/ft^3

USA COMPRESSION

USAC 2439 Caterpillar G3516BLE Engine Emissions

Date of Manufacture	3/17/2013	Engine Serial Number	JEF02167	Date Modified/Reconstructed	Not Any
Driver Rated HP	1380	Rated Speed in RPM	1400	Combustion Type	Spark Ignited 4 Stroke
Number of Cylinders	16	Compression Ratio	8:1	Combustion Setting	Ultra Lean Burn
Total Displacement (in^3)	4230	Fuel Delivery Method	Carburetor	Combustion Air Treatment	T.C./Aftercooled

With Customer Supplied Fuel Gas Analysis

Fuel Consumption *7442 LHV BTU/bhp-hr or 8255 HHV BTU/bhp-hr*
Altitude *1200 ft*
Maximum Air Inlet Temp *90 F*

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	TPY
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.43		7.39	32.38
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	0.48		1.46	6.40
Formaldehyde (CH2O)	0.43		1.31	5.73
Particulate Matter (PM) Filterable+Condensable		9.99E-03	1.14E-01	4.98E-01
Sulfur Dioxide (SO2)		5.88E-04	6.70E-03	2.93E-02

	g/bhp-hr [1]	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	472	1436	5705
Methane (CH4)	4.04	12.29	48.83

[1] g/bhp-hr are based on Caterpillar Specifications (GERP) with customer supplied fuel gas, 1200 ft elevation, and 90 F Max Air Inlet Temperature. Note that g/bhp-hr values are based on 100% Load Operation. For Air Permitting, it is recommended to add a safety margin to CO, VOC, and Formaldehyde to account for variations in fuel gas composition and load.

[2] Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make and Model: *DCL, DC64L2-HSG+*
Element Type: *DC64, 24.23" round A-Coat*
Number of Elements in Housing: *2*
Air/Fuel Ratio Control *Caterpillar ADEM3, NOx Feedback*

	% Reduction	g/bhp-hr	lb/hr	TPY
Nitrogen Oxides (NOx)	0	0.5	**1.52**	**6.66**
Carbon Monoxide (CO)	50	1	**3.70**	**16.19**
Volatile Organic Compounds (VOC or NMNEHC)	0	0.48	**1.46**	**6.40**
Formaldehyde (CH2O)	0	0.43	**1.31**	**5.73**
Particulate Matter (PM)	0	0.04	**1.14E-01**	**4.98E-01**
Sulfur Dioxide (SO2)	0	0.00	**6.70E-03**	**2.93E-02**

	% Reduction	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	0	**1436**	**5705**
Methane (CH4)	0	**12.29**	**48.83**

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Emission Summary (See Attachment M)
HAPS (CE-1R, CE-2R)

Emissions are calculated as follows:

Emissions = Heat of Natural Gas (MMBtu) * Emission Factor (lbs/MMBtu)

[1] Natural Gas Emission Factors were taken from AP-42 Tables 3.2-2

CE-1R - Natural Gas 4SLB HAP	CE-2R - Natural Gas 4SLB HAP
MMBtu	MMBtu
30,748	30,748

HAP Emissions		Natural Gas		
		(1) Engine		
		(lbs/yr)	(lbs/hr)	(tons/yr)
HAP	Natural Gas[1] (lb/MMBtu)			
1,1,2,2-Tetrachloroethane	4.00E-05	1.23	0.0001	0.0006
1,1,2-Trichloroethane	3.18E-05	0.9778	0.0001	0.0005
1,3-Butadiene	2.67E-04	8.21	0.0009	0.0041
1,3-Dichloropropene	2.64E-05	0.8117	9.27E-05	0.0004
2-Methylnaphthalene	3.32E-05	1.02	0.0001	0.0005
2,2,4-Trimethylpentane	2.50E-04	7.69	0.0009	0.0038
Acenaphthene	1.25E-06	0.0384	4.39E-06	1.92E-05
Acenaphthylene	5.53E-06	0.1700	1.94E-05	8.50E-05
Acetaldehyde	8.36E-03	257.05	0.0293	0.1285
Acrolein	5.14E-03	158.04	0.0180	0.0790
Benzene	4.40E-04	13.53	0.0015	0.0068
Benzo(b)fluoranthene	1.66E-07	0.0051	5.83E-07	2.55E-06
Benzo(e)pyrene	4.15E-07	0.0128	1.46E-06	6.38E-06
Benzo(g,h,i)perylene	4.14E-07	0.0127	1.45E-06	6.36E-06
Bipheyl	2.12E-04	6.52	0.0007	0.0033
Carbon Tetrachloride	3.67E-05	1.13	0.0001	0.0006
Chlorobenzene	3.04E-05	0.9347	0.0001	0.0005
Chloroform	2.85E-05	0.8763	0.0001	0.0004
Chrysene	6.93E-07	0.0213	2.43E-06	1.07E-05
Ethylbenzene	3.97E-05	1.22	0.0001	0.0006
Ethylene Dibromide	4.43E-05	1.36	0.0002	0.0007
Fluoranthene	1.11E-06	0.0341	3.90E-06	1.71E-05
Fluorene	5.67E-06	0.1743	1.99E-05	8.72E-05
Formaldehyde	5.28E-02	1,623	0.1853	0.8117
Methanol	2.50E-03	76.87	0.0088	0.0384
Methylene Chloride	2.00E-05	0.6150	7.02E-05	0.0003
n-Hexane	1.11E-03	34.13	0.0039	0.0171
Naphthalene	7.44E-05	2.29	0.0003	0.0011
PAH	2.69E-05	0.8271	9.44E-05	0.0004
Phenanthrene	1.04E-05	0.3198	3.65E-05	0.0002
Phenol	2.40E-05	0.7379	8.42E-05	0.0004
Pyrene	1.36E-06	0.0418	4.77E-06	2.09E-05
Styrene	2.36E-05	0.7256	8.28E-05	0.0004
Tetrachloroethane	2.48E-06	0.0763	8.70E-06	3.81E-05
Toluene	4.08E-04	12.55	0.0014	0.0063
Vinyl Chloride	1.49E-05	0.4581	5.23E-05	0.0002
Xylene	1.84E-04	5.66	0.0006	0.0028
	Total:	**2,220**	**0.2534**	**1.11**

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Emission Summary (See Attachment M)
HAPS (CE-5R)

Emissions are calculated as follows:

Emissions = Heat of Natural Gas (MMBtu) * Emission Factor (lbs/MMBtu)

[1] Natural Gas Emission Factors were taken from AP-42 Tables 3.2-2

CE-5R - Natural Gas 4SLB HAP
MMBtu
52,823

HAP Emissions		Natural Gas 4SLB		
		(lbs/yr)	(lbs/hr)	(tons/yr)
HAP	Natural Gas[1] (lb/MMBtu)			
1,1,2,2-Tetrachloroethane	4.00E-05	2.11	0.0002	0.0011
1,1,2-Trichloroethane	3.18E-05	1.68	0.0002	0.0008
1,3-Butadiene	2.67E-04	14.10	0.0016	0.0071
1,3-Dichloropropene	2.64E-05	1.39	0.0002	0.0007
2-Methylnaphthalene	3.32E-05	1.75	0.0002	0.0009
2,2,4-Trimethylpentane	2.50E-04	13.21	0.0015	0.0066
Acenaphthene	1.25E-06	0.0660	7.54E-06	3.30E-05
Acenaphthylene	5.53E-06	0.2921	3.33E-05	0.0001
Acetaldehyde	8.36E-03	441.60	0.0504	0.2208
Acrolein	5.14E-03	271.51	0.0310	0.1358
Benzene	4.40E-04	23.24	0.0027	0.0116
Benzo(b)fluoranthene	1.66E-07	0.0088	1.00E-06	4.38E-06
Benzo(e)pyrene	4.15E-07	0.0219	2.50E-06	1.10E-05
Benzo(g,h,i)perylene	4.14E-07	0.0219	2.50E-06	1.09E-05
Bipheyl	2.12E-04	11.20	0.0013	0.0056
Carbon Tetrachloride	3.67E-05	1.94	0.0002	0.0010
Chlorobenzene	3.04E-05	1.61	0.0002	0.0008
Chloroform	2.85E-05	1.51	0.0002	0.0008
Chrysene	6.93E-07	0.0366	4.18E-06	1.83E-05
Ethylbenzene	3.97E-05	2.10	0.0002	0.0010
Ethylene Dibromide	4.43E-05	2.34	0.0003	0.0012
Fluoranthene	1.11E-06	0.0586	6.69E-06	2.93E-05
Fluorene	5.67E-06	0.2995	3.42E-05	0.0001
Formaldehyde	5.28E-02	2,789	0.3184	1.39
Methanol	2.50E-03	132.06	0.0151	0.0660
Methylene Chloride	2.00E-05	1.06	0.0001	0.0005
n-Hexane	1.11E-03	58.63	0.0067	0.0293
Naphthalene	7.44E-05	3.93	0.0004	0.0020
PAH	2.69E-05	1.42	0.0002	0.0007
Phenanthrene	1.04E-05	0.5494	6.27E-05	0.0003
Phenol	2.40E-05	1.27	0.0001	0.0006
Pyrene	1.36E-06	0.0718	8.20E-06	3.59E-05
Styrene	2.36E-05	1.25	0.0001	0.0006
Tetrachloroethane	2.48E-06	0.1310	1.50E-05	6.55E-05
Toluene	4.08E-04	21.55	0.0025	0.0108
Vinyl Chloride	1.49E-05	0.7871	8.98E-05	0.0004
Xylene	1.84E-04	9.72	0.0011	0.0049
	Total:	**3,814**	**0.4353**	**1.91**

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Emission Summary (See Attachment M)
HAPS (CE-6R)

Emissions are calculated as follows:

Emissions = Heat of Natural Gas (MMBtu) * Emission Factor (lbs/MMBtu)

[1] Natural Gas Emission Factors were taken from AP-42 Tables 3.2-2

CE-6R - Natural Gas 4SLB HAP
MMBtu
39,595

HAP Emissions		Natural Gas 4SLB		
		(lbs/yr)	(lbs/hr)	(tons/yr)
HAP	Natural Gas[1] (lb/MMBtu)			
1,1,2,2-Tetrachloroethane	4.00E-05	1.58	0.0002	0.0008
1,1,2-Trichloroethane	3.18E-05	1.26	0.0001	0.0006
1,3-Butadiene	2.67E-04	10.57	0.0012	0.0053
1,3-Dichloropropene	2.64E-05	1.05	0.0001	0.0005
2-Methylnaphthalene	3.32E-05	1.31	0.0002	0.0007
2,2,4-Trimethylpentane	2.50E-04	9.90	0.0011	0.0049
Acenaphthene	1.25E-06	0.0495	5.65E-06	2.47E-05
Acenaphthylene	5.53E-06	0.2190	2.50E-05	0.0001
Acetaldehyde	8.36E-03	331.02	0.0378	0.1655
Acrolein	5.14E-03	203.52	0.0232	0.1018
Benzene	4.40E-04	17.42	0.0020	0.0087
Benzo(b)fluoranthene	1.66E-07	0.0066	7.50E-07	3.29E-06
Benzo(e)pyrene	4.15E-07	0.0164	1.88E-06	8.22E-06
Benzo(g,h,i)perylene	4.14E-07	0.0164	1.87E-06	8.20E-06
Bipheyl	2.12E-04	8.39	0.0010	0.0042
Carbon Tetrachloride	3.67E-05	1.45	0.0002	0.0007
Chlorobenzene	3.04E-05	1.20	0.0001	0.0006
Chloroform	2.85E-05	1.13	0.0001	0.0006
Chrysene	6.93E-07	0.0274	3.13E-06	1.37E-05
Ethylbenzene	3.97E-05	1.57	0.0002	0.0008
Ethylene Dibromide	4.43E-05	1.75	0.0002	0.0009
Fluoranthene	1.11E-06	0.0440	5.02E-06	2.20E-05
Fluorene	5.67E-06	0.2245	2.56E-05	0.0001
Formaldehyde	5.28E-02	2,091	0.2387	1.05
Methanol	2.50E-03	98.99	0.0113	0.0495
Methylene Chloride	2.00E-05	0.7919	9.04E-05	0.0004
n-Hexane	1.11E-03	43.95	0.0050	0.0220
Naphthalene	7.44E-05	2.95	0.0003	0.0015
PAH	2.69E-05	1.07	0.0001	0.0005
Phenanthrene	1.04E-05	0.4118	4.70E-05	0.0002
Phenol	2.40E-05	0.9503	0.0001	0.0005
Pyrene	1.36E-06	0.0538	6.15E-06	2.69E-05
Styrene	2.36E-05	0.9344	0.0001	0.0005
Tetrachloroethane	2.48E-06	0.0982	1.12E-05	4.91E-05
Toluene	4.08E-04	16.15	0.0018	0.0081
Vinyl Chloride	1.49E-05	0.5900	6.73E-05	0.0003
Xylene	1.84E-04	7.29	0.0008	0.0036
	Total:	**2,859**	**0.3263**	**1.43**

Mountaineer Keystone - PDC West Compressor Station
Plant ID# 033-00187
Engine Emission Summary (See Attachment M)
HAPS (CE-7R, CE-8R)

Emissions are calculated as follows:

Emissions = Heat of Natural Gas (MMBtu) * Emission Factor (lbs/MMBtu)

[1] Natural Gas Emission Factors were taken from AP-42 Tables 3.2-2 and Formaldehyde emissions (lb/hr & tpy) were taken from the spec sheet

CE-7R - Natural Gas 4SLB HAP	CE-8R - Natural Gas 4SLB HAP
MMBtu	MMBtu
30,748	30,748

HAP Emissions		Natural Gas		
		(1) Engine		
		(lbs/yr)	(lbs/hr)	(tons/yr)
HAP	Natural Gas[1] (lb/MMBtu)			
1,1,2,2-Tetrachloroethane	4.00E-05	1.23	0.0001	0.0006
1,1,2-Trichloroethane	3.18E-05	0.9778	0.0001	0.0005
1,3-Butadiene	2.67E-04	8.21	0.0009	0.0041
1,3-Dichloropropene	2.64E-05	0.8117	9.27E-05	0.0004
2-Methylnaphthalene	3.32E-05	1.02	0.0001	0.0005
2,2,4-Trimethylpentane	2.50E-04	7.69	0.0009	0.0038
Acenaphthene	1.25E-06	0.0384	4.39E-06	1.92E-05
Acenaphthylene	5.53E-06	0.1700	1.94E-05	8.50E-05
Acetaldehyde	8.36E-03	257.05	0.0293	0.1285
Acrolein	5.14E-03	158.04	0.0180	0.0790
Benzene	4.40E-04	13.53	0.0015	0.0068
Benzo(b)fluoranthene	1.66E-07	0.0051	5.83E-07	2.55E-06
Benzo(e)pyrene	4.15E-07	0.0128	1.46E-06	6.38E-06
Benzo(g,h,i)perylene	4.14E-07	0.0127	1.45E-06	6.36E-06
Bipheyl	2.12E-04	6.52	0.0007	0.0033
Carbon Tetrachloride	3.67E-05	1.13	0.0001	0.0006
Chlorobenzene	3.04E-05	0.9347	0.0001	0.0005
Chloroform	2.85E-05	0.8763	0.0001	0.0004
Chrysene	6.93E-07	0.0213	2.43E-06	1.07E-05
Ethylbenzene	3.97E-05	1.22	0.0001	0.0006
Ethylene Dibromide	4.43E-05	1.36	0.0002	0.0007
Fluoranthene	1.11E-06	0.0341	3.90E-06	1.71E-05
Fluorene	5.67E-06	0.1743	1.99E-05	8.72E-05
Formaldehyde	-	1,840	0.2100	0.9200
Methanol	2.50E-03	76.87	0.0088	0.0384
Methylene Chloride	2.00E-05	0.6150	7.02E-05	0.0003
n-Hexane	1.11E-03	34.13	0.0039	0.0171
Naphthalene	7.44E-05	2.29	0.0003	0.0011
PAH	2.69E-05	0.8271	9.44E-05	0.0004
Phenanthrene	1.04E-05	0.3198	3.65E-05	0.0002
Phenol	2.40E-05	0.7379	8.42E-05	0.0004
Pyrene	1.36E-06	0.0418	4.77E-06	2.09E-05
Styrene	2.36E-05	0.7256	8.28E-05	0.0004
Tetrachloroethane	2.48E-06	0.0763	8.70E-06	3.81E-05
Toluene	4.08E-04	12.55	0.0014	0.0063
Vinyl Chloride	1.49E-05	0.4581	5.23E-05	0.0002
Xylene	1.84E-04	5.66	0.0006	0.0028
	Total:	**2,436**	**0.2781**	**1.22**

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Prepared For:

Chris Magee

USA COMPRESSION

QUOTE: QUO-13825-F8N1

APPLICATION INFORMATION

DRIVER

Make:	CATERPILLAR
Model:	G3516B
Horsepower:	1380
RPM:	1400
Compression Ratio:	8.0
Exhaust Flow Rate:	9042 CFM
Exhaust Temperature:	982 ˚F
Reference:	DM8800-07
Fuel:	Natural Gas
Annual Operating Hours:	8760

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr	Lb/hr	Tons/Year
NO_x:	0.50	1.52	6.66
CO:	2.43	7.39	32.38
THC:	475.00	14.45	63.30
NMHC:	0.71	2.16	9.46
NMNEHC	0.48	1.46	6.40
HCHO	0.43	1.31	5.73
Oxygen:	0.30%		

POST CATALYST EMISSIONS

	g/bhp-hr	Lb/hr	Tons/Year
NO_x:	Unaffected by Oxidation Catalyst		
CO:	<1.22	<3.70	<16.19
HCHO:	<0.07	<0.21	<0.92

CONTROL EQUIPMENT

Catalyst Housing

Model:	ELX-5000Z-1616F-30CEE-361
Manufacturer:	EMIT Technologies, Inc
Element Size:	Rectangle, 36" x 15" x 3.5"
Housing Type:	3 Element Capacity
Catalyst Installation:	Accessible Housing
Construction:	10 gauge Carbon Steel
Sample Ports:	6 (0.5" NPT)
Inlet Connections:	16" Flat Face Flange
Outlet Connections:	16" Flat Face Flange
Configuration:	End In / End Out
Silencer:	Integrated
Silencer Grade:	Hospital Enhanced
Insertion Loss:	35-50 dBA

Catalyst Element

Model:	RT-3615-Z
Catalyst Type:	Oxidation, Standard Precious Group Metals
Substrate Type:	BRAZED
Element Size:	Rectangle, 36" x 15" x 3.5"
Element Quantity:	2

Tanker Truck Loading Calculations

Mountaineer Keystone – PDC West Compressor Station
Plant ID# 033-00187
Tanker Truck Loading Emissions (See Attachment N)

Assumptions:

- All VOC, GHG, and HAPS that enter the tank are emitted during loading
- Lbs/tons of VOC, GHG, and HAPS are used from the tank emission calculations

$$0.0013\frac{lbs\ VOC}{hr} + 0.0161\frac{lbs\ VOC}{hr} = 0.0174\frac{lbs\ VOC}{hr}$$

$$0.0058\frac{tons\ VOC}{yr} + 0.0703\frac{tons\ VOC}{yr} = 0.0761\frac{tons\ VOC}{yr}$$

$$0.3745\ \frac{lbs\ GHG}{hr} + 0.4369\frac{lbs\ GHG}{hr} = 0.8114\frac{lbs\ GHG}{hr}$$

$$1.64\frac{tons\ GHG}{yr} + 1.91\frac{tons\ GHG}{yr} = 3.55\frac{tons\ GHG}{yr}$$

$$0.0002\frac{lbs\ HAPS}{hr} + 0.0008\frac{lbs\ HAPS}{hr} = 0.0010\frac{lbs\ HAPS}{hr}$$

$$0.0011\frac{tons\ HAPS}{yr} + 0.0033\frac{tons\ HAPS}{yr} = 0.0044\frac{tons\ HAPS}{yr}$$

GRI – GLYCalc Model

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: PDC West Compressor Station - Glycol Dehy # 2
File Name: C:\Users\vks.HRP\Desktop\New Model\67 MMSCFD Model with new analytics-01062017.ddf
Date: January 18, 2017

DESCRIPTION:

Description: PDC West Compressor Station - Glycol Dehydration Unit with one (1) 1.0 MMBtu/hr Reboiler

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	42.0063	1008.152	183.9878
Ethane	3.5378	84.907	15.4955
Propane	0.4270	10.248	1.8703
Isobutane	0.0408	0.980	0.1788
n-Butane	0.0719	1.725	0.3148
Isopentane	0.0177	0.424	0.0774
n-Pentane	0.0122	0.292	0.0534
Other Hexanes	0.0208	0.498	0.0909
Heptanes	0.0319	0.767	0.1399
Benzene	0.0006	0.014	0.0026
Toluene	0.0011	0.026	0.0048
Ethylbenzene	0.0018	0.044	0.0081
Xylenes	0.0027	0.065	0.0119
C8+ Heavies	0.0480	1.152	0.2102
Total Emissions	46.2206	1109.295	202.4464
Total Hydrocarbon Emissions	46.2206	1109.295	202.4464
Total VOC Emissions	0.6765	16.236	2.9631
Total HAP Emissions	0.0063	0.150	0.0274
Total BTEX Emissions	0.0063	0.150	0.0274

EQUIPMENT REPORTS:

ABSORBER

Calculated Absorber Stages:	2.08	
Specified Dry Gas Dew Point:	2.70	lbs. H2O/MMSCF
Temperature:	88.0	deg. F
Pressure:	650.0	psig
Dry Gas Flow Rate:	67.0000	MMSCF/day
Glycol Losses with Dry Gas:	0.2689	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	56.27	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	1.60	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.79%	95.21%
Carbon Dioxide	99.94%	0.06%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.99%	0.01%
Propane	99.97%	0.03%
Isobutane	99.96%	0.04%
n-Butane	99.95%	0.05%
Isopentane	99.95%	0.05%
n-Pentane	99.93%	0.07%
Other Hexanes	99.91%	0.09%
Heptanes	99.76%	0.24%
Benzene	94.79%	5.21%
Toluene	91.90%	8.10%
Ethylbenzene	88.25%	11.75%
Xylenes	82.65%	17.35%
C8+ Heavies	99.08%	0.92%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	18.40%	81.60%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.31%	99.69%
n-Pentane	0.34%	99.66%
Other Hexanes	0.74%	99.26%
Heptanes	0.44%	99.56%
Benzene	4.97%	95.03%
Toluene	7.88%	92.12%
Ethylbenzene	10.39%	89.61%
Xylenes	12.92%	87.08%
C8+ Heavies	11.65%	88.35%

STREAM REPORTS:

WET GAS STREAM

Temperature: 88.00 deg. F
Pressure: 664.70 psia
Flow Rate: 2.80e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.19e-001	1.57e+002
Carbon Dioxide	1.77e-001	5.73e+002
Nitrogen	2.62e-001	5.41e+002
Methane	9.58e+001	1.13e+005
Ethane	3.41e+000	7.55e+003
Propane	2.21e-001	7.17e+002
Isobutane	1.33e-002	5.69e+001
n-Butane	1.98e-002	8.47e+001
Isopentane	3.80e-003	2.02e+001
n-Pentane	2.20e-003	1.17e+001
Other Hexanes	2.60e-003	1.65e+001
Heptanes	1.60e-003	1.18e+001
Benzene	2.00e-006	1.15e-002
Toluene	2.00e-006	1.36e-002
Ethylbenzene	2.00e-006	1.56e-002
Xylenes	2.00e-006	1.56e-002
C8+ Heavies	4.00e-004	5.01e+000
Total Components	100.00	1.23e+005

DRY GAS STREAM

Temperature: 88.00 deg. F
Pressure: 664.70 psia
Flow Rate: 2.79e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.69e-003	7.54e+000
Carbon Dioxide	1.77e-001	5.73e+002
Nitrogen	2.62e-001	5.41e+002
Methane	9.59e+001	1.13e+005
Ethane	3.41e+000	7.55e+003
Propane	2.21e-001	7.17e+002
Isobutane	1.33e-002	5.69e+001
n-Butane	1.98e-002	8.46e+001
Isopentane	3.80e-003	2.02e+001
n-Pentane	2.20e-003	1.17e+001
Other Hexanes	2.60e-003	1.65e+001
Heptanes	1.60e-003	1.18e+001
Benzene	1.90e-006	1.09e-002
Toluene	1.84e-006	1.25e-002
Ethylbenzene	1.76e-006	1.38e-002
Xylenes	1.65e-006	1.29e-002
C8+ Heavies	3.96e-004	4.97e+000
Total Components	100.00	1.23e+005

LEAN GLYCOL STREAM

Temperature: 88.00 deg. F
Flow Rate: 4.00e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.85e+001	2.22e+003
Water	1.50e+000	3.38e+001
Carbon Dioxide	1.62e-012	3.65e-011
Nitrogen	9.97e-014	2.25e-012
Methane	6.71e-018	1.51e-016
Ethane	2.17e-008	4.88e-007
Propane	3.42e-010	7.71e-009
Isobutane	2.93e-011	6.59e-010
n-Butane	4.82e-011	1.09e-009
Isopentane	2.45e-006	5.51e-005
n-Pentane	1.85e-006	4.18e-005
Other Hexanes	6.86e-006	1.54e-004
Heptanes	6.26e-006	1.41e-004
Benzene	1.40e-006	3.15e-005
Toluene	4.19e-006	9.43e-005
Ethylbenzene	9.48e-006	2.13e-004
Xylenes	1.79e-005	4.03e-004
C8+ Heavies	2.81e-004	6.33e-003
Total Components	100.00	2.25e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 88.00 deg. F
Pressure: 664.70 psia
Flow Rate: 4.40e+000 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.06e+001	2.22e+003
Water	7.50e+000	1.84e+002
Carbon Dioxide	2.27e-002	5.55e-001
Nitrogen	8.24e-003	2.02e-001
Methane	1.72e+000	4.20e+001
Ethane	1.45e-001	3.54e+000
Propane	1.74e-002	4.27e-001
Isobutane	1.67e-003	4.08e-002
n-Butane	2.94e-003	7.19e-002
Isopentane	7.24e-004	1.77e-002
n-Pentane	5.00e-004	1.22e-002
Other Hexanes	8.54e-004	2.09e-002
Heptanes	1.31e-003	3.21e-002
Benzene	2.59e-005	6.34e-004
Toluene	4.89e-005	1.20e-003
Ethylbenzene	8.40e-005	2.05e-003
Xylenes	1.27e-004	3.12e-003
C8+ Heavies	2.22e-003	5.43e-002
Total Components	100.00	2.45e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 4.21e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	7.50e+001	1.50e+002
Carbon Dioxide	1.14e-001	5.55e-001
Nitrogen	6.50e-002	2.02e-001
Methane	2.36e+001	4.20e+001
Ethane	1.06e+000	3.54e+000
Propane	8.73e-002	4.27e-001
Isobutane	6.34e-003	4.08e-002
n-Butane	1.12e-002	7.19e-002
Isopentane	2.21e-003	1.77e-002
n-Pentane	1.52e-003	1.22e-002
Other Hexanes	2.17e-003	2.08e-002
Heptanes	2.88e-003	3.19e-002
Benzene	6.96e-005	6.02e-004
Toluene	1.08e-004	1.10e-003
Ethylbenzene	1.56e-004	1.84e-003
Xylenes	2.31e-004	2.71e-003
C8+ Heavies	2.54e-003	4.80e-002
Total Components	100.00	1.97e+002

Gas Analytical Services

CHARLESTON, WV

304-677-9926

Good

LELAP Certification #

04049

Customer	: 0034 - MK MIDSTREAM	**Date Sampled**	: 12/13/2016
Station ID	: 2601	**Date Analyzed**	: 12/19/2016
Cylinder ID	: 0280	**Effective Date**	: 01/01/2017
Producer	:	**Cyl Pressure**	: 625
Lease	: GOFF WEST	**Temp**	: 60
Area	: 190 - UNKNOWN	**Cylinder Type**	: Spot
State	: WV	**Sample By**	: HT

COMPONENT	MOL%	GPM@14.73(PSIA)
Methane	95.8791	0.000
Ethane	3.4142	0.915
Propane	0.2210	0.061
Iso-Butane	0.0133	0.004
Normal-Butane	0.0198	0.006
Neo-Pentane	0.0006	0.000
Iso-Pentane	0.0038	0.001
Normal-Pentane	0.0022	0.001
Nitrogen	0.2624	0.000
Carbon-Dioxide	0.1770	0.000
Oxygen	0.0020	0.000
BENZENE	0.0000	0.000
ETHYLBENZENE	0.0000	0.000
TOLUENE	0.0000	0.000
M-XYLENE/P-XYLENE	0.0000	0.000
C6's	0.0026	0.001
C8's	0.0004	0.000
C9's	0.0000	0.000
C7's	0.0016	0.001
C10's	0.0000	0.000
C11's	0.0000	0.000
C12's	0.0000	0.000
TOTAL	**100.0000**	**0.990**

Compressibility Factor (Z) @ 14.73 @ 60 Deg. F = 0.9979

C5+ GPM : 0.00200

Ideal Gravity: 0.5761 **Real Gravity:** 0.5771

C5+ Mole % : 0.0106

BTU @ (PSIA)	@14.65	@14.696	@14.73	@15.025
Ideal GPM	0.983	0.986	0.989	1.008
Ideal BTU Dry	1,032.69	1,035.94	1,038.33	1,059.13
Ideal BTU Sat	1,014.62	1,017.86	1,020.26	1,041.05
Real GPM	0.985	0.989	0.991	1.011
Real BTU Dry	1,034.91	1,038.16	1,040.57	1,061.46
Real BTU Sat	1,017.14	1,020.40	1,022.81	1,043.70

Comments:

Gas Analysis performed in accordance with GPA 2286

Analytical Calculations performed in accordance with GPA 2172

Sample Count : 220000003

COC :

Measurement Analyst: _____ **Ashley Free**

Blowdown and Pigging Operation Emission Calculations

Mountaineer Keystone – PDC West Compressor Station
Plant ID# 033-00187
Blowdown and Pigging Operation Emissions (See Attachment S)

Compressor Blowdown

Assumptions:

- 642.9 scf/event summed from factors on page 137 of Background Technical Support Document – Petroleum and Natural Gas Industry (https://www.epa.gov/sites/production/files/2015-05/documents/background-tsd-posted-4-12-10-epa-hq-oar-2009-0923-0027.pdf)
- Events occur 48 times per year

$$\left(642.9\frac{scf}{event}\right)\left(\frac{28.32\ L}{scf}\right)\left(\frac{gmol}{22.4\ L}\right)\left(\frac{lbmol}{453.592\ gmol}\right)\left(\frac{16.68\ lb}{lbmol}\right) = 29.89\frac{lbs\ natural\ gas}{event}$$

$$\left(29.89\frac{lbs\ natural\ gas}{event}\right)\left(48\frac{events}{year}\right) = 1434.72\frac{lbs\ natural\ gas}{year} = 0.7173\frac{tons\ natural\ gas}{year}$$

$$\left(0.7173\frac{tons\ natural\ gas}{year}\right)(7\%\ wt\ VOC) = 0.0502\frac{tons\ VOC}{year}$$

Low Pressure Pig Venting

Assumptions:

- 10 mmscf/day of gas flow
- Each event takes 10 minutes
- Events occurs 36 times per year

$$\left(10{,}000{,}000\frac{scf}{day}\right)\left(\frac{day}{1440\ \text{min}}\right)\left(\frac{10\ min}{event}\right) = 69{,}444\frac{scf}{event}$$

$$\left(69{,}444\frac{scf}{event}\right)\left(\frac{28.32\ L}{scf}\right)\left(\frac{gmol}{22.4\ L}\right)\left(\frac{lbmol}{453.592\ gmol}\right)\left(\frac{16.68\ lb}{lbmol}\right) = 3{,}235\ \frac{lbs\ natural\ gas}{event}$$

$$\left(3{,}235\frac{lbs\ natural\ gas}{event}\right)\left(\frac{36\ events}{year}\right) = 116{,}460\frac{lbs\ natural\ gas}{year} = 58.23\frac{tons\ natural\ gas}{year}$$

$$\left(58.23\frac{tons\ natural\ gas}{year}\right)(7\%\ wt\ VOC) = 4.08\frac{tons\ VOC}{year}$$

Compressor Startup

Assumptions:

- 5,000 scf/event taken from Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry footnote (e) from pdf page 297 (Table 5-23) (http://www.api.org/~/media/files/ehs/climate-change/2009_ghg_compendium.ashx)
- Events occur 6 times per year

$$\left(5{,}000\,\frac{scf}{event}\right)\left(\frac{28.32\ L}{scf}\right)\left(\frac{gmol}{22.4\ L}\right)\left(\frac{lbmol}{453.592\ gmol}\right)\left(\frac{16.68\ lb}{lbmol}\right) = 232.46\ \frac{lbs\ natural\ gas}{event}$$

$$\left(232.46\,\frac{lbs\ natural\ gas}{event}\right)\left(\frac{6\ events}{year}\right) = 1{,}395\,\frac{lbs\ natural\ gas}{year} = 0.6974\,\frac{tons\ natural\ gas}{year}$$

$$\left(0.6974\,\frac{tons\ natural\ gas}{year}\right)(7\%\ wt\ VOC) = 0.0488\,\frac{tons\ VOC}{year}$$

ATTACHMENT V – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		GHG (CO_2e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E (CE-1R)	1.01	4.41	0.4800	2.11	0.0300	0.1500	0.0021	0.0090	0.0003	0.0012	0.0003	0.0012	386.18	1,691
2E (CE-2R)	1.07	4.69	0.1700	0.7500	0.0600	0.2600	0.0021	.0090	0.0003	0.0012	0.0003	0.0012	386.18	1,691
5E (CE-5R)	1.06	4.66	0.0500	0.2200	0.0800	0.3500	0.0035	0.0155	0.0005	0.0020	0.0005	0.0020	663.22	2,905
6E (CE-6R)	0.8600	3.78	0.0600	0.277	0.0400	0.1900	0.0027	0.0116	0.0003	0.0015	0.0003	0.0015	496.72	2,176
3E (CE-7R)	1.52	6.66	3.70	16.19	1.46	6.40	0.0067	0.0293	0.1140	0.4980	0.1140	0.4980	1,497	7,634
4E (CE-8R)	1.52	6.66	3.70	16.19	1.46	6.40	0.0067	0.0293	0.1140	0.4980	0.1140	0.4980	1,497	7,634
RSV-1 (TEG-1)	NA	NA	NA	NA	0.6737	2.96	NA	NA	NA	NA	NA	NA	210	920
RBV-1 (TEG-1)	0.0971	0.4252	0.0816	0.3572	0.0053	0.0234	0.0060	0.0026	0.0074	0.0323	0.0074	0.0323	116	510
RSV-2 (TEG-2)	NA	NA	NA	NA	0.6737	2.95	NA	NA	NA	NA	NA	NA	1,033	4,522
RBV-2 (TEG-2)	0.0971	0.4252	0.0816	0.3572	0.0053	0.0234	0.0060	0.0026	0.0074	0.0323	0.0074	0.0323	116	510
7E (TK-1)	NA	NA	NA	NA	0.0161	0.0703	NA	NA	NA	NA	NA	NA	0.4369	1.91
8E (TK-3)	NA	NA	NA	NA	0.0013	0.0058	NA	NA	NA	NA	NA	NA	0.3745	1.64
LO-1	NA	NA	NA	NA	<0.0174	<0.0761	NA	NA	NA	NA	NA	NA	<0.8114	<3.55
TOTAL	7.23	31.71	8.32	36.44	4.52	19.82	0.0250	0.1089	0.2442	1.07	0.2442	1.07	5,580	26,598

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.
According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT V – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E (CE-1R)	0.1853	0.8117	0.0015	0.0068	0.0001	0.0063	0.0006	0.0006	6.39E-4	0.0028	0.0039	0.0171	0.2534	1.11
2E (CE-2R)	0.1853	0.8117	0.0015	0.0068	0.0001	0.0063	0.0006	0.0006	6.39E-4	0.0028	0.0039	0.0171	0.2534	1.11
5E (CE-5R)	0.3184	1.39	0.0027	0.0116	0.0025	0.0108	0.0002	0.0010	0.0011	0.0049	0.0069	0.0293	0.4353	1.91
6E (CE-6R)	0.2387	1.05	0.0020	0.0087	0.0018	0.0081	0.0002	0.0008	0.0008	0.0036	0.0050	0.0220	0.3263	1.43
3E (CE-7R)	0.2100	0.9200	0.0020	0.0068	0.001	0.0063	0.001	0.0006	6.39E-4	0.0028	0.0040	0.0171	0.2781	1.22
4E (CE-8R)	0.2100	0.9200	0.0020	0.0068	0.001	0.0063	0.001	0.0006	6.39E-4	0.0028	0.0040	0.0171	0.2781	1.22
RSV-1 (TEG-1)	NA	NA	0.0006	0.0026	0.0011	0.0048	0.0018	0.0081	0.0027	0.0119	0.0208	0.0909	0.0063	0.0274
RBV-1 (TEG-1)	7.28E-5	0.0003	2.04E-6	8.93E-6	3.30E-6	1.45E-5	NA	NA	NA	NA	0.0017	0.0077	0.0018	0.0080
RSV-2 (TEG-2)	NA	NA	0.0006	0.0026	0.0011	0.0048	0.0018	0.0081	0.0027	0.0119	0.0208	0.0909	0.0063	0.0274
RBV-2 (TEG-2)	7.28E-5	0.0003	2.04E-6	8.93E-6	3.30E-6	1.45E-5	NA	NA	NA	NA	0.0017	0.0077	0.0018	0.0080
7E (TK-1)	NA	NA	NA	NA	0.0002	0.0008	NA	NA	NA	NA	NA	NA	0.0004	0.0016
8E (TK-3)	NA	NA	0.0001	0.0005	0.0001	0.0005	4.81E-6	2.10E-5	3.36E-5	0.0001	NA	NA	0.0005	0.0023
LO-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0010	0.0044
TOTAL	1.35	7.53	0.0130	0.0532	0.0116	0.0550	0.0062	0.0204	0.0098	0.0436	0.0725	0.3169	1.84	8.08

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.
According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT W – CLASS I LEGAL ADVERTISEMENT

Publication of a proper Class I legal advertisement is a requirement of the G35-D registration process. In the event the applicant's legal advertisement fails to follow the requirements of 45CSR13, Section 8 or the requirements of Chapter 59, Article 3, of the West Virginia Code, the application will be considered incomplete and no further review of the application will occur until this is corrected.

The applicant, utilizing the format for the Class I legal advertisement example provided on the following page, shall have the legal advertisement appear a minimum of one (1) day in the newspaper most commonly read in the area where the facility exists or will be constructed. The notice must be published no earlier than five (5) working days of receipt by this office of your application. The original affidavit of publication must be received by this office no later than the last day of the public comment period.

The advertisement shall contain, at a minimum, the name of the applicant, the type and location of the source, the type and amount of air pollutants that will be discharged (include fugitive emissions separately), the nature of the permit being sought, the proposed start-up date for the source, and a contact telephone number for more information.

The location of the source should be as specific as possible starting with: 1.) the street address of the source; 2.) the nearest street or road; 3.) the nearest town or unincorporated area, 4.) the county, and 5.) latitude and longitude coordinates in decimal format.

Types and amounts of pollutants discharged must include all regulated pollutants (Nitrogen Oxides, Carbon Monoxide, Particulate Matter-2.5, Particulate Matter-10, Volatile Organic Compounds, Sulfur Dioxide, Formaldehyde, Benzene, Toluene, Ethylbenzene, Xylenes, Hexane, Total Hazardous Air Pollutants) and their potential to emit or the permit level being sought in units of tons per year.

In the event the 30th day is a Saturday, Sunday, or legal holiday, the comment period will be extended until 5:00 p.m. on the following regularly scheduled business day.

A list of qualified newspapers that are eligible to publish legal ads may be found:

http://www.sos.wv.gov/elections/resource/Documents/Qualified%20Newspapers.pdf

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that MK Midstream Holdings, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for aG35-D (General Permit Modification), for a natural gas compressor and/or dehydration facility located on Davisson Run Road, Clarksburg, in Harrison County, West Virginia. The latitude and longitude coordinates are: 39.27550 and -80.403099.

The applicant estimates the increased potential to discharge the following Regulated Air Pollutants will be:

- VOC – 4.15 Tons per year;
- Benzene – 0.0052 Tons per year;
- Toluene – 0.0096 Tons per year;
- Ethylbenzene – 0.0162 Tons per year;
- Xylenes – 0.0238 Tons per year; and
- Hexane – 0.1818 Tons per year.

Startup of operation is planned to begin on or about March 1, 2017. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.
Dated this 18th day of January, 2017.

By: MK Midstream Holdings, LLC
Meghan M.B. Yingling
Environmental Compliance Manager
65 Professional Place, Suite 200
Bridgeport, WV 26330