October 11, 2017 Reference No. 082715

Ms. Beverly McKeone
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, West Virginia 25304

Dear Ms. Beverly McKeone:

Re: General Permit G70-D Modification Application
Lemley Well Pad
Antero Resources Corporation

GHD Services Inc. (GHD) would like to submit this General Permit Modification application that we prepared on behalf of Antero Resources Corporation for an oil and gas facility identified as Lemley Well Pad.

A General Permit Registration Modification is requested due to the following planned operational changes:

1. Increase in condensate and produced water production
2. Addition of ten line heaters
3. Addition of two produced water tanks
4. Addition of one HP Ford VRU engine
5. Addition of three enclosed Cimarron combustors
6. Removal of one Abutec combustor

Please refer to Table 14 in Attachment T - Emissions Calculations for the summary of changes in emissions of regulated air pollutants that will result from the above operational changes.

Enclosed are the following documents:

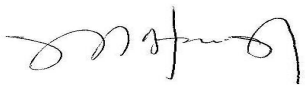
- Original copy of the G70-D General Permit Modification Application.
- Two CD copies of the G70-D General Permit Modification Application.
- The application fee with check no. 488688 in the amount of $1,500.00.

GHD
6320 Rothway Street Suite 100 Houston Texas 77040 USA
T 713 734 3090 **F** 713 734 3391 **W** www.ghd.com

Please let us know if you have any questions or require additional information.

Sincerely,

GHD Services Inc.



Manuel Bautista

MB/ma/353

Encl.

cc: Barry Schatz, Antero Resources Corporation
Elizabeth McLaughlin, Antero Resources Corporation

G70-D General Permit Registration Modification Application

Lemley Well Pad

Antero Resources Corporation

GHD 6320 Rothway Suite 100 Houston Texas 77040
082715 | Report No 353 | October 2017

Table of Contents

dep	**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

G70-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 PRODUCTION FACILITIES LOCATED AT THE WELL SITE

☐CONSTRUCTION
☒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): Antero Resources Corporation

Federal Employer ID No. (FEIN): 80-0162034

Applicant's Mailing Address: 1615 Wynkoop Street

City: Denver	State: CO	ZIP Code: 80202

Facility Name: Lemley Well Pad

Operating Site Physical Address: 3126 Morgans Run Rd.

City: West Union	Zip Code: 26456	County: Doddridge

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: 39.32634
Longitude: -80.68025

SIC Code: 1311 NAICS Code: 211111	DAQ Facility ID No. (For existing facilities) 017-00135

CERTIFICATION OF INFORMATION

This G70-D General 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 G70-D Registration Application will be returned to the applicant. Furthermore, if the G70-D forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.**

I hereby certify that Barry Schatz 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 G70-D General 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: Phone: Fax:
Email: Date:

If applicable:
Authorized Representative Signature: Barry Schatz
Name and Title: Barry Schatz/ Senior Environmental & Regulatory Manager Phone: 303-357-7276 Fax: 303-357-7315
Email: bschatz@anteroresources.com Date: 10/10/2017

If applicable:
Environmental Contact
Name and Title: Phone: Fax:
Email: Date:

OPERATING SITE INFORMATION	
Briefly describe the proposed new operation and/or any change(s) to the facility: Increase in condensate and produced water production, addition of ten line heaters, addition of two produced water tanks, addition of one HP Ford VRU engine, addition of three enclosed Cimarron combustors and removal of one Abutec combustor.	
Directions to the facility: From West Union, take Davis St/Old U.S. 50 E and go 0.2 mi, continue straight onto Davis St/Smithton Rd for 0.1 mi, turn left onto Rock Run Rd and go 5.3 mi, turn right onto Big Flint Rd and go 3.1 mi, take a sharp right onto Howell Run Rd and go 1.4 mi. The approach road to the well pad will be towards 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): ☒$500 (Construction, Modification, and Relocation) ☐$300 (Class II Administrative Update) ☒$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ, OOOO and/or OOOOa [1] ☐$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH [2] [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)	
☒ Single Source Determination Form **(must be completed in its entirety)** – Attachment A	
☐ Siting Criteria Waiver (if applicable) – Attachment B	☒ Current Business Certificate – Attachment C
☒ Process Flow Diagram – Attachment D	☒ Process Description – Attachment E
☒ Plot Plan – Attachment F	☒ Area Map – Attachment G
☒ G70-D Section Applicability Form – Attachment H	☒ Emission Units/ERD Table – Attachment I
☒ Fugitive Emissions Summary Sheet – Attachment J	
☒ Gas Well Affected Facility Data Sheet (if applicable) – Attachment K	
☒ 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 L	
☒ Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment M	
☒ Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment N	
☒ Tanker Truck Loading Data Sheet (if applicable) – Attachment O	
☐ Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment P	
☐ Pneumatic Controllers Data Sheet – Attachment Q	
☐ Pneumatic Pump Data Sheet – Attachment R	
☒ Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment S	
☒ Emission Calculations (please be specific and include all calculation methodologies used) – Attachment T	
☒ Facility-wide Emission Summary Sheet(s) – Attachment U	
☒ Class I Legal Advertisement – Attachment V	
☒ One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

Attachment R
AUTHORITY OF CORPORATION
OR OTHER BUSINESS ENTITY (DOMESTIC OR FOREIGN)

TO: The West Virginia Department of Environmental Protection, Division of Air Quality

DATE: January 23, 2015

ATTN.: Director

Corporation's / other business entity's Federal Employer I.D. Number 80-0162034

The undersigned hereby files with the West Virginia Department of Environmental Protection, Division of Air Quality, a permit application and hereby certifies that the said name is a trade name which is used in the conduct of an incorporated business or other business entity.

Further, the corporation or the business entity certifies as follows:

(1) Barry Schatz (is/are) the authorized representative(s) and in that capacity may represent the interest of the corporation or the business entity and may obligate and legally bind the corporation or the business entity.

(2) The corporation or the business entity is authorized to do business in the State of West Virginia.

(3) If the corporation or the business entity changes its authorized representative(s), the corporation or the business entity shall notify the Director of the West Virginia Department of Environmental Protection, Division of Air Quality, immediately upon such change.

President or Other Authorized Officer
(Vice President, Secretary, Treasurer or other official in charge of a principal business function of the corporation or the business entity)

(If not the President, then the corporation or the business entity must submit certified minutes or bylaws stating legal authority of other authorized officer to bind the corporation or the business entity).

Secretary

Name of Corporation or business entity

Attachment A
Single Source Determination Form

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 ☒ No ☐

Is there equipment and activities under the control of the same person/people?
Yes ☒ 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 ☒

Lemley Well Pad calculation of potential to emit included all of the emission sources that belong to the same industrial grouping, are located on contiguous or adjacent properties, and are under the control of the same person. The nearby emission source that belongs to the same industrial grouping and under the control of the same person but not located on contiguous or adjacent property is the well pad site identified as Revival Well Pad. Lemley Well Pad site is located approximately 0.56 miles northeast of the Revival Well Pad.

Attachment B
Siting Criteria Waiver

Attachment B

Siting Waiver
Lemley Well Pad
Antero Resources Corporation
Doddridge County, West Virginia

A Siting Waiver form is not required because there are no occupied dwelling structures within 300 feet of Lemley Well Pad.

Attachment C
Current Business Certificate

State of West Virginia

Certificate

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

ANTERO RESOURCES CORPORATION

a corporation formed under the laws of Delaware, which is authorized to transact business in West Virginia by a Certificate of Authority has filed in my office as required by the provisions of the West Virginia Code, a copy of an amendment to its Articles of Incorporation authenticated by the proper office of the state or country of its incorporation and was found to conform to law.

Therefore, I issue this

CERTIFICATE OF AMENDMENT TO CERTIFICATE OF AUTHORITY

Given under my hand and the Great Seal of the State of West Virginia on this day of June 10, 2013

Natalie E Tennant

Secretary of State

FILED

JUN 10 2013

IN THE OFFICE OF SECRETARY OF STATE

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

Office Hours: Monday – Friday
8:30 a.m. – 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed stamped copy returned to you)
FEE: $25.00

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

****** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby **** applies for an Amended Certificate of Authority and submits the following statement:**

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation

2. Date Certificate of Authority was issued in West Virginia: 6/25/2008

3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)

4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)

5. Other amendments:
(attach additional pages if necessary)

6. **Name and phone number of contact person.** (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp — Contact Name
(303) 357-7310 — Phone Number

7. **Signature information** (See below ******Important Legal Notice Regarding Signature*):

Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person

Signature: Alvyn A. Schopp **Date:** June 10, 2013

******Important Legal Notice Regarding Signature*: **Per West Virginia Code §31D-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.**

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "ANTERO RESOURCES APPALACHIAN CORPORATION", CHANGING ITS NAME FROM "ANTERO RESOURCES APPALACHIAN CORPORATION" TO "ANTERO RESOURCES CORPORATION", FILED IN THIS OFFICE ON THE TENTH DAY OF JUNE, A.D. 2013, AT 9:37 O'CLOCK A.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.

Jeffrey W. Bullock, Secretary of State

4520810 8100

130754186

AUTHENTICATION: 0496546

DATE: 06-10-13

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 09:37 AM 06/10/2013
FILED 09:37 AM 06/10/2013
SRV 130754186 - 4520810 FILE

AMENDMENT TO THE AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF ANTERO RESOURCES APPALACHIAN CORPORATION

Antero Resources Appalachian Corporation (the "Corporation"), a corporation organized and existing under the laws of the State of Delaware, hereby certifies as follows:

1. The original Certificate of Incorporation of the Corporation was filed under the name Antero Resources Barnett Corporation with the filing of the original Certificate of Incorporation of the Corporation with the Secretary of State of the State of Delaware on March 18, 2008.

2. This Amendment to the Amended and Restated Certificate of Incorporation has been duly adopted and approved in accordance with Sections 242 of the General Corporation Law of the State of Delaware.

3. Article FIRST of the Amended and Restated Certificate of Incorporation is hereby amended to read in its entirety as follows:

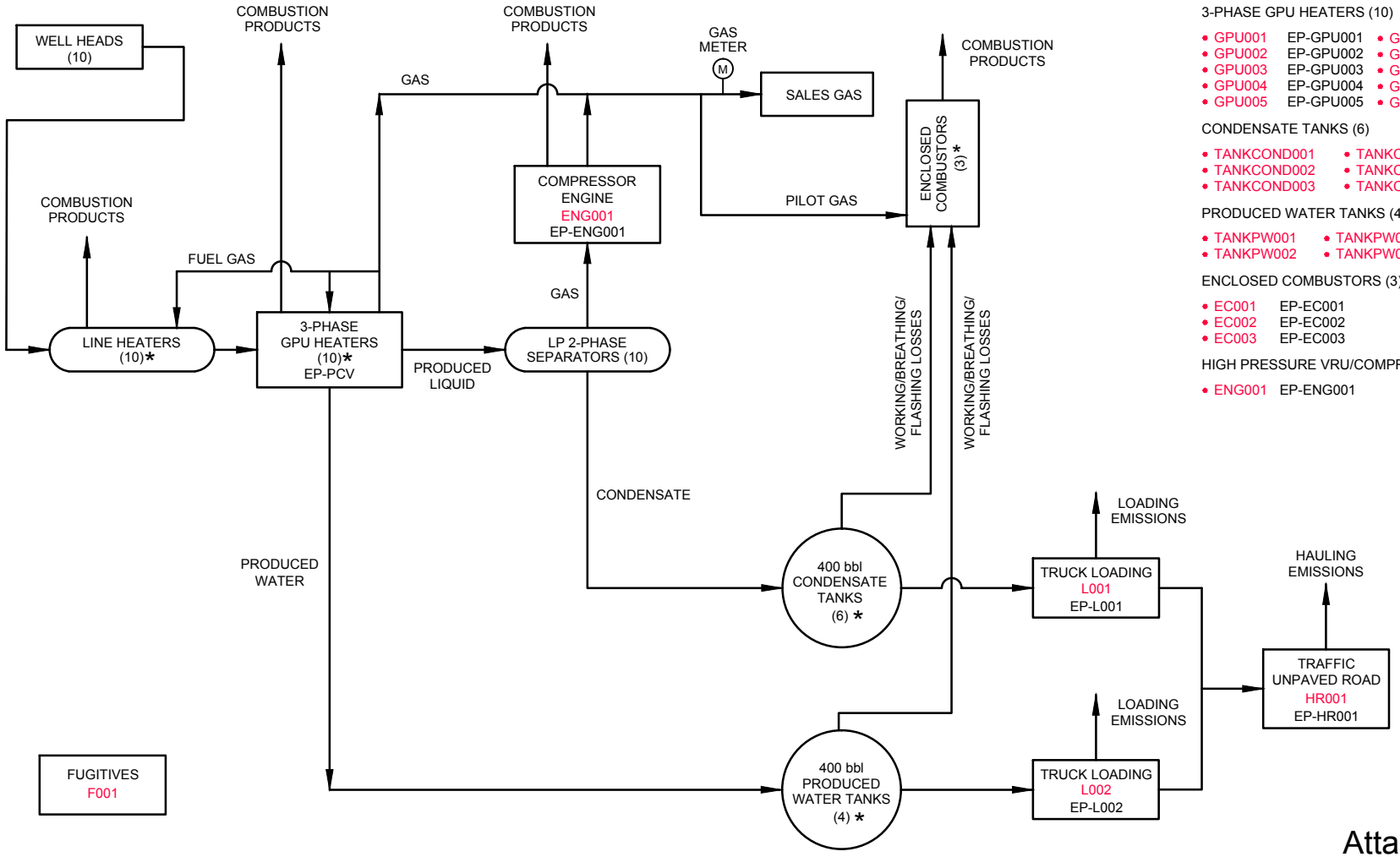
FIRST. The name of the Corporation is Antero Resources Corporation.

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be executed by its duly authorized officer on the 10th day of June, 2013.

ANTERO RESOURCES APPALACHIAN CORPORATION

By: _____
Name: Alvyn A. Schopp
Title: Vice President of Accounting & Administration / Treasurer

Attachment D
Process Flow Diagram



* LINE HEATERS (10)

- LH001 EP-LH001
- LH002 EP-LH002
- LH003 EP-LH003
- LH004 EP-LH004
- LH005 EP-LH005
- LH006 EP-LH006
- LH007 EP-LH007
- LH008 EP-LH008
- LH009 EP-LH009
- LH010 EP-LH010

3-PHASE GPU HEATERS (10)

- GPU001 EP-GPU001
- GPU002 EP-GPU002
- GPU003 EP-GPU003
- GPU004 EP-GPU004
- GPU005 EP-GPU005
- GPU006 EP-GPU006
- GPU007 EP-GPU007
- GPU008 EP-GPU008
- GPU009 EP-GPU009
- GPU010 EP-GPU010

CONDENSATE TANKS (6)

- TANKCOND001
- TANKCOND002
- TANKCOND003
- TANKCOND004
- TANKCOND005
- TANKCOND006

PRODUCED WATER TANKS (4)

- TANKPW001
- TANKPW002
- TANKPW003
- TANKPW004

ENCLOSED COMBUSTORS (3)

- EC001 EP-EC001
- EC002 EP-EC002
- EC003 EP-EC003

HIGH PRESSURE VRU/COMPRESSOR ENGINE (1)

- ENG001 EP-ENG001

Attachment D

PROCESS FLOW DIAGRAM - ANTERO RESOURCES LEMLEY WELL PAD

Doddridge County, West Virginia

Attachment E
Process Description

Attachment E

Process Description
Lemley Well Pad
Antero Resources Corporation
Doddridge County, West Virginia

A mixture of condensate, water, and entrained gas from the condensate and gas wells enters the facility through a series of line heaters (LH001-010) and gas production units (GPU001-GPU010) which are 3-phase separators where the gas, condensate, and produced water are separated. The line heaters and GPUs are fueled by a slip stream of the separated gas.

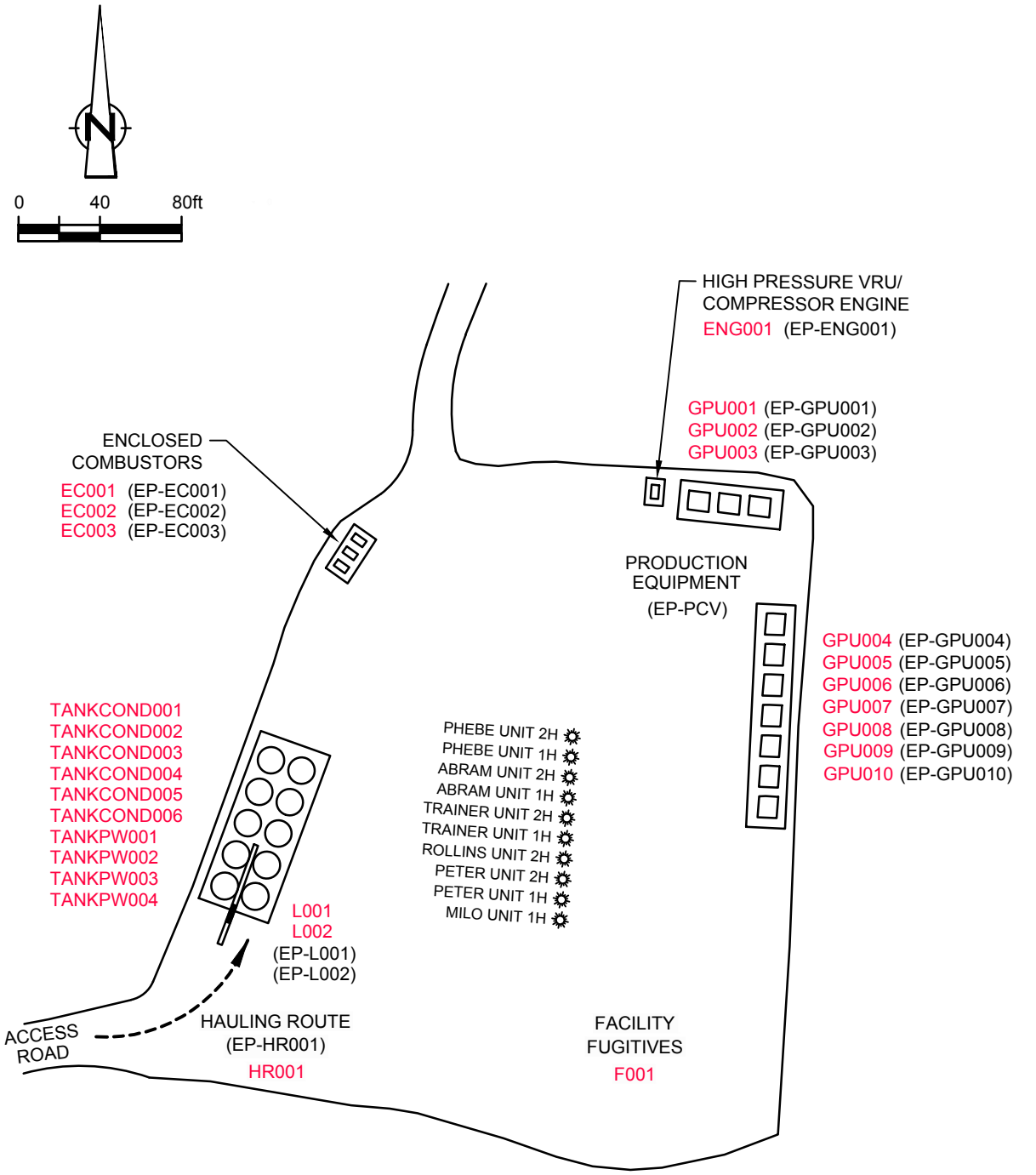
The gas from the three phase separators is metered and sent to the sales gas pipeline. The water flow to the produced water storage tanks (TANKPW001-004). The condensate is then sent to two phase low pressure separators where gas is further separated. The gas is routed to the gas fueled compressor engine (ENG001), compressed, metered and sent to the sales gas line. The condensate from the two phase separators flows to the condensate storage tanks (TANKSCOND001-006). The line heaters are only used during the first several months from start of production and will be removed once production has normalized.

The facility has six (6) tanks (TANKCOND001-006) on site to store condensate and four (4) tanks (TANKPW001-004) to store produced water prior to removal from the site. The flashing, working and breathing losses from the tanks are routed to three enclosed combustors (EC001-003) to control the emissions. The enclosed combustors that will be used to control emissions are designed to achieve a VOC destruction efficiency of 98 percent.

Condensate and produced water are transported off site on an as needed basis via tanker truck. Truck loading connections are in place to pump condensate (L001) and produced water (L002) from the storage tanks into tanker trucks. Emissions from the loading operations are vented to the atmosphere.

Emissions from the facility's emission sources were calculated using the extended analysis of the condensate from Gaskins Unit 1H, one of the wells in the Hamilton Well Pad, and gas from Mt. Salem Revival 2H, one of the wells in the Revival Well Pad. The condensate extended analysis and gas analysis are considered representative of the materials from Lemley Pad, being in the same Marcellus rock formation.

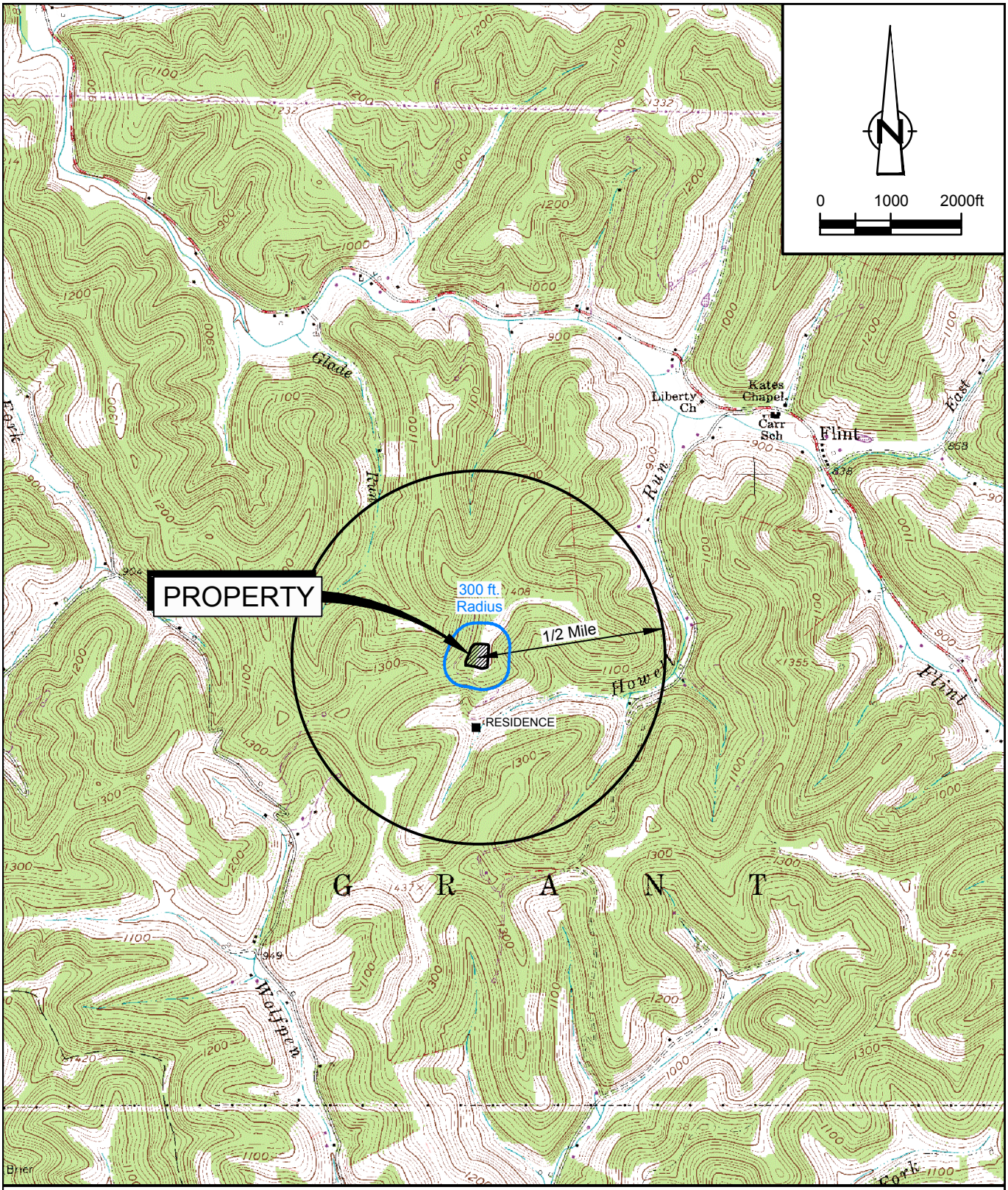
Attachment F
Plot Plan



Attachment F

PLOT PLAN
LEMLEY WELL PAD
ANTERO RESOURCES
Doddridge County, West Virginia

Attachment G
Area Map



SOURCE: USGS QUADRANGLE MAP;
SMITHBURG, WEST VIRGINIA

SITE COORDINATES: LAT. 39.326345, LONG. -80.680251
SITE ELEVATION: 1322 ft AMSL

GHD

Attachment G

AREA MAP
LEMLEY WELL PAD
ANTERO RESOURCES
Doddridge County, West Virginia

82715-00(353)GN-WA003 SEP 12, 2017

Attachment H
G70-D Section Applicability Form

ATTACHMENT H – G70-D SECTION APPLICABILITY FORM

General Permit G70-D Registration[1]
Section Applicability Form

General Permit G70-D was developed to allow qualified applicants to seek registration for a variety of sources. These sources include gas well affected facilities, 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 G70-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 G70-D APPLICABLE SECTIONS	
☒Section 5.0	Gas Well Affected Facility (NSPS, Subpart OOOO/OOOOa)
☒Section 6.0	Storage Vessels Containing Condensate and/or Produced Water[1]
☒Section 7.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO/OOOOa)
☒Section 8.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO/OOOOa and/or NESHAP Subpart HH
☒Section 9.0	Small Heaters and Reboilers not subject to 40CFR60 Subpart Dc
☐Section 10.0	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO/OOOOa)
☐Section 11.0	Pneumatic Pump Affected Facility (NSPS, Subpart OOOOa)
☒Section 12.0	Fugitive Emissions GHG and VOC Standards (NSPS, Subpart OOOOa)
☒Section 13.0	Reciprocating Internal Combustion Engines, Generator Engines
☒Section 14.0	Tanker Truck/Rail Car Loading[2]
☐Section 15.0	Glycol Dehydration Units[3]

1 *Applicants that are subject to Section 6 may also be subject to Section 7 if the applicant is subject to the NSPS, Subparts OOOO or OOOOa control requirements or the applicable control device requirements of Section 8.*

2 *Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 8.*

3 *Applicants that are subject to Section 15 may also be subject to the requirements of Section 9 (reboilers). Applicants that are subject to Section 15 may also be subject to control device and emission reduction device requirements of Section 8.*

Attachment I
Emission Units/ ERD Table

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. 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]
GPU001, GPU002, GPU003, GPU004, GPU005, GPU006, GPU007, GPU008, GPU009, GPU010	EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007, EP-GPU008, EP-GPU009, EP-GPU010	Gas Production Unit Heater	2018		1.5 MMBtu/hr	Existing	N/A	
LH001, LH002, LH003, LH004, LH005, LH006, LH007, LH008, LH009, LH010	EP-LH001, EP-LH002, EP-LH003, EP-LH004, EP-LH005, EP-LH006, EP-LH007, EP-LH008, EP-LH009, EP-LH010	Line Heater	2018		2.0 MMBtu/hr	New	N/A	
F001	F001	Fugitives	2018		N/A	Existing	N/A	
TANKCOND001-006	EP-EC001, EP-EC002, EP-EC003	Condensate Tank F/W/B	2018		400 bbl each	Modification[1]	EP-EC001, EP-EC002, EP-EC003	
TANKPW001-002	EP-EC001, EP-EC002, EP-EC003	PW Tank F/W/B	2018		400 bbl each	Modification[1]	EP-EC001, EP-EC002, EP-EC003	
TANKPW003-004	EP-EC001, EP-EC002, EP-EC003	PW Tank F/W/B	2018		400 bbl each	New	EP-EC001, EP-EC002, EP-EC003	
L001	EP-L001	Loading (Condensate)	2018		880.25 gal/hr 7,710,990 gal/yr	Modification[1]	N/A	
L002	EP-L002	Loading (Produced Water)	2018		7,000 gal/hr 61,320,000 gal/yr	Modification[1]	N/A	
HR001	EP-HR001	Haul Road	2018		Tanker Trucks Condensate: 918 trips per year Tanker Trucks PW: 7300 trips per year Pick Up Truck: 730 trips per year	Modification[2]	N/A	
EC001	EP-EC001	Enclosed Combustor	2018		12 MMBtu/hr	New	N/A	
EC002	EP-EC002	Enclosed Combustor	2018		12 MMBtu/hr	New	N/A	
EC003	EP-EC003	Enclosed Combustor	2018		12 MMBtu/hr	New	N/A	
PCV	EP-PCV	Pneumatic CV	2018		6.6 scf/day/PCV	Existing	N/A	
ENG001	EP-ENG001	HP VRU/Compressor Engine	2018	2015	76 HP	New	Non-Selective Catalytic Reduction	
FL001	FL001	Flare	2018		18.4 MMBtu/hr	Removal	N/A	

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.

Notes:

1. Increase in condensate and produced water production. Not a physical change.
2. Increase in number of hauling trips due to increase in condensate and produced water production.
3. Existing - represented in current air permit.

Attachment J
Fugitive Emissions Summary Sheet

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:

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

Component Type	Closed Vent System	Count	Source of Leak Factors (EPA, other (specify))	Stream type (gas, liquid, etc.)	Estimated Emissions (tpy)			
					VOC	HAP	GHG (methane)	GHG (CO2e)
Valves	☐ Yes ☑ No	500	EPA	gas	2.375	0.100	15.056	376.410
Valves	☐ Yes ☑ No	520	EPA	liquid	12.232	0.856	0.099	2.480
Connections (Not sampling)	☐ Yes ☑ No	590	EPA	gas	0.125	0.005	0.790	19.741
Flanges	☐ Yes ☑ No	130	EPA	gas	0.054	0.002	0.339	8.482

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

Please provide an explanation of the sources of fugitive emissions (e. g. pigging operations, equipment blowdowns, pneumatic controllers, etc.)

Please indicate if there are any closed vent bypasses (include component)

Specify all equipment used in the closed vent system (e. g. VRU, ERD, thief hatches, tanker truck loading, etc.)

Attachment K
Gas Well Affected Facility Data Sheet

ATTACHMENT K – GAS WELL AFFECTED FACILITY DATA SHEET

Complete this data sheet if you are the owner or operator of a gas well affected facility for which construction, modification or reconstruction commenced after August 23, 2011. This form must be completed for natural gas well affected facilities regardless of when flowback operations occur (or have occurred).

API Number	Date of Flowback	Date of Well Completion	Green Completion and/or Combustion Device	Subject to OOOO or OOOOa?
	7/11/2019	6/11/2019	Green	OOOOa
47-017-06827-00	7/11/2019	6/16/2019	Green	OOOOa
	7/11/2019	6/21/2019	Green	OOOOa
	7/11/2019	6/26/2019	Green	OOOOa
	7/11/2019	7/4/2019	Green	OOOOa
	7/11/2019	7/6/2019	Green	OOOOa
	7/11/2019	7/1/2019	Green	OOOOa
	7/11/2019	6/26/2019	Green	OOOOa
	7/11/2019	6/18/2019	Green	OOOOa
	7/11/2019	6/11/2019	Green	OOOOa

Note: If future wells are planned and no API number is available please list as PLANNED.
If there are existing wells that commenced construction prior to August 23, 2011, please acknowledge as existing.

This is the same API (American Petroleum Institute) well number(s) provided in the well completion notification and as provided to the WVDEP, Office of Oil and Gas for the well permit. The API number application without the state code (047).

Every oil and gas well permitted in West Virginia since 1929 has been issued an API number. This API is used by agencies to identify and track oil and gas wells.

The API number has the following format: 047-001-00001

Where,

047 = State code. The state code for WV is 047.

001 = County Code. County codes are odd numbers, beginning with 001 (Barbour) and continuing to 109 (Wyoming).

00001 = Well number. Each well will have a unique well number.

Attachment L
Storage Vessels Data Sheet

ATTACHMENT L – 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 (REQUIRED)

1. Bulk Storage Area Name: Tanks	2. Tank Name: Condensate Tank 001-010
3. Emission Unit ID number: TANKCOND001-010	4. Emission Point ID number. EP-EC001, EP-EC002, EP-EC003
5. Date Installed , Modified or Relocated (for existing tanks)	6. Type of change:
2018 Was the tank manufactured after August 23, 2011 and on or before September 18, 2015? ☐ Yes ☑ No Was the tank manufactured after September 18, 2015? ☑ Yes ☐ No	☑ 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 ☑ No

7C. Was USEPA Tanks simulation software utilized?
☐ Yes ☑ 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. 400bbls

9A. Tank Internal Diameter (ft): 12	9B. Tank Internal Height (or Length) (ft): 20
10A. Maximum Liquid Height (ft): 18	10B. Average Liquid Height (ft): 10
11A. Maximum Vapor Space Height (ft): 18	11B. Average Vapor Space Height (ft): 10

12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.: 400bbls

13A. Maximum annual throughput (gal/yr): 7,710,990	13B. Maximum daily throughput (gal/day): 21,126
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume): 77	15. Maximum tank fill rate (gal/min) 168

16. Tank fill method ☐ Submerged ☑ Splash ☐ Bottom Loading

17. Is the tank system a variable vapor space system? ☐ Yes ☑ 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):

☑ 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

ATTACHMENT L – STORAGE VESSEL DATA SHEET

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

- ☐ Does Not Apply
- ☐ Inert Gas Blanket of
- ☑ Vent to Vapor Combustion Device (vapor combustors, flares, thermal oxidizers, enclosed combustors)
- ☐ Conservation Vent (psig)

Vacuum Setting Pressure Setting

- ☐ Emergency relief Valve (psig)

Vacuum Setting Pressure Setting

- ☐ Thief Hatch Weighted ☐ Yes ☐ No

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 Emission Loss		[1] Estimation Method
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Please see Table 6 and Table 7									

TANK CONSTRUCTION & OPERATION INFORMATION

21. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated ☑ Other (describe): Steel

21A. Shell Color: Green | 21B. Roof Color: Green | 21C. Year Last Painted 2018

22. Shell Condition (if metal and unlined):
☑ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated?
☐ Yes ☑ No

22B. If yes, operating temperature:

22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig): 0 psig, atmospheric
Must be listed for tanks using VRUs with closed vent system

24. Is the tank a Vertical Fixed Roof Tank?
☑ Yes ☐ No

24A. If yes, for dome roof provide radius (ft): NA

24B. If yes, for cone roof, provide slop (ft/ft): NA

25. Complete the following section for **Floating Roof Tanks** Does Not Apply

25A. Year Internal Floaters Installed:

25B. Primary Seal Type:
☐ 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 ☑ Does not apply

26A. Deck Type: ☐ Bolted ☐ Welded

26B. For bolted decks, provide deck construction

26C. Deck seam:
☐ 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:
Number of columns:

26G. For column supported tanks, Diameter of each column:

27. Closed Vent System with VRU ☐ Yes ☑ No

28. Closed Vent System with Enclosed Combustor? ☑ Yes ☐ No

ATTACHMENT L – STORAGE VESSEL DATA SHEET

SITE INFORMATION

29. Provide the city and state on which the data in this section are based.: West Union, WV			
30. Daily Average Ambient Temperature (°F):	72.10	31. Annual Average Maximum Temperature (°F):	75.94
32. Annual Average Minimum Temperature (°F):	46.56	33. Average Wind Speed (miles/hr): 18.5 mph	
34. Annual Average Solar Insulation Factor (BTU/(ft2·day))	1030.235999	35. Atmospheric Pressure (psia): 14.8 (based off local conditions, could not find annual)	

LIQUID INFORMATION

36. Average daily temperature range of bulk liquid (F):	72.10	36A. Minimum (°F):	46.56	36B. Maximum (°F)	75.94
37. Average operating pressure range of tank (psig):	atmosphere	37A. Minimum (psig)	0	37B. Maximum (psig)	atmosphere

38A. Minimum Liquid Surface Temperature (°F)	46.56	38B. Corresponding Vapor Pressure (psia)	2.9043
39A. Average Liquid Surface Temperature (°F)	72.10	39B. Corresponding Vapor Pressure (psia)	4.6968
40A. Maximum Liquid Surface Temperature (°F)	75.94	40B. Corresponding Vapor Pressure (psia)	5.0290

41. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.

41A. Material Name or Composition	Condensate		
41B. CAS Number	mix of HC		
41C. Liquid Density (lb/gal)	5.9300		
41D. Liquid Molecular Weight (lb/lb-mole)	106.50		
41E. Vapor Molecular Weight (lb/lb-mole)	38.4394		
Maximum Vapor Pressure 41F. True (psia)	5.0290		
41G. Reid (psia)	6.09		
Months Storage per Year 41H. From - To	year round		
Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations 42.	50 psig; 70 F		

ATTACHMENT L – 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 (REQUIRED)

1. Bulk Storage Area Name: Tanks	2. Tank Name: Produced Water Tank 001-004
3. Emission Unit ID number: TANKPW001-004	4. Emission Point ID number. EP-EC001, EP-EC002, EP-EC003
5. Date Installed , Modified or Relocated (for existing tanks)	6. Type of change:
2014	☑ New construction ☐ New stored material ☐ Other
Was the tank manufactured after August 23, 2011 and on or before September 18, 2015? ☐ Yes ☑ No	☐ Relocation
Was the tank manufactured after September 18, 2015? ☑ Yes ☐ No	

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 ☑ No

7C. Was USEPA Tanks simulation software utilized?

☐ Yes ☑ 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. 400bbls

9A. Tank Internal Diameter (ft): 12	9B. Tank Internal Height (or Length) (ft): 20
10A. Maximum Liquid Height (ft): 18	10B. Average Liquid Height (ft): 10
11A. Maximum Vapor Space Height (ft): 18	11B. Average Vapor Space Height (ft): 10

12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.: 400bbls

13A. Maximum annual throughput (gal/yr): 61,320,000	13B. Maximum daily throughput (gal/day): 168,000
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume): 913	15. Maximum tank fill rate (gal/min) 168

16. Tank fill method ☐ Submerged ☑ Splash ☐ Bottom Loading

17. Is the tank system a variable vapor space system? ☐ Yes ☑ 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):

☑ 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

ATTACHMENT L – STORAGE VESSEL DATA SHEET

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does not apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket ☐ Carbon Adsorption

☑ Vent to Vapor Combustion Device (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig)
Vacuum Setting Pressure Setting

☐ Emergency relief Valve (psig)
Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

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 Emission Loss		[1] Estimation Method
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Please see Table 6 and Table 7									

TANK CONSTRUCTION & OPERATION INFORMATION

21. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated ☑ Other(describe): Steel

21A. Shell Color: Green	21B. Roof Color: Green	21C. Year Last Painted 2018

22. Shell Condition (if metal and unlined):
☑ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☑ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig): 0 psig, atmospheric
Must be listed for tanks using VRUs with closed vent system

24. Is the tank a Vertical Fixed Roof Tank? ☑ Yes ☐ No	24A. If yes, for dome roof provide radius (ft): NA	24B. If yes, for cone roof, provide slop (ft/ft): NA

25. Complete the following section for **Floating Roof Tanks** Does Not Apply

25A. Year Internal Floaters Installed:

25B. Primary Seal Type: ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient ☐ 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 ☑ Does not apply

26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction

26C. Deck seam:
☐ 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: Number of columns:	26G. For column supported tanks, Diameter of each column:

27. Closed Vent System with VRU ☐ Yes ☑ No

28. Closed Vent System with Enclosed Combustor? ☑ Yes ☐ No

ATTACHMENT L – STORAGE VESSEL DATA SHEET

SITE INFORMATION

29. Provide the city and state on which the data in this section are based.: West Union, WV			
30. Daily Average Ambient Temperature (°F):	72.10	31. Annual Average Maximum Temperature (°F):	75.94
32. Annual Average Minimum Temperature (°F):	46.56	33. Average Wind Speed (miles/hr): 5.9 mph	
34. Annual Average Solar Insulation Factor (BTU/(ft2·day))	1030.236	35. Atmospheric Pressure (psia): 14.8 (based off local conditions, could not find annual)	

LIQUID INFORMATION

36. Average daily temperature range of bulk liquid (F):	72.10	36A. Minimum (°F):	46.56	36B. Maximum (°F)	75.94
37. Average operating pressure range of tank (psig):	atmosphere	37A. Minimum (psig)	0	37B. Maximum (psig)	atmosphere

38A. Minimum Liquid Surface Temperature (°F)	46.56	38B. Corresponding Vapor Pressure (psia)	0.2280
39A. Average Liquid Surface Temperature (°F)	72.10	39B. Corresponding Vapor Pressure (psia)	0.4525
40A. Maximum Liquid Surface Temperature (°F)	75.94	40B. Corresponding Vapor Pressure (psia)	0.4988

41. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.

41A. Material Name or Composition	Produced Water		
41B. CAS Number	mix of HC and water		
41C. Liquid Density (lb/gal)	8.3300		
41D. Liquid Molecular Weight (lb/lb-mole)	18.54		
41E. Vapor Molecular Weight (lb/lb-mole)	18.5365		
Maximum Vapor Pressure 41F. True (psia)	0.4988		
41G. Reid (psia)	1.0333		
Months Storage per Year 41H. From - To	year round		
Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations 42.	169 psig 70 F		

Attachment M
Natural Gas Fired Fuel Burning Unit(s)
Data Sheet

ATTACHMENT M – 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#	Emission Point ID#	Emission Unit Description (Manufacturer, model#)	Year Installed/ Modified	Type and Date of Change	Maximum Design Heat Input (MMBTU/hr)	Fuel Heating Value (BTU/scf)
GPU001	EP-GPU001	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU002	EP-GPU002	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU003	EP-GPU003	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU004	EP-GPU004	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU005	EP-GPU005	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU006	EP-GPU006	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU007	EP-GPU007	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU008	EP-GPU008	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU009	EP-GPU009	Gas Production Unit Heater	2018	Existing	1.5	1181.37
GPU010	EP-GPU010	Gas Production Unit Heater	2018	Existing	1.5	1181.37
LH001	EP-LH001	Line Heater	2018	New	2	1181.37
LH002	EP-LH002	Line Heater	2018	New	2	1181.37
LH003	EP-LH003	Line Heater	2018	New	2	1181.37
LH004	EP-LH004	Line Heater	2018	New	2	1181.37
LH005	EP-LH005	Line Heater	2018	New	2	1181.37
LH006	EP-LH006	Line Heater	2018	New	2	1181.37
LH007	EP-LH007	Line Heater	2018	New	2	1181.37
LH008	EP-LH008	Line Heater	2018	New	2	1181.37
LH009	EP-LH009	Line Heater	2018	New	2	1181.37
LH010	EP-LH010	Line Heater	2018	New	2	1181.37

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 N
Internal Combustion Engine Data Sheet

ATTACHMENT N – INTERNAL COMBUSTION ENGINE DATA SHEET

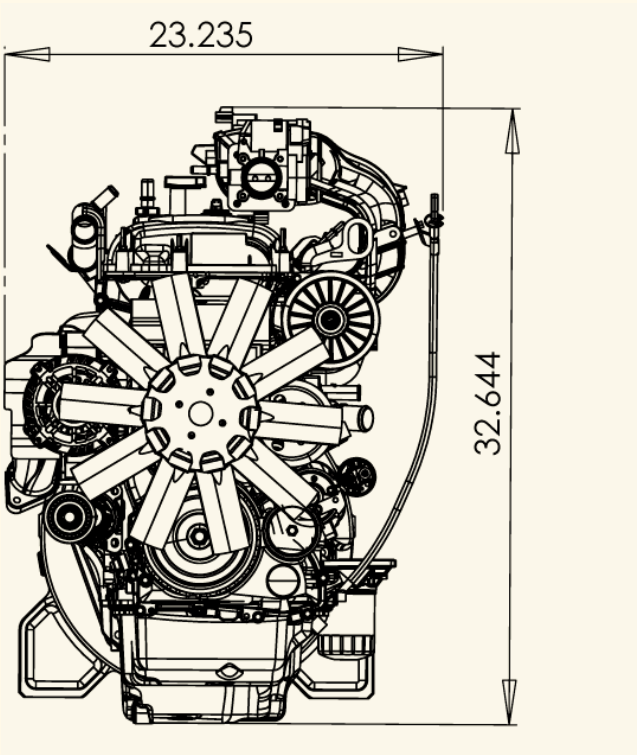
Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID#	ENG001
Engine Manufacturer/Model	Ford MSG425 2.5L Engine
Manufacturers Rated bhp/rpm	76 HP @ 3200 rpm
Source Status	NS
Date Installed/ Modified/ Removed/ Relocated	2018
Engine Manufacturer/ Reconstruction Date	2015
Check all applicable Federal Rules for the engine (include EPA Certification of Conformity if applicable)	☑ 40CFR60 Subpart JJJJ ☑ JJJJ Certified? ☐ 40CFR60 Subpart IIII ☐ IIII Certified? ☑ 40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources
Engine Type	4SRB
APCD Type	NSCR
Fuel Type	RG
H2S (gr/ 100 scf)	0
Operating bhp/rpm	50 HP @ 2300 rpm
BSFC (BTU/bhp-hr)	8151
Hourly Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)	345 ft^3/hr gal/hr
Fuel Usage or Hours of Operation Metered	3.0222 $MMft^3/yr$ gal/yr

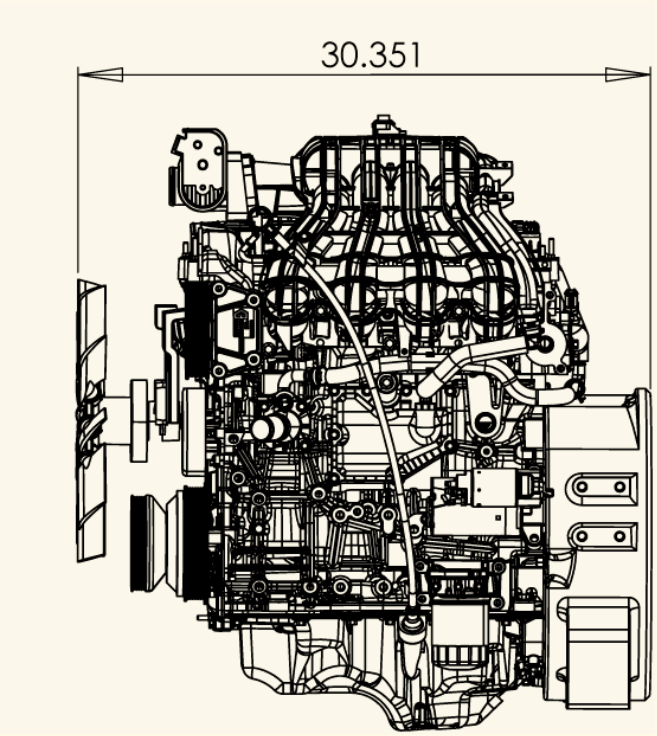
Calculation Methodology	Pollutant	Hourly PTE (lb/hr)	Annual PTE (tons/year)
MD	NOx	0.0625	0.2738
MD	CO	0.4126	1.8073
AP	VOC	0.0183	0.0803
AP	SO2	0.0004	0.0016
AP	PM10	0.0059	0.0258
AP	Formaldehyde	0.0127	0.0556
AP	Total HAPs	0.0142	0.0623
OT	GHG (CO2e)	71.7083	314.0825

Installation Drawings

Front End View

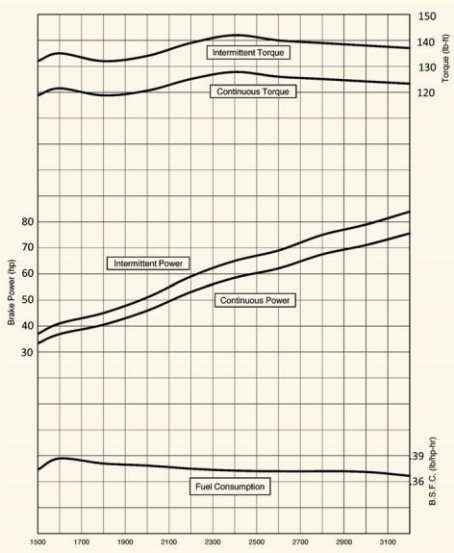


Left Side View

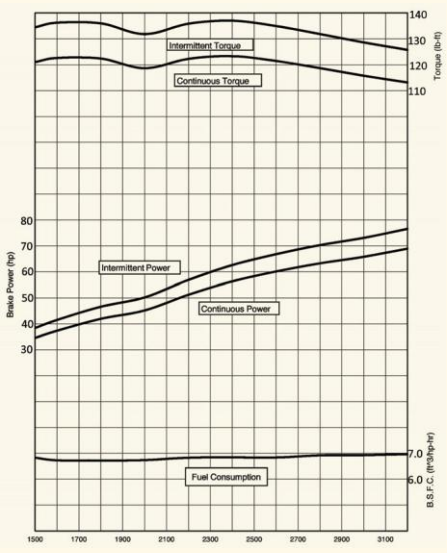


Power Curves (corrected per SAE J1349)

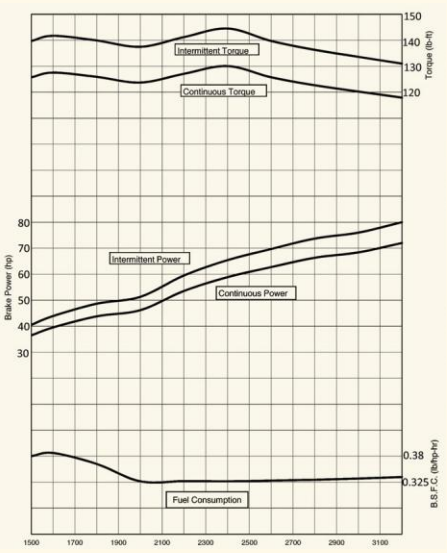
Gasoline



Natural Gas



Liquefied Petroleum Gas



Ford Power Products

Powertrain Assemblies & Components Provided By Ford Component Sales

MSG-425 EFI

2.5 Liter 4-Cylinder

Options

Engine Cooling Fans
- 15" (381mm) diameter suction
- 15" (381mm) diameter pusher

Flywheels
- 10" (254mm) SAE over-center clutch
- flat face flywheel

Flywheel Housings
- SAE #4

Exhaust Manifold
- rear dump down

Power Steering Pump

Wiring Harnesses

Discrete Speed Switch

Variable Speed Hand Throttle

Variable Speed Foot Pedal

Engine Mounts
- Automotive with insulators
- Open power unit

Electronic Instrument Panel, Gauges

Three Way Catalyst / Muffler Standard

Transmissions

6R80 electronic shift
C6 Mechanical

Emissions Information

California Air Resources Board (CARB)
Environmental Protection Agency (EPA)
Emission Certified Packages Available.

Warranty

Contact Engine Distributors, Inc for warranty details.

Power Products

Powertrain Assemblies & Components Provided By Ford Component Sales

Specifications

Engine Type	I-4
Bore and Stroke	3.5" x 3.93" (89mm x 100mm)
Displacement	2.5L Liter (152.5 CID)
Compression Ratio	9.7:1
Oil Capacity	7 qts. including filter
Net Weight	351 Lbs. with accessories (159 Kgs.)
Dimensions	L 30.3" x W 23.3" x H 32.6" (769 mm x 589 mm x 828 mm)

Gasoline (corrected per SAE J1349)

Unleaded 87 or 89 octane

Intermittent Power	84 [HP] @ 3200rpm	(62 [kW] @ 3200rpm)
Continuous power	75 [HP] @ 3200rpm	(56 [kW] @ 3200rpm)
Intermittent Torque	137 [ft-lbs] @3200rpm	(185 [N-m] @ 3200rpm)
Continuous Torque	123 [ft-lbs] @3200rpm	(166 [N-m] @ 3200rpm)

Natural Gas (corrected per SAE J1349)

Fuel Specification	1050 BTU/FT3	
Intermittent Power	76 [HP] @ 3200rpm	(56 [kW] @ 3200rpm)
Continuous power	68 [HP] @ 3200rpm	(50 [kW] @ 3200rpm)
Intermittent Torque	125 [ft-lbs] @3200rpm	(169 [N-m] @ 3200rpm)
Continuous Torque	113 [ft-lbs] @3200rpm	(153 [N-m] @ 3200rpm)

Liquefied Petroleum Gas (corrected per SAE J1349)

Fuel Specification	HD-5	
Intermittent Power	80 [HP] @ 3200rpm	(59 [kW] @ 3200rpm)
Continuous power	72 [HP] @ 3200rpm	(53 [kW] @ 3200rpm)
Intermittent Torque	131 [ft-lbs] @3200rpm	(177 [N-m] @ 3200rpm)
Continuous Torque	118 [ft-lbs] @3200rpm	(160 [N-m] @ 3200rpm)

Standard Features / Benefits

Set-for-life valvetrain

Deep skirted, ribbed cylinder block casting for rigidity

Aluminum AA319 cylinder block cast with the Cosworth process, including cast-in-place iron cylinder liners.

Chain driven dual camshafts with automatic tensioning system

Structural front cover and oil pan

Alternate fuel ready valvetrain components

Individual coil on plug electronic ignition

Cast aluminum camshaft cover to ensure warp-free sealing

Sintered metal connecting rods

Nodular iron crankshaft, featuring five main bearings, eight counterweights

Broadband knock sensor, calibrated for individual cylinder use

Gasoline Sequential Port Fuel Injection

Closed loop fuel control for all fuels

Electronic engine management system with built-in engine protection against detonation, high coolant temperature, low oil pressure, over speed shutdown and starter lockout

Next generation governing - discrete speeds, variable speeds, drive by wire - using the highest quality components.

California Environmental Protection Agency **Air Resources Board**	**ENGINE DISTRIBUTORS, INC.**	**EXECUTIVE ORDER U-L-034-0028** New Off-Road Large Spark-Ignition Engines Above 19 Kilowatts

Pursuant to the authority vested in the Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapters 1 and 2; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: That the following new large spark-ignition engines and emission control systems produced by the manufacturer are certified for use in off-road equipment as described below. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY NAME	ENGINE DISPLACEMENT (liters)	FUEL TYPE
2015	FEDIB02.5MSG	2.5	Gasoline, LPG, CNG, Gasoline-LPG Dual Fuel

DURABILITY HOURS	SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT USAGE
5000	Three-Way Catalytic Converter, Heated Oxygen Sensor, Sequential Multiport Fuel Injection (Gas), Gaseous Fuel Mixer (LPG, CNG)	Forklift, Aerial Lift, Generator, Compressor, Pump, Other Industrial Equipment

ENGINE MODELS (rated power in kilowatt, kW)	MSG425-DF (64.3 kW), MSG425-GAS (64.3 kW), MSG425-LPG (59.8 kW), MSG425-LP VAPOR (59.8 kW), MSG425-NG (57.3 kW)

The following are the hydrocarbon plus oxides of nitrogen (HC+NOx) and carbon monoxide (CO) exhaust certification emission standards (Title 13, California Code of Regulations, (13 CCR) Section 2433(b)(1)) and certification emission levels for this engine family in grams per kilowatt-hour (g/kW-hr). Engines within this engine family shall have closed crankcases in conformance with 13 CCR Section 2433(b)(3).

(g/kW-hr)	HC+NOx	CO
Exhaust Standards	0.8	20.6
Certification Levels	0.5	3.3

The following is the evaporative hydrocarbon emission standard (13 CCR Section 2433(b)(4)) and certification emission level for this engine family in grams per gallon of fuel tank capacity (g/gallon).

Evaporative Certification Method	HC Certification Level (g/gallon)	HC Certification Standard (g/gallon)
Design Based	N/A	0.2

BE IT FURTHER RESOLVED: That for the listed engines for the aforementioned model-year, the manufacturer has submitted, and the Executive Officer hereby approves, the information and materials to demonstrate certification compliance with 13 CCR Section 2433(c) (certification and test procedures), 13 CCR Section 2434 (emission control labels), and 13 CCR Sections 2435 and 2436 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 14th day of November 2014.

FOR Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2015 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Engine Distributors, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: FEDIB02.5MSG-002

Effective Date: 12/09/2014

Expiration Date: 12/31/2015

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 12/09/2014

Revision Date: N/A

Manufacturer: Engine Distributors, Inc.
Engine Family: FEDIB02.5MSG
Certification Type: Mobile and Stationary
Fuel : LPG/Propane
Gasoline (up to and including 10% Ethanol)
Natural Gas (CNG/LNG)
Emission Standards : NMHC + NOx (g/kW-hr) : 0.8
HC + NOx (g/kW-hr) : 0.8
CO (g/kW-hr) : 20.6NMHC + NOx (g/kW-hr) : 0.8
HC + NOx (g/kW-hr) : 0.8
CO (g/kW-hr) : 20.6
Emergency Use Only : N

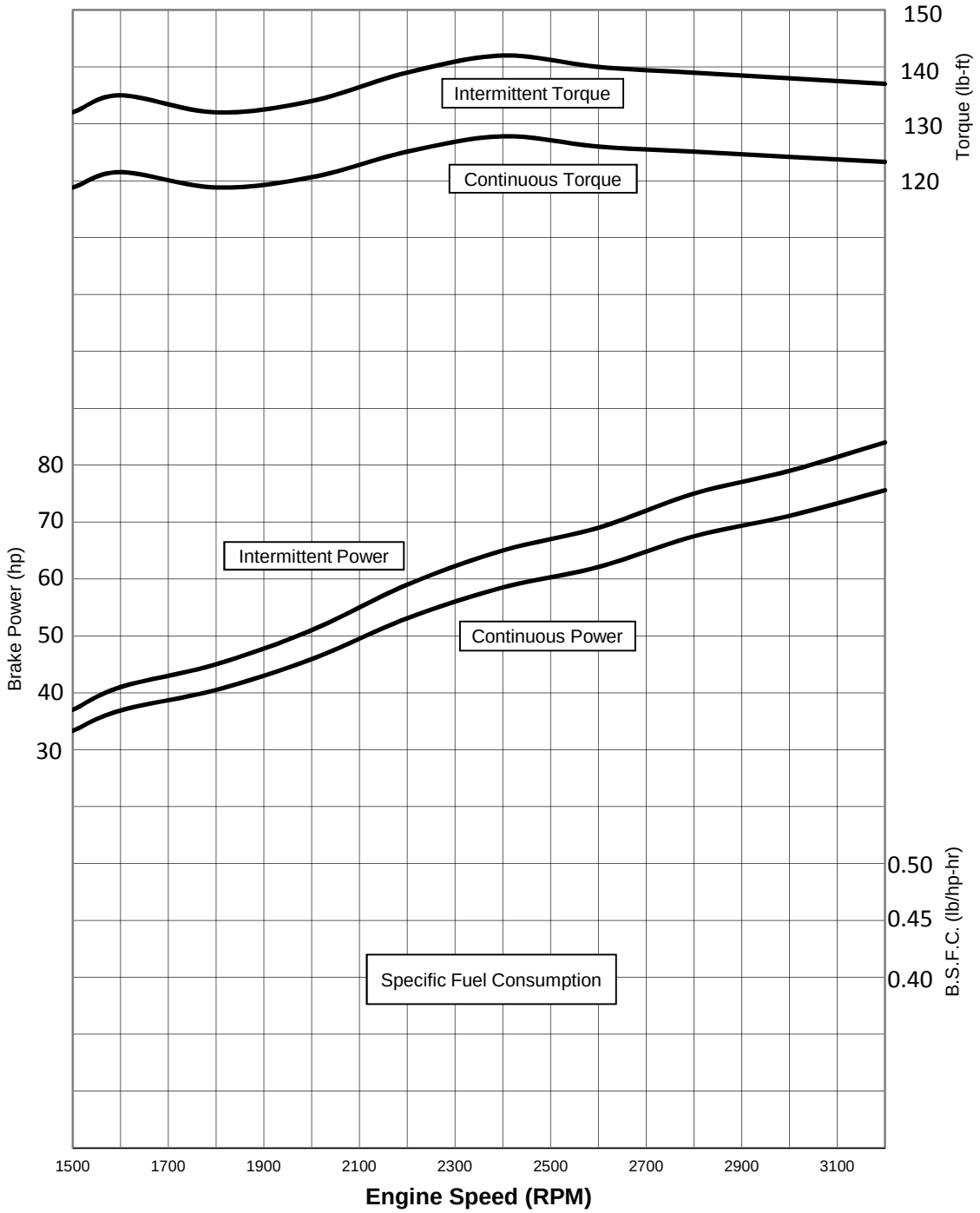
Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 40 CFR Part 1048, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60, 40 CFR Part 1048. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

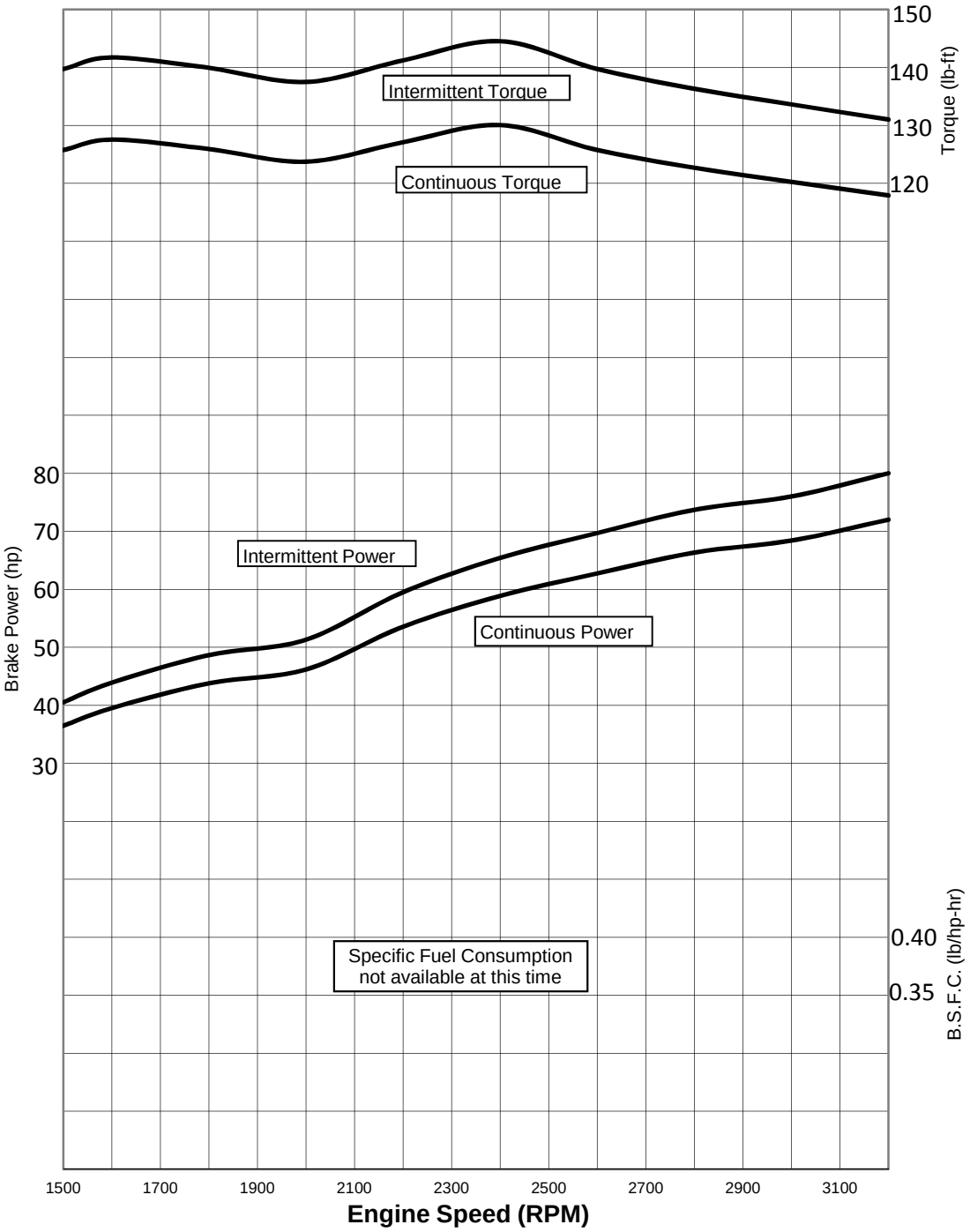
It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60, 40 CFR Part 1048. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60, 40 CFR Part 1048.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

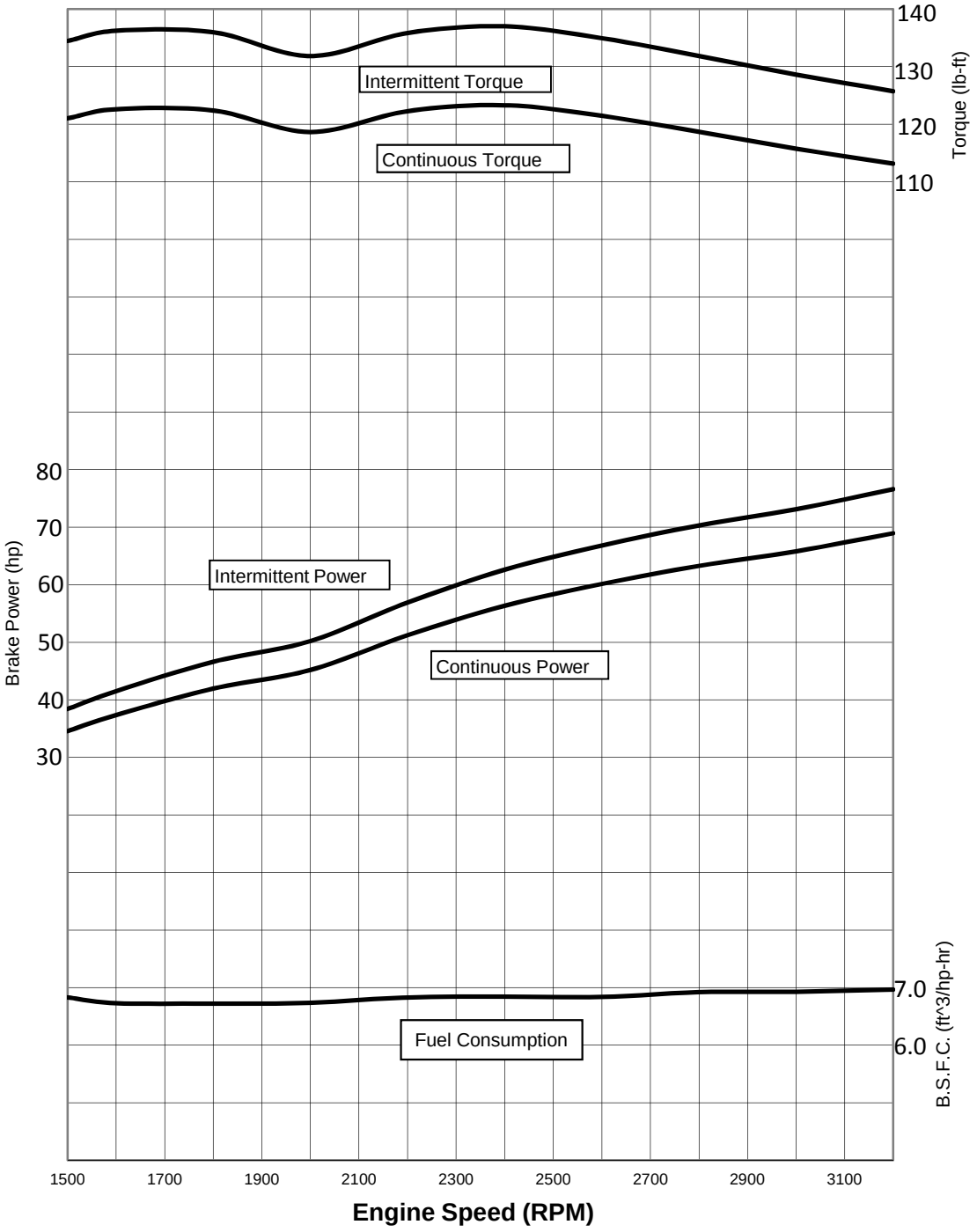
Gasoline


150
140
130
120
Torque (lb-ft)
Intermittent Torque
Continuous Torque
80
70
60
50
40
30
Brake Power (hp)
Intermittent Power
Continuous Power
0.50
0.45
0.40
B.S.F.C. (lb/hp-hr)
Specific Fuel Consumption
1500
1700
1900
2100
2300
2500
2700
2900
3100
Engine Speed (RPM)

LP


150
140
130
120
Torque (lb-ft)
Intermittent Torque
Continuous Torque
80
70
60
50
40
30
Brake Power (hp)
Intermittent Power
Continuous Power
Specific Fuel Consumption
not available at this time
0.40
0.35
B.S.F.C. (lb/hp-hr)
1500
1700
1900
2100
2300
2500
2700
2900
3100
Engine Speed (RPM)

NG


140
130
120
110
Torque (lb-ft)
Intermittent Torque
Continuous Torque
80
70
60
50
40
30
Brake Power (hp)
Intermittent Power
Continuous Power
7.0
6.0
B.S.F.C. (ft^3/hp-hr)
Fuel Consumption
1500
1700
1900
2100
2300
2500
2700
2900
3100
Engine Speed (RPM)

Attachment O
Tanker Truck Loading Data Sheet

ATTACHMENT O – TANKER TRUCK LOADING DATA S HEET

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.

Emission Unit ID#:	L001, L002	Emission Point ID#:	EP-L001, EP-L002	Year Installed/ Modified:	2018

Emission Unit Description: Condensate Loading, Produced Water Loading

Loading Area Data

Number of Pumps: 2 | Number of Liquids Loaded: 2 | Max number of trucks loading at one time: 2

Are Tanker trucks pressure tested for leaks at this any other location? ☑ Yes ☐ No ☐ Not Required

If Yes, Please Describe: Tank trucks are pressure tested for leaks at the location of the leak testing company. Trucks are tested using EPA Method 27-internal vapor valve test and issued certification that DOT requirements are met.

Provide description of closed vent system and any bypasses

Are any of the following truck loadout systems utilized? No

☐ 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	10	10	10	10
Days/week	7	7	7	7

Bulk Liquid Data (use extra pages as necessary)

Liquid Name		Condensate	Produced Water	
Max. Daily Throughput (1000 gal/day)		21.13	168.00	
Max. Annual Throughput (1000 gal/yr)		7,711	61,320	
Loading Method		BF	BF	
Max. Fill Rate (gal/min)		168	168	
Average Fill Time (min/loading)		50	50	
Max. Bulk Liquid Temperature (F)		72.1	72.1	
True Vapor Pressure		4.7	0.5	
Cargo Vessel Condition		U	U	
Control Equipment or Method		None	None	
Max. Collection Efficiency (%)		0	0	
Max. Control Efficiency (%)		0	0	
Max VOC Emission Rate	Loading (lb/hr)	14.3963	0.0007	
	Annual (ton/yr)	5.5065	0.0022	
Max HAP Emission Rate	Loading (lb/hr)	0.6851	8.27E-06	
	Annual (ton/yr)	0.2620	2.52E-05	
Estimation Method		Promax	Promax	

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 servi 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 Q
Pneumatic Controllers Data Sheet

ATTACHMENT Q – 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 R
Pneumatic Pump Data Sheet

ATTACHMENT R – PNEUMATIC PUMP DATA SHEET

Are there any natural gas-driven diaphragm pumps located at a well site that commenced construction, modification or reconstruction after September 18, 2015?

☐ Yes ☒ No

Please list.

Source ID #	Date	Pump Make/Model	Pump Size

Attachment S
Air Pollution Control Device – Emission Reduction Device Sheets

ATTACHMENT S – AIR POLLUTION CONTROL DEVICE / EMISSION REDUCTION DEVICE SHEETS

Complete the applicable air pollution control device sheet s for each flare, vapor combustor, thermal oxidizer, condenser, adsorption system, vapor recovery unit , BTEX Eliminator, Reboiler with and without Glow Plug, etc. at the facility. Use extra pages if necessary.

Emissions calculations must be performed using the most conservative control device efficiency.

The following five (5) rows are only to be completed if registering an alternative air pollution control device.

Emission Unit ID:	NA	Make/Model:	NA
Primary Control Device ID:	NA	Make/Model	NA
Control Efficiency (%):	NA	APCD/ERD Data Sheet Completed	☐ Yes ☐ No
Secondary Control Device ID:	NA	Make/Model	NA
Control Efficiency (%):	NA	APCD/ERD Data Sheet Completed	☐ Yes ☐ No

VAPOR COMBUSTION (Including Enclosed Combustors)

General Information

Control Device ID#:	EC001-003	Installation Date: ☑ New ☐ Modified ☐ Relocated	
Maximum Rated Total Flow Capacity: 5458 scfh 131000 scfd		Maximum Design Heating Input (from mfg. spec sheet): 12.0 MMBTU/hr	Design Heat Content: 2300 BTU/scf

Control Device Information

Type of Vapor Combustion Control?

☑ Enclosed Combustion Device ☐ Elevated Flare ☐ Ground Flare ☐ Thermal Oxidizer

Manufacturer: Cimarron Model: 48" HV ECD		Hours of operation per year?	8760

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID# NA

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
TANKCOND001-006	Condensate Tanks		
TANKPW001-004	Produced Water Tanks		

If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.

Assist Type (Flares only)	Flare height	Tip Diameter	Was the design per §60.18?
☐ Steam ☐ Air ☐ Pressure ☑ Non	25 feet	3.33 feet	☑ Yes ☐ No Provide determination

Waste Gas Information

Maximum Waste Gas Flow Rate	Heat Value of Waste Gas Stream	Exit Velocity of the Emission Stream
21.62 (scfm)	1,695.40 BTU/ft^3	0.0414 (ft/s)

Please see Attachment S, Tables 6 & 7 for VOC composition/ characteristics of the waste gas stream to be burned.

Pilot Gas Information

Number of Pilot Lights	Fuel Flow Rate to Pilot Flame per Pilot	Heat Input per Pilot	Will automatic re-ignition be used?
3	17 scfh	20083 BTU/hr	☑ Yes ☐ No

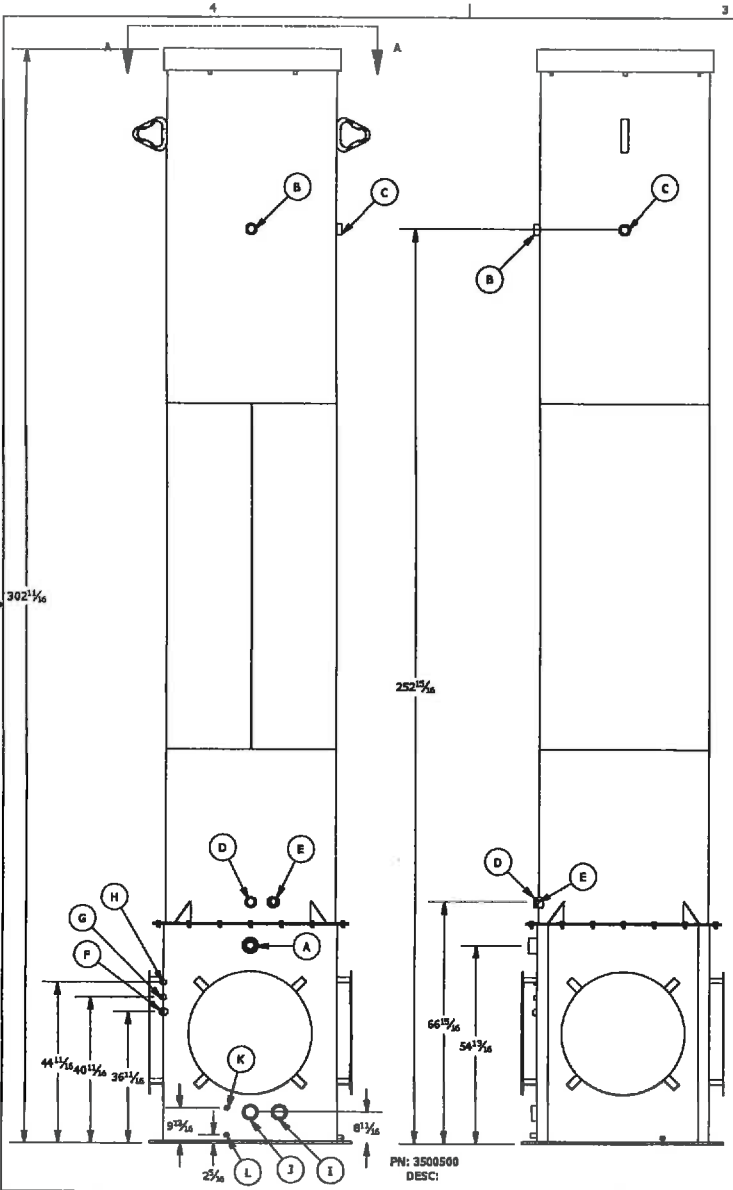
If automatic re-ignition is used, please describe the method. Flame Rectification, a thermocouple equivalent

Is pilot flame equipped with a monitor to detect the presence of the flame?	If Yes, What type?
☑ Yes ☐ No	☐ Thermocouple ☐ Infrared ☐ Ultraviolet ☐ Camera ☑ Other: Flame Ionization Rod

Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).*

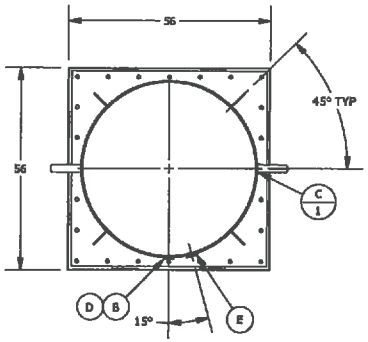
Additional information attached? ☑ Yes ☐ No Manufacturer's specs sheet

Please attach copies of manufacturer's data sheets, drawings, flame demonstration per §60.18 or §63.11 (b) and performance testing.



48" DIA x 302 5/8" HEIGHT, 88 ORIFICES EMISSION CONTROL DEVICE

* >98% TVOC DRE, CERTIFIED USEPA 40 CFR 60, APPENDIX A, SOURCE EMMISIONS TEST METHODS REFERENCED. MEETS ALL EPA & CDPHE REGULATIONS.
* DESTROYS OIL/CONDENSATE PRODUCTION TANK VAPORS W/ NO VISIBLE FLAME.
* EXCELLENT OPACITY AND SMOKELESS OPERATION.
* RELIABLE AND CUSTOMIZABLE IGNITION.
* VERY LOW CAPITAL AND OPERATING COST.
* EASY TO OPERATE AND MAINTAIN.
* FIELD TESTED TO DESTROY UP TO 119.5 MDSCFD (131 MCFD) @ 10 oz/in^2; 2300 BTU/CF WASTE GAS (SG 1.45)
* STRUCTURE CERTIFIED FOR 90 MPH 3-SEC WIND GUST PER ASCE 7-05 & IBC 2006 STANDARDS. HIGHER WIND LOAD RATED STRUCTURES AVAILABLE.



VIEW A-A

PN: 3500500
DESC:

SCHEDULE OF NOZZLES				
MARK	QTY	DESCRIPTION	SERIES	SERVICE
A	1	3" HALF COUPLING	2000#	BURNER WASTE GAS IN
B	1	2" FULL COUPLING	3000#	FLOW TEST/AUTOMATION
C	1	2" FULL COUPLING	3000#	FLOW TEST/AUTOMATION
D	1	2" FULL COUPLING	3000#	SIGHT GLASS
E	1	2" FULL COUPLING	3000#	MANUAL LIGHTING
F	1	1" FULL COUPLING	3000#	PILOT GAS IN
G	1	1/2" FULL COUPLING	3000#	IGNITOR CABLE
H	1	1/2" FULL COUPLING	3000#	AUTOMATION
I	1	3" HALF COUPLING	3000#	DRIP TANK WASTE GAS IN
J	1	3" HALF COUPLING	3000#	DRIP TANK WASTE GAS OUT
K	1	1/2" FULL COUPLING	3000#	AUTOMATION
L	1	1/2" FULL COUPLING	3000#	LIQUID DRAIN

UNLESS OTHERWISE SPECIFIED

1. REMOVE ALL BURRS AND SHARP CORNERS.
2. COR. RAD .03
3. DO NOT SCALE DRAWING.
4. ALL DIMENSIONS ARE IN INCHES.
5. MACHINE FIN.
6. FABRICATION
   .X = ± 0.25
   .XX = ± 0.125
   .XXX = ± 0.06
   ANGLES ± 3°
7. MACHINE
   .X = ±0.030
   .XX = ±0.015
   .XXX = ±0.005
   ANGLES ±1/2°
   CONTRICITY WITHIN 0.010 TIR

APPROVED FOR A.S.M.E CODE, SECTION VIII DIV 1
_____ED,_____ ADDENDA BY_____ DATE_____

CIMARRON
Energy Inc.

TITLE:
48" HIGH VOLUME ECD

DATE:	WO No.:	SHEET: 1 OF 1

DRAWN BY: TDS | REV. | DRAW NO.: 3500500

Attachment T
Emissions Calculations

Table 1

Facility Information
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Oil and Gas Site General Information

Administrative Information	
Company Name	Antero Resources Corporation
Facility/Well Name	Lemley Well Pad
Nearest City/Town	West Union
API Number/SIC Code	1311
Latitude/Longitude	39.326345, -80.680251
County	Doddridge County

Technical Information	
Max Condensate Site Throughput (bbl/day):	503
Max Produced Water Site Throughput (bbl/day):	4,000
Are there any sour gas streams at this site?	No
Is this site currently operational/producing?	No

Equipment/Processes at Site	
Equipment/Process Types	**How many for this site?**
Fugitives	10
IC Engines	1
Gas Production Unit Heaters	10
Line Heaters	10
Condensate Tanks	6
Produced Water Tanks	4
Loading Jobs	2
Enclosed Combustors	3

Table 2

Uncontrolled/Controlled Emissions Summary
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Emission Source	VOC		NO_x		CH_4		CO_{2e}		CO		SO_2		$PM_{2.5}$		PM_{10}		Lead		Total HAPs		Benzene		Xylenes		Formaldehyde	
	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)
UNCONTROLLED (Fugitives, Storage Tanks, Engines, Gas Production Unit Heaters, Line Heaters)																										
Fugitive Emissions (Component Count, PCV and Hauling)[1]	3.4363	15.0509			4.1027	17.9697	102.569	449.25							6.9496	14.1461			0.2227	0.9754	0.0028	0.0121	0.0646	0.2830		
Flashing, Working and Breathing (F/W/B) Losses[2]	52.2562	228.8822			20.7241	90.7715	519.0846	2273.5904											2.8489	12.4782	0.0136	0.0597	0.1176	0.5150		
VRU Engine Emissions[3]	0.0183	0.0803	0.0625	0.2738	0.1425	0.6241	71.7083	314.0825	0.4126	1.8073	0.0004	0.0016	0.0059	0.0258	0.0059	0.0258			0.0142	0.0623	0.0010	0.0043	0.0001	0.0005	0.0127	0.0556
Gas Production Unit Heater Emissions[4]	0.0698	0.3059	1.2697	5.5613	0.0681	0.2985	1,523.65	6,673.61	1.0666	4.6715	0.0076	0.0334	0.0965	0.4227	0.0965	0.4227	6.35E-06	2.78E-05	0.024	0.105	2.67E-05	1.17E-04			0.0010	0.0042
Line Heater Emissions[4]	0.0931	0.4078	1.6929	7.4151			2,031.54	8,898.14	1.4221	6.2287	0.0102	0.0445	0.1287	0.5635	0.1287	0.5635	8.46E-06	3.71E-05	0.032	0.140	3.56E-05	1.56E-04			0.0013	0.0056
TOTALS:	**55.8738**	**244.7271**	**3.0252**	**13.2503**	**25.0374**	**109.6638**	**4248.5566**	**18608.6778**	**2.9013**	**12.7075**	**0.0181**	**0.0795**	**0.2310**	**1.0120**	**7.1806**	**15.1581**	**1.48E-05**	**6.49E-05**	**3.1416**	**13.7601**	**0.0174**	**0.0763**	**0.1823**	**0.7985**	**0.0149**	**0.0654**
UNCONTROLLED (Truck Loading Emissions)																										
Truck Loading Emissions[5]	14.3971	5.5086			0.6545	0.3521	16.4879	8.9894											0.6851	0.2621	0.0018	7.02E-04	0.0186	0.0071		
CONTROLLED EMISSIONS																										
Enclosed Combustor Emissions (from F/W/B losses)[6]	1.0454	4.5789	2.4531	10.7446	0.4192	1.8362	313.9568	1375.1307	11.1643	48.8996	3.06E-05	0.0001	0.0077	0.0337	0.0102	0.0449	6.74E-07	2.95E-06	0.0571	0.2500	0.0003	0.0012	0.0024	0.0103	3.83E-06	1.68E-05
Controlled Fugitive Emissions from Hauling															3.4748	7.0730										
TOTALS:	**1.045**	**4.579**	**2.453**	**10.745**	**0.419**	**1.836**	**313.957**	**1375.131**	**11.164**	**48.900**	**3.06E-05**	**1.34E-04**	**0.008**	**0.034**	**3.485**	**7.118**	**6.74E-07**	**2.95E-06**	**0.057**	**0.250**	**2.73E-04**	**0.0012**	**0.0024**	**0.010**	**3.83E-06**	**1.68E-05**
POTENTIAL TO EMIT[7]	**19.0600**	**25.9324**	**5.4783**	**23.9949**	**5.3870**	**21.0806**	**4059.9167**	**17719.2076**	**14.0655**	**61.6071**	**0.0182**	**0.0796**	**0.2387**	**1.0456**	**3.7161**	**8.1299**	**1.55E-05**	**6.78E-05**	**1.0349**	**1.7940**	**0.0059**	**0.0186**	**0.0857**	**0.3009**	**0.0149**	**0.0654**
POTENTIAL TO EMIT (Excluding Fugitives)	**15.6238**	**10.8815**	**5.4783**	**23.9949**	**1.2843**	**3.1109**	**3957.3474**	**17269.9541**	**14.0655**	**61.6071**	**0.0182**	**0.0796**	**0.2387**	**1.0456**	**0.2413**	**1.0569**	**1.55E-05**	**6.78E-05**	**0.8122**	**0.8186**	**0.0031**	**0.0065**	**0.0211**	**0.0179**	**0.0149**	**0.0654**

Enter any notes here:

1 - See Tables 4 and 5 for fugitive emission calculations; Table 12 for PM emissions from hauling.
2 - See Tables 6 and 7 for tanks emission calculations
3 - See Table 13 for engine emissions
4 - See Table 9 for gas production unit heater and line heater emission calculations
5 - The maximum emission was calculated based on tank truck capacity of 200 barrels and actual fill rate of 50 minutes per tank truck. At a production rate of 503 barrels per day, VOC emissions would be 14.3971 pounds per hour when there are truck loading activities. Average hourly VOC emissions from truck loading is 1.2577 pound per hour.
6 - See Table 10 and 11 for enclosed combustion emission calculations.
7 - The maximum hourly potential to emit is the sum of emissions from gas production unit heaters, line heaters, storage tanks, engines, enclosed combustors, loading, and fugitives. The total TPY PTE is the sum of all emissions.
PM 10 TPY is the sum of uncontrolled hauling and other PM10 sources.

Table 3

Permits Summary

Lemley Well Pad

Doddridge County, West Virginia

Antero Resources Corporation

Pollutant		Emissions		Threshold Exceeded?		
		Uncontrolled	Controlled	Threshold	Uncontrolled	Controlled
VOC	lbs/hr	70.2708	19.0600	6	**Yes**	**Yes**
	tons/yr	250.2357	25.9324	10	**Yes**	**Yes**
NO_X	lbs/hr	3.0252	5.4783	6		
	tons/yr	13.2503	23.9949	10	**Yes**	**Yes**
CH_4	lbs/hr	25.6919	5.3870			**Yes**
	tons/yr	110.0159	21.0806			**Yes**
CO	lbs/hr	2.9013	14.0655	6		**Yes**
	tons/yr	12.7075	61.6071	10	**Yes**	**Yes**
SO_2	lbs/hr	0.0181	0.0182	6		
	tons/yr	0.0795	0.0796	10		
$PM_{2.5}$	lbs/hr	0.2310	0.2387	6		
	tons/yr	1.0120	1.0456	10		
PM_{10}	lbs/hr	7.1806	3.7161	6	**Yes**	
	tons/yr	15.1581	8.1299	10	**Yes**	
Lead	lbs/hr	1.48E-05	1.55E-05	6		
	tons/yr	6.49E-05	6.78E-05	10		
Total HAPs	lbs/hr	3.8267	1.0349	2	**Yes**	
	tons/yr	14.0222	1.7940	5	**Yes**	
Total TAPs	lbs/hr	0.0342	0.0208	1.14		
n-Hexane	lbs/hr	3.4048	0.8621			
	tons/yr	12.3283	1.1914			
Toluene	lbs/hr	0.1025	0.0323			
	tons/yr	0.4083	0.1007			
Ethylbenzene	lbs/hr	0.0845	0.0342			
	tons/yr	0.3387	0.1180			
Xylenes	lbs/hr	0.2010	0.0858			
	tons/yr	0.8061	0.3015			
Benzene	lbs/hr	0.0202	0.0069			
	tons/yr	0.0813	0.0229			

Enter any notes here:	1. Emissions are based on 98% Enclosed Combustor DRE operating 100% of the time. 2. Please see Attachment J - Fugitive Emissions Data Summary Sheet and Attachment T - Emission Points Summary Sheet for sitewide sources and breakdown of emission quantities.

Table 4

Fugitive Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

VOC Type:	Condensate VOC
Emission Type:	Steady State (continuous)

Gas Weight Fraction From Analysis:	VOC frac	0.110
	Benzene frac	0.000
	Toluene	0.000
	Ethylbenzene	0.000
	Xylenes	0.000
	n-Hexane	0.005
	HAPs	0.005
	Methane	0.694

Gas					
Number	Component	Pollutant	Emission Factor (kg/hr of THC per component)	kg/hr	lb/yr
500	Valves	Gas VOC	0.004500	0.25	4,749.70
		Non VOC	0.004500	2.00	38,612.30
		HAPs	0.004500	0.01	200.38
		CO2e	0.004500	39.06	752,820.23
590	Connectors	VOC	0.000200	0.01	249.10
		Non-VOC	0.000200	0.11	2,025.00
		HAPs	0.000200	0.00	10.51
		CO2e	0.000200	2.05	39,481.24
130	Flanges	VOC	0.000390	0.01	107.03
		Non-VOC	0.000390	0.05	870.06
		HAPs	0.000390	0.00	4.52
		CO2e	0.000390	0.880217	16963.549155
			Total VOCs:	0.26	5105.82
			Total THC:	2.42	46613.19
			Total CH4:	1.68	32370.60

Light Liquid Weight Fraction From Analysis:	VOC frac	0.976
	Benzene frac	0.001
	Toluene	0.007
	Ethylbenzene	0.009
	Xylenes	0.023
	n-hexane	0.029
	HAPs	0.068
	Methane	0.008

Light Liquid					
Number	Component	Pollutant	Emission Factor (kg/hr of THC per component)	kg/hr	lb/yr
520	Valves	Light Liquid VOC	0.002500	1.27	24,464.24
		Light Liquid Non-VOC	0.002500	0.03	589.36
		Light Liquid HAPs	0.002500	0.09	1,712.94
		CO2e	0.002500	0.26	4959.20
			Total VOC:	1.27	24,464.24
			Total THC:	1.30	25,053.60
			Total CH4:	0.01	198.37

Fugitive Total Emissions			
	Annual Emissions (lb/yr)	Annual Emissions (lb/hr)	Annual Emissions (tpy)
VOC	29,570.06	3.38	14.79
Ethylbenzene		0.03	0.11
Toluene		0.02	0.09
Xylenes		0.06	0.28
n-Hexane		0.11	0.47
TAPs (Benzene)		0.00	0.01
HAPs		0.22	0.96
CH_4 [3]		3.72	16.28
CO_{2e}	814,224.22	92.95	407.11

Enter Notes Here:	Fugitive emissions based on an estimated component count Global Warming Potentials from EPA site Reference to Emission factors used: 1. Emission factors are for oil and gas production facilities (not refineries) come from the EPA's "Protocol for Equipment Leak Emission Estimates" November 1995, EPA 4531, R-95-017, Table 2-4. 2. Percent of speciated VOCs used in fugitive calculations are based on the total hydrocarbons, not of the total sample. 3. CH_4 emissions are based on percent of CH4 of the total hydrocarbons

Table 5

Pneumatic Control Valve Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Number of PCVs	40
Bleed Rate (scf/day/PCV)	6.6
Total Bleed Rate (scf/day)	264

Component	Mol%	Molecular Weight (lb/lb-mole)	Component Flow (scf/day)	Component Moles (lb-moles)	Component Emissions (lbs/day)	(lbs/hr)	(tons/year)
H2S	0.00E+00	34.08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.393	14.01	1.03752	2.73E-03	0.04	1.60E-03	0.01
Carbon Dioxide	0.202	44.01	0.53328	1.41E-03	0.06	2.58E-03	1.13E-02
Methane	82.7505	16.04	218.46132	0.58	9.23	0.38	1.69
Ethane	12.459	30.07	32.89176	0.09	2.61	0.11	0.48
Propane	2.9287	44.1	7.731768	0.02	0.90	0.04	0.16
Isobutane	0.3446	58.12	0.909744	2.40E-03	0.14	0.01	0.03
n-Butane	0.5546	58.12	1.464144	3.86E-03	0.22	0.01	0.04
Isopentane	0.1545	72.15	0.40788	1.07E-03	0.08	3.23E-03	0.01
n-Pentane	0.1105	72.15	0.29172	7.69E-04	0.06	2.31E-03	0.01
2-Methylpentane	0.00E+00	86.18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3-Methylpentane	0.00E+00	86.18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
n-Hexane	0.1025	86.18	0.2706	7.13E-04	0.06	0.00	0.01
Methylcyclopentane	0.00E+00	84.16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	0.00E+00	78.11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Methylhexane	0.00E+00	100.2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3-Methylhexane	0.00E+00	100.2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heptane	0.00E+00	100.21	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylcyclohexane	0.00E+00	98.186	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene	0.00E+00	92.14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Octane	0.00E+00	114.23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene	0.00E+00	106.17	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
m & p-Xylene	0.00E+00	106.16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
o-Xylene	0.00E+00	106.16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nonane	0.00E+00	128.2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C10+	0.00E+00	174.28	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	lb/hr	tpy
VOC Emissions	0.0607	0.2658
Benzene Emissions	0.00E+00	0.00E+00
Toluene Emissions	0.00E+00	0.00E+00
Ethylbenzene Emissions	0.00E+00	0.00E+00
Xylene Emissions	0.00E+00	0.00E+00
n-Hexane Emissions	0.0026	0.0112
HAPs Emissions	0.0026	0.0112
TAPs Emissions	0.00E+00	0.00E+00
CH_4 Emissions	0.3848	1.6852
CO_{2e} emissions	9.6213	42.1414

Enter any notes here:	1. PCV bleed rate obtained from the user manual for PCV http://issuu.com/rmcprocesscontrols/docs/mizer-pilot-operation--parts---installation-manual 2. Emissions per hour= Mol % x no. of PCV x bleed rate x MW / 379.48 / 24

Table 6

Uncontrolled Flashing Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

# Hours Operational	8760

	Condensate Tank Flashing Losses			Produced Water Tank Flashing Losses		
	Vapor Mass Fraction	Flashing Losses		Vapor Mass Fraction	Flashing Losses	
	wt%	lbs/hr	tpy	wt%	lbs/hr	tpy
Water	0.4216	0.3465	1.5177	2.7419	0.5383	2.3579
H2S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	0.0122	0.0101	0.0441	0.2657	0.0522	0.2285
Carbon Dioxide	0.3360	0.2762	1.2096	3.4296	0.6734	2.9493
Methane	10.3670	8.5199	37.3171	61.1359	12.0032	52.5741
Ethane	32.8349	26.9847	118.1930	23.8829	4.6891	20.5382
Propane	27.8870	22.9184	100.3824	5.7233	1.1237	4.9218
Isobutane	5.6971	4.6820	20.5074	0.6307	0.1238	0.5424
n-Butane	9.8107	8.0628	35.3149	1.2609	0.2476	1.0843
2,2 Dimethylpropane	0.0106	0.0087	0.0380	0.0007	0.0001	0.0006
Isopentane	3.7068	3.0464	13.3432	0.3146	0.0618	0.2705
n-Pentane	2.8037	2.3042	10.0923	0.0915	0.0180	0.0787
2,2 Dimethylbutane	0.0226	0.0186	0.0814	0.0007	0.0001	0.0006
Cyclopentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2,3 Dimethylbutane	0.0359	0.0295	0.1293	0.0024	0.0005	0.0021
2-Methylpentane	0.2318	0.1905	0.8344	0.0102	0.0020	0.0087
3-Methylpentane	0.1566	0.1287	0.5636	0.0164	0.0032	0.0141
n-Hexane	2.8946	2.3789	10.4195	0.0621	0.0122	0.0534
Methylcyclopentane	0.0735	0.0604	0.2646	0.0124	0.0024	0.0107
Benzene	0.0117	0.0096	0.0422	0.0173	0.0034	0.0149
Cyclohexane	0.0698	0.0573	0.2511	0.0243	0.0048	0.0209
2-Methylhexane	0.2720	0.2236	0.9793	0.0084	0.0017	0.0073
3-Methylhexane	0.2247	0.1847	0.8089	0.0084	0.0016	0.0072
2,2,4 Trimethylpentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heptane	0.4786	0.3933	1.7228	0.0076	0.0015	0.0065
Methylcyclohexane	0.3192	0.2624	1.1492	0.0528	0.0104	0.0454
Toluene	0.0625	0.0514	0.2250	0.0869	0.0171	0.0747
Octane	0.8226	0.6760	2.9611	0.0053	0.0010	0.0046
Ethylbenzene	0.0449	0.0369	0.1617	0.0612	0.0120	0.0526
m & p-Xylene	0.0424	0.0348	0.1526	0.0526	0.0103	0.0452
o-Xylene	0.0606	0.0498	0.2181	0.0855	0.0168	0.0735
Nonane	0.2599	0.2136	0.9356	0.0018	0.0004	0.0016
C10+	0.0282	0.0232	0.1015	0.0061	0.0012	0.0053
Total VOCs	56.028	46.05	201.7	8.544	1.6775	7.3475
Total CO_{2e}		213.27	934.1		300.75	1,317.3
CH_4		8.52	37.32		12.00	52.57
Total TAPs (Benzene)		0.0096	0.0422		0.0034	0.0149
Toluene		0.0514	0.2250		0.0171	0.0747
Ethylbenzene		0.0369	0.1617		0.0120	0.0526
Xylenes		0.0846	0.3706		0.0271	0.1187
n-Hexane		2.379	10.419		0.0122	0.0534
Total HAPs		2.561	11.219		0.0718	0.3143
Total	100.00	82.18	360.0	100.00	19.634	86.00

Enter any notes here:	Vapor mass fractions and Flashing losses from Promax output

Table 7

Uncontrolled Working and Breathing Losses
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Condensate Tank Information	
Number of Tanks	6
Maximum Working Losses (lbs/hr)	4.6691
Maximum Breathing Losses (lbs/hr)	3.3866
# Hours Operational	8760

	Condensate Tank W/B Losses						
	Vapor Mass Fraction	Working Losses		Breathing Losses		Max W/B Losses	
	wt%	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.0006	2.71E-05	1.19E-04	0.0000	0.0001	0.0000	0.0002
Carbon Dioxide	0.2905	0.0136	0.0594	0.0098	0.0431	0.0234	0.1025
Methane	2.4084	0.1125	0.4925	0.0816	0.3572	0.1940	0.8498
Ethane	41.0312	1.9158	8.3912	1.3896	6.0863	3.3054	14.4775
Propane	29.9679	1.3992	6.1287	1.0149	4.4453	2.4141	10.5739
Isobutane	5.6822	0.2653	1.1620	0.1924	0.8429	0.4577	2.0049
n-Butane	9.7416	0.4548	1.9922	0.3299	1.4450	0.7848	3.4373
2,2 Dimethylpropane	0.0096	0.0005	0.0020	0.0003	0.0014	0.0008	0.0034
Isopentane	3.3849	0.1580	0.6922	0.1146	0.5021	0.2727	1.1943
n-Pentane	2.5202	0.1177	0.5154	0.0854	0.3738	0.2030	0.8892
2,2 Dimethylbutane	0.0197	0.0009	0.0040	0.0007	0.0029	0.0016	0.0070
Cyclopentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2,3 Dimethylbutane	0.0309	0.0014	0.0063	0.0010	0.0046	0.0025	0.0109
2-Methylpentane	0.1974	0.0092	0.0404	0.0067	0.0293	0.0159	0.0697
3-Methylpentane	0.1332	0.0062	0.0272	0.0045	0.0198	0.0107	0.0470
n-Hexane	2.5272	0.1180	0.5168	0.0856	0.3749	0.2036	0.8917
Methylcyclopentane	0.0576	0.0027	0.0118	0.0020	0.0085	0.0046	0.0203
Benzene	0.0071	0.0003	0.0014	0.0002	0.0010	0.0006	0.0025
Cyclohexane	0.0559	0.0026	0.0114	0.0019	0.0083	0.0045	0.0197
2-Methylhexane	0.0634	0.0030	0.0130	0.0021	0.0094	0.0051	0.0224
3-Methylhexane	0.1914	0.0089	0.0391	0.0065	0.0284	0.0154	0.0675
2,2,4 Trimethylpentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heptane	0.3938	0.0184	0.0805	0.0133	0.0584	0.0317	0.1389
Methylcyclohexane	0.2649	0.0124	0.0542	0.0090	0.0393	0.0213	0.0935
Toluene	0.0399	1.86E-03	8.17E-03	0.0014	0.0059	0.0032	0.0141
Octane	0.6598	0.0308	0.1349	0.0223	0.0979	0.0531	0.2328
Ethylbenzene	0.0309	1.44E-03	6.32E-03	0.0010	0.0046	0.0025	0.0109
m & p-Xylene	0.0380	1.77E-03	7.76E-03	0.0013	0.0056	0.0031	0.0134
o-Xylene	0.0346	1.62E-03	0.0071	0.0012	0.0051	0.0028	0.0122
Nonane	0.2016	0.0094	0.0412	0.0068	0.0299	0.0162	0.0711
C10+	0.0151	7.06E-04	0.0031	0.0005	0.0022	0.0012	0.0053
Total VOCs	56.269	2.6273	11.507	1.9056	8.3466	4.5329	19.854
Total CO_{2e}		2.8248	12.3727	2.0489	8.9743	4.8738	21.347
CH_4		0.1125	0.4925	0.0816	0.3572	0.1940	0.8498
Total TAPs (Benzene)		3.30E-04	1.45E-03	0.0002	0.0010	0.0006	0.0025
Toluene		1.86E-03	8.17E-03	0.0014	0.0059	0.0032	0.0141
Ethylbenzene		1.44E-03	6.32E-03	0.0010	0.0046	0.0025	0.0109
Xylenes		3.39E-03	0.0148	0.0025	0.0108	0.0058	0.0256
n-Hexane		0.1180	0.5168	0.0856	0.3749	0.2036	0.8917
Total HAPs		0.1250	0.5476	0.0907	0.3972	0.2157	0.9448
Total	100.00	4.6691	20.4507	3.3866	14.8335	8.0557	35.284

Table 7

Uncontrolled Working and Breathing Losses
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Produced Water Tank Information	
Number of Tanks	4
Maximum Working Losses (lbs/hr)	0.1991
Maximum Breathing Losses (lbs/hr)	0.0168

	Produced Water Tank W/B Losses						
	Vapor Mass Fraction	Working Losses		Breathing Losses		Max W/B Losses	
	wt%	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
Water	90.8702	0.1809	0.7926	0.0152	0.0667	0.1962	0.8592
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.0050	1.00E-05	4.39E-05	8.43E-07	3.69E-06	1.09E-05	4.76E-05
Carbon Dioxide	4.3589	0.0087	0.0380	0.0007	0.0032	0.0094	0.0412
Methane	3.2208	0.0064	0.0281	0.0005	0.0024	0.0070	0.0305
Ethane	1.4844	0.0030	0.0129	0.0002	0.0011	0.0032	0.0140
Propane	0.0554	1.10E-04	0.0005	9.29E-06	4.07E-05	1.20E-04	0.0005
Isobutane	0.0015	3.05E-06	1.33E-05	2.56E-07	1.12E-06	3.30E-06	1.45E-05
n-Butane	0.0028	5.48E-06	2.40E-05	4.61E-07	2.02E-06	5.95E-06	2.60E-05
2,2 Dimethylpropane	0.0000	9.49E-10	4.16E-09	7.99E-11	3.50E-10	1.03E-09	4.51E-09
Isopentane	0.0002	3.54E-07	1.55E-06	2.98E-08	1.30E-07	3.84E-07	1.68E-06
n-Pentane	0.0000	3.03E-08	1.33E-07	2.55E-09	1.12E-08	3.29E-08	1.44E-07
2,2 Dimethylbutane	0.0000	1.27E-10	5.56E-10	1.07E-11	4.68E-11	1.38E-10	6.03E-10
Cyclopentane	0.0000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,3 Dimethylbutane	0.0000	7.38E-10	3.23E-09	6.21E-11	2.72E-10	8.00E-10	3.51E-09
2-Methylpentane	9.29E-07	1.85E-09	8.11E-09	1.56E-10	6.82E-10	2.01E-09	8.79E-09
3-Methylpentane	3.34E-06	6.65E-09	2.91E-08	5.59E-10	2.45E-09	7.20E-09	3.16E-08
n-Hexane	2.00E-06	3.97E-09	1.74E-08	3.34E-10	1.46E-09	4.31E-09	1.89E-08
Methylcyclopentane	3.01E-06	6.00E-09	2.63E-08	5.05E-10	2.21E-09	6.50E-09	2.85E-08
Benzene	2.50E-04	4.97E-07	2.18E-06	4.18E-08	1.83E-07	5.39E-07	2.36E-06
Cyclohexane	9.61E-06	1.91E-08	8.38E-08	1.61E-09	7.05E-09	2.07E-08	9.08E-08
2-Methylhexane	4.48E-08	8.91E-11	3.90E-10	7.50E-12	3.29E-11	9.66E-11	4.23E-10
3-Methylhexane	1.74E-07	3.47E-10	1.52E-09	2.92E-11	1.28E-10	3.77E-10	1.65E-09
2,2,4 Trimethylpentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heptane	5.16E-08	1.03E-10	4.50E-10	8.64E-12	3.79E-11	1.11E-10	4.88E-10
Methylcyclohexane	4.10E-06	8.17E-09	3.58E-08	6.87E-10	3.01E-09	8.86E-09	3.88E-08
Toluene	2.71E-04	5.39E-07	2.36E-06	4.54E-08	1.99E-07	5.85E-07	2.56E-06
Octane	4.56E-09	9.08E-12	3.98E-11	7.64E-13	3.35E-12	9.85E-12	4.31E-11
Ethylbenzene	5.72E-05	1.14E-07	4.99E-07	9.58E-09	4.20E-08	1.23E-07	5.41E-07
m & p-Xylene	3.77E-05	7.51E-08	3.29E-07	6.32E-09	2.77E-08	8.14E-08	3.57E-07
o-Xylene	7.81E-05	1.56E-07	6.81E-07	1.31E-08	5.73E-08	1.69E-07	7.39E-07
Nonane	4.69E-10	9.34E-13	4.09E-12	7.86E-14	3.44E-13	1.01E-12	4.44E-12
C10+	8.41E-10	1.67E-12	7.33E-12	1.41E-13	6.17E-13	1.81E-12	7.95E-12
Total VOCs	0.0606	1.21E-04	0.0005	1.02E-05	4.45E-05	1.31E-04	0.0006
Total CO_{2e}		0.1690	0.7403	0.0142	0.0623	0.1832	0.8026
CH_4		0.0064	0.0281	0.0005	0.0024	0.0070	0.0305
Total TAPs (Benzene)		4.97E-07	2.18E-06	4.18E-08	1.83E-07	5.39E-07	2.36E-06
Toluene		5.39E-07	2.36E-06	4.54E-08	1.99E-07	5.85E-07	2.56E-06
Ethylbenzene		1.14E-07	4.99E-07	9.58E-09	4.20E-08	1.23E-07	5.41E-07
Xylenes		2.31E-07	1.01E-06	1.94E-08	8.50E-08	2.50E-07	1.10E-06
n-Hexane		3.97E-09	1.74E-08	3.34E-10	1.46E-09	4.31E-09	1.89E-08
Total HAPs		1.39E-06	6.07E-06	1.17E-07	5.11E-07	1.50E-06	6.58E-06
Total	100.00	0.1991	0.8722	0.0168	0.0734	0.2159	0.9456

Enter any notes here:	Vapor mass fractions, working losses and breathing losses from Promax output

Table 8

Loading Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Annual Loading	Oil Truck Loading	Water Truck Loading
RVP	6.09	1.0333
Annual Average Temp (F)	72.1	72.1
S (saturation factor)	0.6	0.6
P (true vapor pressure)	4.70	0.45
M (MW of vapor)	38.44	18.54
Collection Efficiency (%)	0.00	0.00
Total Hydrocarbon Loading Loss (lb/10^3 gal)*	2.54	0.12
Maximum Throughput (gallons/hr)**	10,080	10,080
Average Throughput (gallons/yr)	7,710,990	61,320,000
Total Hydrocarbon Loading Emissions (lbs/hr)	25.58	1.19
Total Hydrocarbon Loading Emissions (tpy)	9.79	3.62

	Condensate Tank Loading Losses			Produced Water Tank Loading Losses		
	Vapor Mass Fraction	Loading Losses		Vapor Mass Fraction	Loading Losses	
	wt%	lbs/hr	tpy	wt%	lbs/hr	tpy
H2S	0.0000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.0006	1.48E-04	5.68E-05	0.0050	5.98E-05	1.82E-04
Carbon Dioxide	0.2905	0.0743	2.84E-02	4.3589	5.18E-02	1.58E-01
Methane	2.4084	0.6162	2.36E-01	3.2208	3.83E-02	1.16E-01
Ethane	41.0312	10.4978	4.0153	1.4844	1.76E-02	5.37E-02
Propane	29.9679	7.6673	2.93E+00	0.0554	6.59E-04	2.00E-03
Isobutane	5.6822	1.4538	5.56E-01	0.0015	1.82E-05	5.53E-05
n-Butane	9.7416	2.4924	9.53E-01	0.0028	3.27E-05	9.96E-05
2,2 Dimethylpropane	0.0096	0.0025	9.44E-04	0.0000	5.67E-09	1.72E-08
Isopentane	3.3849	0.8660	3.31E-01	0.0002	2.11E-06	6.42E-06
n-Pentane	2.5202	0.6448	2.47E-01	0.0000	1.81E-07	5.51E-07
2,2 Dimethylbutane	0.0197	0.0050	1.93E-03	0.0000	7.58E-10	2.31E-09
Cyclopentane	0.0000	0.0000	0.00E+00	0.0000	0.00E+00	0.00E+00
2,3 Dimethylbutane	0.0309	0.0079	3.02E-03	0.0000	4.41E-09	1.34E-08
2-Methylpentane	0.1974	0.0505	1.93E-02	9.29E-07	1.10E-08	3.36E-08
3-Methylpentane	0.1332	0.0341	1.30E-02	3.34E-06	3.97E-08	1.21E-07
n-Hexane	2.5272	0.6466	2.47E-01	2.00E-06	2.37E-08	7.22E-08
Methylcyclopentane	0.0576	0.0147	5.63E-03	3.01E-06	3.58E-08	1.09E-07
Benzene	0.0071	0.0018	6.93E-04	0.0002	2.97E-06	9.03E-06
Cyclohexane	0.0559	0.0143	5.47E-03	0.0000	1.14E-07	3.47E-07
2-Methylhexane	0.0634	0.0162	6.20E-03	0.0000	5.32E-10	1.62E-09
3-Methylhexane	0.1914	0.0490	1.87E-02	0.0000	2.07E-09	6.31E-09
2,2,4 Trimethylpentane	0.0000	0.0000	0.00E+00	0.0000	0.00E+00	0.00E+00
Heptane	0.3938	0.1007	3.85E-02	5.16E-08	6.13E-10	1.87E-09
Methylcyclohexane	0.2649	0.0678	2.59E-02	4.10E-06	4.88E-08	1.48E-07
Toluene	0.0399	0.0102	3.91E-03	0.0003	3.22E-06	9.79E-06
Octane	0.6598	0.1688	6.46E-02	4.56E-09	5.42E-11	1.65E-10
Ethylbenzene	0.0309	0.0079	3.02E-03	5.72E-05	6.80E-07	2.07E-06
m & p-Xylene	0.0380	0.0097	3.72E-03	3.77E-05	4.48E-07	1.36E-06
o-Xylene	0.0346	0.0089	3.39E-03	7.81E-05	9.29E-07	2.82E-06
Nonane	0.2016	0.0516	1.97E-02	4.69E-10	5.58E-12	1.70E-11
C10+	0.0151	0.0039	1.48E-03	8.41E-10	9.99E-12	3.04E-11
Total VOCs	56.2689	14.3963	5.5065	0.0606	7.21E-04	2.19E-03
Total CH_4		0.6162	0.2357		0.0383	0.1165
Total CO_{2e}		15.4789	5.9205		1.0090	3.0689
Total TAPs (Benzene)		0.0018	6.93E-04		2.97E-06	9.03E-06
Toluene		0.0102	3.91E-03		3.22E-06	9.79E-06
Ethylbenzene		0.0079	3.02E-03		6.80E-07	2.07E-06
Xylenes		0.0186	7.11E-03		1.38E-06	4.19E-06
n-Hexane		0.6466	2.47E-01		2.37E-08	7.22E-08
Total HAPs		0.6851	2.62E-01		8.27E-06	2.52E-05
Total	100.0000	25.5849	9.7860	100.0000	1.1887	3.6156

Enter any notes here

Vapor mass fractions and loading losses from Promax output

Using equation L_L = 12.46 SPM/T from AP-42, Chapter 5, Section 5.2-4

MW was obtained by Promax; RVP was taken from laboratory reports

Annual Average Temp (F) obtained from Charleston, WV (preset in Promax)

S (saturation factor) is based on submerged loading, dedicated service as it was most representative

True vapor pressure (TVP) equation from AP-42, Chapter 7, Figure 7.1-13a

** Maximum throughput in gallons per hour obtained from actual transfer rate of 200 barrels in 50 minutes. (10,080 gal/hr = 200 bbl / 50 min x 42 gal/bbl x 60 min/hr)

Loading emissions are vented to the atmosphere.

Table 9

Gas Production Unit Heater and Line Heater Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Gas Production Unit Heater Emissions

Number of Units	10
GPU Heater Rating (MMBtu/hr)	1.50
Operating hours/year	8760
Fuel Heat Value (Btu/scf)	1,181.37

Pollutant	Emission Factors (lb/MMscf)	lb/hr	tpy
NOx	100	1.270	5.561
CO	84	1.067	4.672
CO_2	120,000	1523.655	6673.608
Lead	0.0005	6.35E-06	2.78E-05
N_2O	2.2	0.028	0.122
PM (Total)	7.6	0.096	0.423
SO_2	0.6	0.008	0.033
TOC	11	0.140	0.612
Methane	2.3	0.029	0.128
VOC	5.5	0.070	0.306
HAPS			
2-Methylnaphthalene	2.40E-05	3.05E-07	1.33E-06
Benzene	2.10E-03	2.67E-05	1.17E-04
Dichlorobenzene	1.20E-03	1.52E-05	6.67E-05
Fluoranthene	3.00E-06	3.81E-08	1.67E-07
Fluorene	2.80E-06	3.56E-08	1.56E-07
Formaldehyde	7.50E-02	9.52E-04	4.17E-03
Hexane	1.80E+00	2.29E-02	1.00E-01
Naphthalene	6.10E-04	7.75E-06	3.39E-05
Phenanathrene	1.70E-05	2.16E-07	9.45E-07
Toluene	3.40E-03	4.32E-05	1.89E-04

Line Heater Emissions

Number of Units	10
Line Heater Rating (MMBtu/hr)	2.00
Operating hours/year	8760
Fuel Heat Value (Btu/scf)	1,181.37

Pollutant	Emission Factors (lb/MMscf)	lb/hr	tpy
NOx	100	1.693	7.415
CO	84	1.422	6.229
CO_2	120,000	2031.540	8898.144
Lead	0.0005	8.46E-06	3.71E-05
N_2O	2.2	0.037	0.163
PM (Total)	7.6	0.129	0.564
SO_2	0.6	0.010	0.044
TOC	11	0.186	0.816
Methane	2.3	0.039	0.171
VOC	5.5	0.093	0.408
HAPS			
2-Methylnaphthalene	2.40E-05	4.06E-07	1.78E-06
Benzene	2.10E-03	3.56E-05	1.56E-04
Dichlorobenzene	1.20E-03	2.03E-05	8.90E-05
Fluoranthene	3.00E-06	5.08E-08	2.22E-07
Fluorene	2.80E-06	4.74E-08	2.08E-07
Formaldehyde	7.50E-02	1.27E-03	5.56E-03
Hexane	1.80E+00	3.05E-02	1.33E-01
Naphthalene	6.10E-04	1.03E-05	4.52E-05
Phenanathrene	1.70E-05	2.88E-07	1.26E-06
Toluene	3.40E-03	5.76E-05	2.52E-04

	lb/hr	tpy
TOTAL Uncontrolled VOC	0.163	0.714
TOTAL Uncontrolled HAPs	0.056	0.244
TOTAL Uncontrolled TAPs (Benzene)	6.22E-05	2.73E-04
TOTAL Uncontrolled Toluene	1.01E-04	4.41E-04
TOTAL Uncontrolled Hexane	0.053	0.234
TOTAL Uncontrolled TAPs (Formaldehyde)	0.002	0.010
TOTAL CH_4	0.068	0.298
TOTAL CO_{2e} Emissions	3,576.32	15,664.29

Enter any notes here:
All Emission Factors based off AP-42 Sec 1.4 Natural Gas Combustion

Table 10

Enclosed Combustor Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

General Information	
Unit Name:	EC001, EC002, EC003

Pollutant	Emission Factor (lb/MMscf)
NOx	100
CO	84
PM10	7.6
PM2.5	5.7
SO_2	0.6
CO_2	120,000
VOC	5.5
benzene	2.10E-03
Hexane	1.80E+00
Toluene	3.40E-03
Formaldehyde	7.50E-02
N_2O	2.20
Lead	5.00E-04

Pollutant	Emission Factor[2] (lb/MMBtu)
NO_x	0.068
CO	0.31

Constants	
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S molecular wei	34.08
SO_2 molecular	64.06
seconds/hour	3,600
inches/ft	12

Destruction Efficiency	
VOC percent destruction efficiency (%)	98
H_2S percent destruction efficiency (%)	98

Enclosed Combustor operating hours	8760
No. of Enclosed Combustors	3
Maximum Design Heat Input Per Enclosed Combustor (MMBtu/hr)	12

Stream Information							
	1	2	3	4	5	6	Total
Stream Sent to Enclosed/Vapor Combustor (Enter Name of Each Stream Here)	pilot(s)	added fuel stream(s)	Oil Tank Flash Emissions	Water Tank Flash Emissions	Oil Tank W/B Emissions	Water Tank W/B Emissions	-
Maximum Expected Hourly Volumetric Flow Rate of Stream (scf/hr)	51	--	811.33	401.94	79.53	4.42	1,348.22
Maximum Expected Annual Volumetric Flow Rate of Stream (scf/yr)	446,760.00	--	7,107,236.55	3,521,031.36	696,665.67	38,715.75	11,810,409.33
Heating Content (Btu/ft3)	1,181		2,033.36	1,144.68	2,206.77	101.46	1,695.40

Mass Flow Rates of the Vapors Sent to this Control Device, Hourly Basis (lb/hr)							
	1	2	3	4	5	6	Total
Stream Sent to Enclosed Combustor/Vapor Combustor	pilot(s)	added fuel stream(s)	Oil Tank Flash Emissions	Water Tank Flash Emissions	Oil Tank W/B Emissions	Water Tank W/B Emissions	-
H2S	-	-	0.000	0.000	0.000	0.000	0.000
Total VOC	-	-	46.046	1.678	4.533	0.000	52.26
Benzene	-	-	0.010	0.003	0.001	0.000	0.014
Toluene	-	-	0.051	0.017	0.003	0.000	0.072
Ethylbenzene	-	-	0.037	0.012	0.002	0.000	0.051
Xylenes	-	-	0.085	0.027	0.006	0.000	0.118
n-Hexane	-	-	2.379	0.012	0.204	0.000	2.595
HAPs	-	-	2.561	0.072	0.216	0.000	2.849
Total Mass Flow	-	-	82.183	19.634	8.056	0.216	110.088
Mass Flow Rates of the Vapors Sent to this Control Device, Annual Basis (tpy)							
H2S	-	-	0.000	0.000	0.000	0.000	0.000
Total VOC	-	-	201.680	7.348	19.854	0.001	228.882
Benzene	-	-	0.042	0.015	0.002	0.000	0.060
Toluene	-	-	0.225	0.075	0.014	0.000	0.314
Ethylbenzene	-	-	0.162	0.053	0.011	0.000	0.225
Xylenes	-	-	0.371	0.119	0.026	0.000	0.515
n-Hexane	-	-	10.419	0.053	0.892	0.000	11.365
HAP	-	-	11.219	0.314	0.945	0.000	12.478
Total Mass Flow	-	-	359.962	85.996	35.284	0.946	482.187

Table 10

Enclosed Combustor Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Controlled Emissions							
Hourly (lb/hr)							
	1	2	3	4	5	6	Total
Stream Sent to Enclosed Combustor/Vapor Combustor	pilot(s)	added fuel stream(s)	Oil Tank Flash Emissions	Water Tank Flash Emissions	Oil Tank W/B Emissions	Water Tank W/B Emissions	-
NOx	0.005	-	2.448				2.45
CO	0.004	-	11.160				11.16
PM2.5	0.000	-	0.005	0.002	0.000	0.000	0.01
PM10	0.000	-	0.006	0.003	0.001	0.000	0.01
H2S	0.000	-	0.000	0.000	0.000	0.000	0.00
SO_2	0.000	-	0.000	0.000	0.000	0.000	0.00
CO_2	6.120	-	-	-	-	-	6.12
Total VOC	0.000	-	0.921	0.034	0.091	0.000	1.05
Benzene	0.000	-	0.000	0.000	0.000	0.000	0.00
Toluene	0.000	-	0.001	0.000	0.000	0.000	0.00
Ethylbenzene	0.000	-	0.001	0.000	0.000	0.000	0.00
Xylenes	0.000	-	0.002	0.001	0.000	0.000	0.00
n-Hexane	0.000	-	0.048	0.000	0.004	0.000	0.05
HAP	0.000	-	0.051	0.001	0.004	0.000	0.06
N_2O	0.000	-	0.002	0.001	0.000	0.000	0.00
Lead	0.000	-	0.000	0.000	0.000	0.000	0.00
Formaldehyde	0.000	-	-	-	-	-	0.00
Annual (tpy)							
	1	2	3	4	5	6	Total
Stream Sent to Enclosed Combustor/Vapor Combustor	pilot(s)	added fuel stream(s)	Oil Tank Flash Emissions	Water Tank Flash Emissions	Oil Tank W/B Emissions	Water Tank W/B Emissions	-
NOx	0.022	-	10.722				10.74
CO	0.019	-	48.881				48.90
PM2.5	0.001	-	0.020	0.010	0.002	0.000	0.03
PM10	0.002	-	0.027	0.013	0.003	0.000	0.04
H_2S	0.000	-	0.000	0.000	0.000	0.000	0.00
SO_2	0.000	-	0.000	0.000	0.000	0.000	0.00
CO_2	26.806	-	-	-	-	-	26.81
Total VOC	0.001	-	4.034	0.147	0.397	0.000	4.58
Benzene	0.000	-	0.001	0.000	0.000	0.000	0.00
Toluene	0.000	-	0.005	0.001	0.000	0.000	0.01
Ethylbenzene	0.000	-	0.003	0.001	0.000	0.000	0.00
Xylenes	0.000	-	0.007	0.002	0.001	0.000	0.01
n-Hexane	0.000	-	0.208	0.001	0.018	0.000	0.23
HAP	0.000	-	0.224	0.006	0.019	0.000	0.25
N_2O	0.000	-	0.008	0.004	0.001	0.000	0.01
Lead	0.000	-	0.000	0.000	0.000	0.000	0.00
Formaldehyde	0.000	-	-	-	-	-	0.00

Enclosed Combustor/Vapor Combustor Total Emissions		
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Total VOC	1.05	4.58
NOx	2.453	10.745
CO	11.164	48.900
PM2.5	0.008	0.034
PM10	0.010	0.045
H_2S	1.63E-05	7.13E-05
SO_2	3.06E-05	1.34E-04
Benzene (TAPs)	2.73E-04	1.19E-03
Toluene	1.43E-03	6.28E-03
Ethylbenzene	1.03E-03	4.50E-03
Xylenes	2.35E-03	0.010
Hexanes	0.052	0.228
Formaldehyde (TAPs)	3.83E-06	1.68E-05
HAPs	0.06	0.25
CH_4	0.42	1.84
CO_2e	313.96	1375.13
N_2O	0.003	0.01299
Lead	6.74E-07	2.95E-06

Enter any notes here as needed
1. Emission Factors from AP-42 Tables 1.4-1, 1.4-2, and 1.4.3
2. Emission Factors from AP-42 Tables 13.5-1 and 13.5-2 for industrial flares

Table 11

Enclosed Combustor GHG Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Enclosed Combustor CO_2 and CH_4 Emissions

Components	Mole fraction of oil flash gas constituents[a]	Volume of oil flash gas sent to Enclosed Combustor *scf/year*	Mole fraction of water flash gas constituents[a]	Volume of water flash gas sent to Enclosed Combustor *scf/year*	Mole fraction of oil tank vapors constituents[a]	Volume of oil tank vapor sent to Enclosed Combustor *scf/year*	Mole fraction of water tank vapors constituents[a]	Volume of water tank vapors sent to Enclosed Combustor *scf/year*	Component volume of gas sent to Enclosed Combustor *scf/year*	Number of carbon atoms	Combustion Efficiency	Combusted CO_2 Volume[b] *scf/year*	Uncombusted CO_2 and CH_4 Volume[b] *scf/year*	Volume GHGs Emitted *scf/year*
CO_2	0.003	7,107,237	0.0155	3,521,031	0.0025	696,666	0.018	38,716	76,258	1	0	--	76,258	22,395,898
Methane	0.229	7,107,237	0.7580	3,521,031	0.0577	696,666	0.037	38,716	4,336,810	1	0.98	4,250,074	86,736	86,736
Ethane	0.387	7,107,237	0.1580	3,521,031	0.5245	696,666	0.009	38,716	3,669,269	2	0.98	7,191,766	--	
Propane	0.224	7,107,237	0.0258	3,521,031	0.2612	696,666	0.000	38,716	1,863,887	3	0.98	5,479,827	--	
i-Butane	0.035	7,107,237	0.0022	3,521,031	0.0376	696,666	0.000	38,716	280,404	4	0.98	1,099,183	--	
n-Butane	0.060	7,107,237	0.0043	3,521,031	0.0644	696,666	0.000	38,716	484,778	4	0.98	1,900,328	--	
Pentane	0.032	7,107,237	0.0011	3,521,031	0.0315	696,666	0.000	38,716	252,893	5	0.98	1,239,174	--	
Hexane	0.013	7,107,237	0.0002	3,521,031	0.0127	696,666	0.000	38,716	105,447	6	0.98	620,029	--	
Benzene	0.000	7,107,237	0.0000	3,521,031	0.0000	696,666	0.000	38,716	558	6	0.98	3,280	--	
Heptanes	0.004	7,107,237	0.0001	3,521,031	0.0028	696,666	0.000	38,716	28,879	7	0.98	198,109	--	
Toluene	0.000	7,107,237	0.0002	3,521,031	0.0002	696,666	0.000	38,716	2,483	7	0.98	17,035	--	
Octane	0.004	7,107,237	0.0001	3,521,031	0.0033	696,666	0.000	38,716	28,977	8	0.98	227,182	--	
Ethyl benzene	0.000	7,107,237	0.0001	3,521,031	0.0001	696,666	0.000	38,716	1,546	8	0.98	12,121	--	
Xylenes	0.000	7,107,237	0.0003	3,521,031	0.0003	696,666	0.000	38,716	3,534	8	0.98	27,706	--	
Nonane	0.001	7,107,237	0.0000	3,521,031	0.0006	696,666	0.000	38,716	5,532	9	0.98	48,793	--	
Decane plus	0.000	7,107,237	0.0000	3,521,031	0.0000	696,666	0.000	38,716	514	10	0.98	5,034	--	
Subtotal												**22,319,640**	--	

Pollutant	Volume Emitted *scf/year*	Density of GHG[c] *lb/scf*	Conversion Factor *lb/ton*	GWF	Emissions[c] *lbs/hr*	*(tons/yr)*
CO_2	22,395,898	0.12	2000	1	296.47	1,298.55
CH_4	86,736	0.04	2000	25	0.42	1.84
				CO_2e Emissions	**306.9**	**1344.44**

GHG Emissions Summary

Notes

a Flashing/Working/Breathing Losses from ProMax output reports

b 40 CFR 98.233 (n)(4): Eqns: W-19, W-20 and W-21

c 40 CFR 98.233(v) Eqn W-36 - density at 60°F and 14.7 psia

Table 12

Haul Road Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

	PM	PM10
Particle Size Multiplier (k)	0.8	0.36
Silt Content of Road Surface Material (s) (%)	5.1	5.1
Days per Year with Precipitation > 0.01 in (p)	150	150
Control Efficiency for Watering [1] (%)	50	50

Tanker Truck Trip Calculation	
Condensate Production (bbl/day)	503
PW Production (bbl/day)	4,000
Truck Capacity (bbl)	200

Pick Up Truck Trip Calculation	
No of Trips Per day	2
Trips Per Year	730

	# of Wheels	Mean Vehicle Weight (W) (tons)	Mean Vehicle Speed (S) (mph)	Miles Per Trip (miles)	Maximum Trips per Hour	Maximum Trips per Year	Vehicle Miles Travelled (miles/hr)	Vehicle Miles Travelled (miles/year)	PM (lbs/VMT)	PM10 (lbs/VMT)
Tanker Trucks Condensate	10	40	10	2.0000	1	918	2.0000	1836.0000	3.8175	1.7179
Tanker Trucks PW	10	40	10	2.0000	1	7300	2.0000	14600.0000	3.8175	1.7179
Pick Up Truck	4	3	10	0.5000	1	730	0.5000	365.0000	0.3467	0.1560

	Uncontrolled Emissions						Controlled Emissions					
	PM			PM10			PM			PM10		
	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)
Tanker Trucks Condensate	7.6351	7008.9840	3.5045	3.4358	3154.0428	1.5770	3.8175	3504.4920	1.7522	1.7179	1577.0214	0.7885
Tanker Trucks PW	7.6351	55735.9291	27.8680	3.4358	25081.1681	12.5406	3.8175	27867.9646	13.9340	1.7179	12540.5841	6.2703
Pick Up Truck	0.1733	126.5381	0.0633	0.0780	56.9421	0.0285	0.0867	63.2690	0.0316	0.0390	28.4711	0.0142
Total Emissions	15.4435	62,871.4512	31.4357	6.9496	28,292.1530	14.1461	7.7217	31,435.7256	15.7179	3.4748	14,146.0765	7.0730

Enter any notes here:	1 EPA, AP-42, Volume I, Section 13.2.2 Unpaved Roads (11/06); assume 2:1 moisture ratio Section 13.2.2 Unpaved Roads (11/06) Source: Attachment L, Fugitive Emissions from Unpaved Haul Roads, Rev 03/2007, West Virginia Department of Environmental Protection

Table 13

Engine Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Ford MSG425 2.5L Engine

Power (hp) [1]	76
Fuel consumption (lbs/BHP-hr) [1]	0.3864
Heat Content of Fuel (Btu/scf)	1181.37
Density of NG (lb/scf)	0.056
Operating Hours/year	8760
No. of Engines	1

Pollutant	Emission Factors (g/hp-hr)	Emission Factors (lb/MMBtu)	lb/hr	tpy
NOx[2]	0.3731		0.0625	0.2738
CO[2]	2.4627		0.4126	1.8073
CO_2		110.000	68.1461	298.48
$PM_{2.5}$		9.500E-03	0.0059	0.0258
PM_{10}		9.500E-03	0.0059	0.0258
PM (Total)		9.910E-03	0.0061	0.0269
SO_2		5.880E-04	0.0004	0.0016
TOC		0.358	0.2218	0.9714
Methane		0.230	0.1425	0.6241
VOC[3]		0.0296	0.0183	0.0803
HAPS				
Benzene		0.002	9.79E-04	0.004
Ethylbenzene		2.48E-05	1.54E-05	6.73E-05
Formaldehyde		0.021	0.013	0.056
Naphthalene		9.71E-05	6.02E-05	2.63E-04
Toluene		5.58E-04	3.46E-04	1.51E-03
Xylene		1.95E-04	1.21E-04	5.29E-04

	lb/hr	tpy
TOTAL Uncontrolled VOC	0.018	0.080
TOTAL Uncontrolled NOx	0.063	0.274
TOTAL Uncontrolled HAPs	0.014	0.062
TOTAL Uncontrolled TAPs (Benzene)	9.79E-04	0.004
TOTAL Uncontrolled Toluene	3.46E-04	1.51E-03
TOTAL Uncontrolled Ethylbenzene	1.54E-05	6.73E-05
TOTAL Uncontrolled Xylenes	1.21E-04	5.29E-04
TOTAL Uncontrolled TAPs (Formaldehyde)	0.013	0.056
TOTAL CH_4 Emissions	0.142	0.624
TOTAL CO_{2e} Emissions	71.708	314.082

Enter Any Notes Here:

1. Engines were manufactured in 2015 for MSG-425. Engine ratings were taken from manufacturer engine specifications. Please see copies of manufacturer engine specifications in Appendix N.
2. Emission factors used for the 76 HP engine NOX and CO emissions are certification levels indicated on MSG-425 CARB document. See MSG-425 CARB document in Appendix N.
3. Emission factors for all other contaminants including VOCs were obtained from AP-42, Section 3.2 "Natural Gas-fired Reciprocating Engines", Table 3.2-3.
4. Hours of operation was calculated based on the 100% operation of the VRU.

Table 14

Change in Regulated Air Pollutants Emissions
Lemley Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

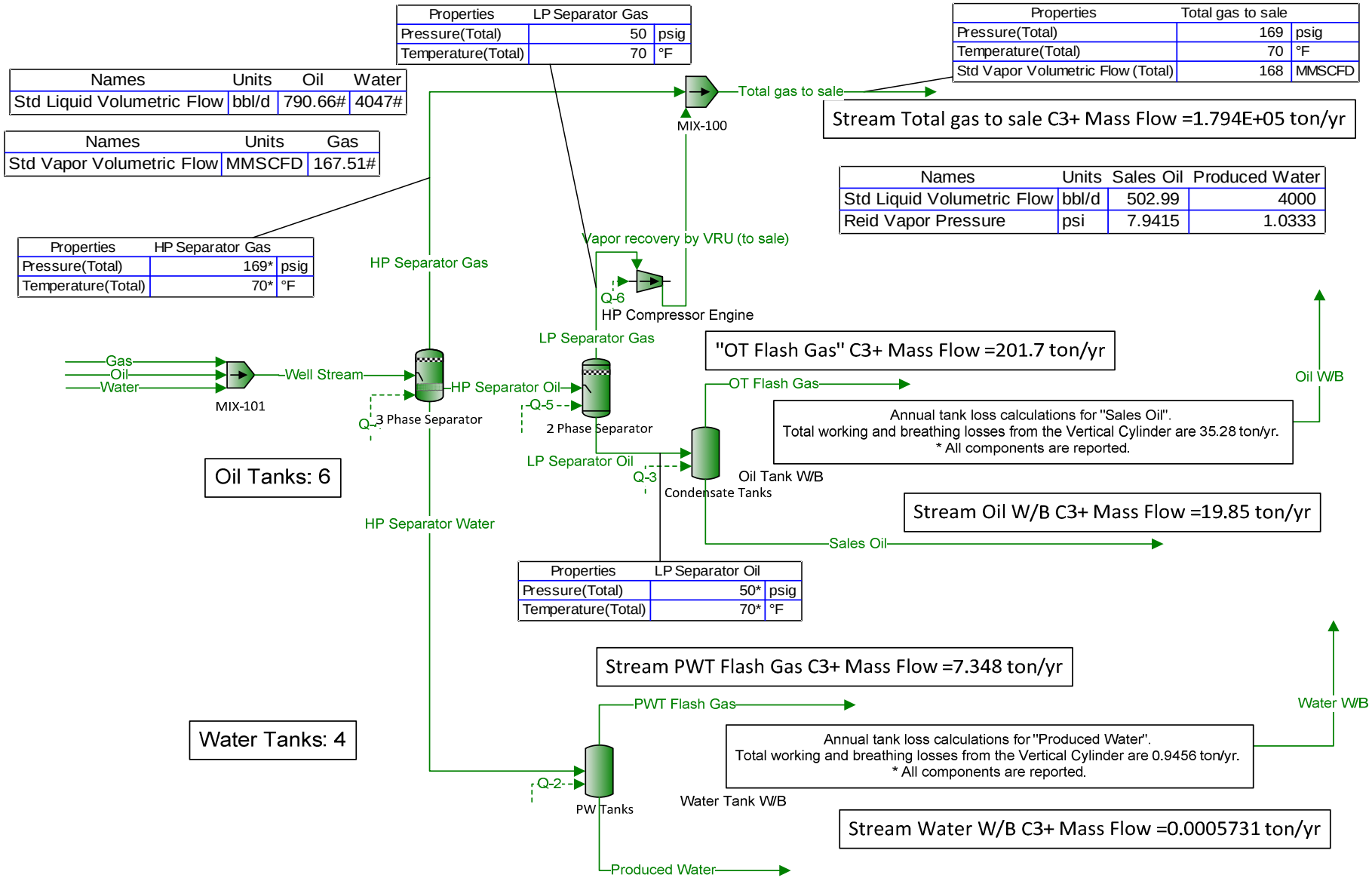
	Potential Emissions		Previous Permit Application Emissions		Change in Emissions	
Pollutant	**Hourly PTE**	**Yearly PTE**	**Hourly PTE**	**Yearly PTE**	**Hourly PTE**	**Yearly PTE**
$PM_{2.5}$	0.2387	1.0456	0.0649	0.2845	1.74E-01	0.7612
PM_{10}	3.7161	8.1299	0.6848	0.4725	3.0312	7.6574
VOC (uncontrolled)	55.8738	250.2357	24.6794	109.2091	31.1944	141.0266
CO	14.0655	61.6071	0.7255	3.1777	13.3400	58.4294
NOx	5.4783	23.9949	0.8637	3.7830	4.6146	20.2119
SO2	0.0182	0.0796	0.0051	0.0218	1.31E-02	5.78E-02
Pb	1.55E-05	6.78E-05	4.32E-06	1.89E-05	1.12E-05	4.89E-05
HAPs	1.0349	1.7940	0.3813	1.6796	0.6536	0.1144
TAPs	0.0208	0.0840	0.0027	0.0118	1.81E-02	0.0721

Notes:
Change in emissions due to -
1. Increase in condensate and produced water production
2. Addition of ten line heaters
3. Addition of two produced water tanks
4. Addition of one HP Ford VRU engine
5. Addition of three enclosed Cimarron combustors
6. Removal of one Abutec combustor

Simulation Report	
Client Name:	Antero Resources
Location:	Doddridge County, WV
Job:	Lemley Well Pad

Project Name:	Antero Promax Model- VRT
File Name:	I:\Air Quality\6-chars\08----\0827--\082715\ANTERO RESOURCES \ProMax\Antero WV_VRT\ProMax Model\Antero Promax Model-
ProMax Version:	4.0.16071.0

Report Created:	9/19/2017 10:39


Properties LP Separator Gas
Pressure(Total) 50 psig
Temperature(Total) 70 °F
Properties Total gas to sale
Pressure(Total) 169 psig
Temperature(Total) 70 °F
Std Vapor Volumetric Flow (Total) 168 MMSCFD
Names Units Oil Water
Std Liquid Volumetric Flow bbl/d 790.66# 4047#
Total gas to sale
MIX-100
Stream Total gas to sale C3+ Mass Flow =1.794E+05 ton/yr
Names Units Gas
Std Vapor Volumetric Flow MMSCFD 167.51#
Names Units Sales Oil Produced Water
Std Liquid Volumetric Flow bbl/d 502.99 4000
Reid Vapor Pressure psi 7.9415 1.0333
Properties HP Separator Gas
Pressure(Total) 169* psig
Temperature(Total) 70* °F
Vapor recovery by VRU (to sale)
HP Separator Gas
Q-6
HP Compressor Engine
LP Separator Gas
"OT Flash Gas" C3+ Mass Flow =201.7 ton/yr
Gas
Oil
Water
MIX-101
Well Stream
HP Separator Oil
Q-5
Q-4
3 Phase Separator
2 Phase Separator
OT Flash Gas
Oil W/B
Annual tank loss calculations for "Sales Oil".
Total working and breathing losses from the Vertical Cylinder are 35.28 ton/yr.
* All components are reported.
Oil Tanks: 6
LP Separator Oil
Q-3
Oil Tank W/B
Condensate Tanks
Stream Oil W/B C3+ Mass Flow =19.85 ton/yr
HP Separator Water
Sales Oil
Properties LP Separator Oil
Pressure(Total) 50* psig
Temperature(Total) 70* °F
Stream PWT Flash Gas C3+ Mass Flow =7.348 ton/yr
PWT Flash Gas
Water W/B
Water Tanks: 4
Annual tank loss calculations for "Produced Water".
Total working and breathing losses from the Vertical Cylinder are 0.9456 ton/yr.
* All components are reported.
Q-2
PW Tanks
Water Tank W/B
Stream Water W/B C3+ Mass Flow =0.0005731 ton/yr
Produced Water

Process Streams	Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	LP Separator Gas	LP Separator Oil	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Vapor recovery by VRU (to sale)	Water	Water W/B	Well Stream
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total** From Block:	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Mole Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water	0*	0.207663	0.0943747	99.9671	0.440677	0.0745015	0*	0.000850811*	0.828643	99.9966	3.03297	0.0312437	0.207694	0.440677	100*	93.4992*	15.0716
H2S	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Nitrogen	0.393000*	0.391603	0.00764442	5.96932E-05	0.125826	0.000862320	0.0219998*	0.000796349*	0.0154807	2.21371E-06	0.189036	2.38063E-05	0.391568	0.125826	0*	0.00332925*	0.332464
Carbon Dioxide	0.202000*	0.201012	0.0332672	0.00122453	0.297169	0.0181227	0.0139999*	0.253741*	0.270341	0.000752566	1.55292	0.00365535	0.201024	0.297169	0*	1.83593*	0.170894
Methane	82.7506*	82.4479	4.76633	0.0249205	64.4381	1.34194	4.97995*	5.77076*	22.8802	0.00182942	75.9418	0.106500	82.4455	64.4381	0*	3.72155*	70.0053
Ethane	12.4590*	12.4230	4.29995	0.00538150	24.1555	3.16050	5.23595*	52.4531*	38.6629	0.000568902	15.8279	1.12407	12.4245	24.1555	0*	0.915083*	10.5558
Propane	2.92870*	2.93033	3.77447	0.000852097	7.08279	3.58462	5.28795*	26.1239*	22.3916	6.56534E-05	2.58646	2.50584	2.93089	7.08279	0*	0.0232964*	2.49560
Isobutane	0.344600*	0.347723	1.11973	6.95782E-05	0.868304	1.13416	1.72798*	3.75794*	3.47048	3.82509E-06	0.216247	1.00015	0.347792	0.868304	0*	0.000487851*	0.297529
n-Butane	0.554601*	0.563577	2.62348	0.000141513	1.41493	2.69283	4.22196*	6.44268*	5.97637	1.00653E-05	0.432304	2.50449	0.563691	1.41493	0*	0.000878413*	0.483911
2,2-Dimethylpropane	0*	0.000481764	0.00288306	5.73861E-08	0.00119731	0.00297980	0.117999*	0.00513892*	0.00517823	2.00521E-09	0.000182134	0.00285370	0.000481859	0.00119731	0*	1.22468E-07*	0.000414985
Isopentane	0.154500*	0.162623	1.82849	2.78500E-05	0.400010	1.91047	3.18197*	1.80339*	1.81908	1.43043E-06	0.0868881	1.91571	0.162654	0.400010	0*	4.56495E-05*	0.141862
n-Pentane	0.110500*	0.120637	1.81850	7.85328E-06	0.297277	1.90580	3.62196*	1.34273*	1.37589	1.66423E-07	0.0252801	1.93620	0.120660	0.297277	0*	3.91209E-06*	0.106195
2,2-Dimethylbutane	0*	0.000811060	0.0189624	4.93076E-08	0.00198131	0.0199369	0.206998*	0.00879014*	0.00928685	9.46055E-10	0.000159049	0.0205478	0.000811216	0.00198131	0*	1.37167E-08*	0.000727983
Cyclopentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane	0*	0.00128424	0.0405550	1.78733E-07	0.00311979	0.0427033	0.333997*	0.0137651*	0.0147590	7.57471E-09	0.000562899	0.0443062	0.00128449	0.00311979	0*	7.97547E-08*	0.00117462
2-Methylpentane	0*	0.00828268	0.290120	7.35752E-07	0.0200424	0.305619	2.17098*	0.0880668*	0.0952386	2.12809E-08	0.00234972	0.317687	0.00828425	0.0200424	0*	1.99927E-07*	0.00763503
3-Methylpentane	0*	0.00558866	0.217911	1.24181E-06	0.0135134	0.229640	1.47799*	0.0594305*	0.0643330	8.52296E-08	0.00380375	0.239122	0.00558972	0.0135134	0*	7.17863E-07*	0.00519787
n-Hexane	0.102500*	0.103432	5.21322	4.42881E-06	0.247748	5.49817	3.40097*	1.12728*	1.18928	6.45597E-08	0.0143529	5.74533	0.103451	0.247748	0*	4.29266E-07*	0.0986520
Methylcyclopentane	0*	0.00265093	0.133634	1.00408E-06	0.00644664	0.140933	0.718993*	0.0263001*	0.0309293	1.09640E-07	0.00294167	0.147243	0.00265143	0.00644664	0*	6.63654E-07*	0.00252860
Benzene	0*	0.000451041	0.0261230	1.58206E-05	0.00110337	0.0275588	0.124999*	0.00348292*	0.00531958	1.44799E-05	0.00442360	0.0288345	0.000451128	0.00110337	0*	5.92708E-05*	0.000439603
Cyclohexane	0*	0.00253385	0.184701	2.24839E-06	0.00609749	0.194950	0.720993*	0.0255346*	0.0293472	4.99974E-07	0.00575055	0.204449	0.00253432	0.00609749	0*	2.11605E-06*	0.00253563
2-Methylhexane	0*	0.00855472	0.933049	5.21116E-07	0.0199502	0.985450	2.61697*	0.0243235*	0.0961261	1.04138E-08	0.00167957	1.03646	0.00855624	0.0199502	0*	8.28148E-09*	0.00920353
3-Methylhexane	0*	0.00704655	0.855383	5.18833E-07	0.0164251	0.903528	2.20698*	0.0734381*	0.0794084	1.23296E-08	0.00166576	0.950800	0.00704780	0.0164251	0*	3.22704E-08*	0.00776164
2,2,4-Trimethylpentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Heptane	0*	0.0151682	2.40638	4.62683E-07	0.0349544	2.54247	5.08495*	0.151062*	0.169117	4.99449E-09	0.00150521	2.67861	0.0151708	0.0349544	0*	9.54455E-09*	0.0178831
Methylcyclohexane	0*	0.0101089	1.61887	3.65566E-06	0.0236988	1.71041	3.39797*	0.103689*	0.115120	3.97165E-07	0.0107167	1.80192	0.0101107	0.0236988	0*	7.74439E-07*	0.0119502
Toluene	0*	0.00208826	0.430572	5.19993E-05	0.00492734	0.454998	0.760992*	0.0166638*	0.0240218	4.63014E-05	0.0187852	0.479719	0.00208864	0.00492734	0*	5.44998E-05*	0.00267630
Octane	0*	0.0235905	11.9402	2.83679E-07	0.0524146	12.6224	12.7579*	0.222020*	0.254976	1.31143E-09	0.000928629	13.3318	0.0235943	0.0524146	0*	7.40046E-10*	0.0448677
Ethylbenzene	0*	0.00135115	0.861472	2.88106E-05	0.00305877	0.910734	0.836992*	0.0111907*	0.0149779	2.53243E-05	0.0114908	0.962115	0.00135138	0.00305877	0*	9.98098E-06*	0.00294358
m-Xylene	0*	0.00128059	0.889418	1.70427E-05	0.00288891	0.940294	0.835992*	0.0137466*	0.0141342	1.40446E-05	0.00987385	0.993419	0.00128080	0.00288891	0*	6.58534E-06*	0.00294007
o-Xylene	0*	0.00182745	1.46632	5.74395E-05	0.00412107	1.55023	1.31099*	0.0125424*	0.0202038	5.25784E-05	0.0160394	1.63799	0.00182776	0.00412107	0*	1.36421E-05*	0.00461056
Nonane	0*	0.00685729	10.9668	8.59060E-08	0.0146408	11.5953	8.14292*	0.0604343*	0.0717555	4.05913E-10	0.000281186	12.2563	0.00685833	0.0146408	0*	6.78204E-11*	0.0286375
C10+	0*	0.000597238	41.1372	2.43325E-07	0.00113152	43.4979	24.4798*	0.00324429*	0.00557574	3.64001E-08	0.000680556	45.9926	0.000597309	0.00113152	0*	8.70037E-11*	0.0860919
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water	0*	38.3365	0.0426978	3239.14	0.0108206	0.0318772	0*	1.78304E-06*	0.0192341	3239.11	0.0298823	0.0126431	38.3474	0.0108206	3277.52*	0.0108893*	3277.52
H2S	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Nitrogen	72.2822*	72.2936	0.00345855	0.00193418	0.00308958	0.000368964	0.0168252*	1.66891E-06*	0.000359330	7.17071E-05	0.00186248	9.63351E-06	72.2967	0.00308958	0*	3.87738E-07*	72.2990
Carbon Dioxide	37.1527*	37.1086	0.0150510	0.0396775	0.00729680	0.00775422	0.0107070*	0.000531764*	0.00627504	0.0243773	0.0153001	0.00147918	37.1159	0.00729680	0*	0.000213820*	37.1634
Methane	15219.8*	15220.7	2.15642	0.807475	1.58224	0.574181	3.80862*	0.0120938*	0.531084	0.0592591	0.748216	0.0430967	15222.2	1.58224	0*	0.000433427*	15223.6
Ethane	2291.51*	2293.39	1.94542	0.174372	0.593123	1.35229	4.00440*	0.109926*	0.897425	0.0184280	0.155944	0.454867	2293.99	0.593123	0*	0.000106574*	2295.51
Propane	538.658*	540.967	1.70768	0.0276097	0.173914	1.53376	4.04417*	0.0547478*	0.519742	0.00212666	0.0254831	1.01402	541.141	0.173914	0*	2.71320E-06*	542.703
Isobutane	63.3802*	64.1929	0.506597	0.00225448	0.0213207	0.485276	1.32154*	0.00787552*	0.0805552	0.000123903	0.00213058	0.404721	64.2142	0.0213207	0*	5.68172E-08*	64.7018
n-Butane	102.004*	104.042	1.18694	0.00458531	0.0347429	1.15219	3.22891*	0.0135019*	0.138721	0.000326038	0.00425927	1.01347	104.076	0.0347429	0*	1.02304E-07*	105.233
2,2-Dimethylpropane	0*	0.0889381	0.00130438	1.85943E-06	2.93993E-05	0.00127498	0.0902444*	1.07696E-05*	0.000120195	6.49531E-08	1.79448E-06	0.00115478	0.0889675	2.93993E-05	0*	1.42631E-11*	0.0902444
Isopentane	28.4163*	30.0216	0.827261	0.000902399	0.00982200	0.817439	2.43354*	0.00377936*	0.0422237	4.63348E-05	0.000856064	0.775215	30.0315	0.00982200	0*	5.31653E-09*	30.8498
n-Pentane	20.3236*	22.2707	0.822742	0.000254463	0.00729947	0.815442	2.77004*	0.00281395*	0.0319366	5.39082E-06	0.000249072	0.783506	22.2780	0.00729947	0*	4.55619E-10*	23.0937
2,2-Dimethylbutane	0*	0.149729	0.00857911	1.59767E-06	4.86499E-05	0.00853046	0.158310*	1.84215E-05*	0.000215562	3.06449E-08	1.56702E-06	0.00831490	0.149778	4.86499E-05	0*	1.59750E-12*	0.158310
Cyclopentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane	0*	0.237083	0.0183482	5.79132E-06	7.66045E-05	0.0182716	0.255437*	2.88475E-05*	0.000342579	2.45362E-07	5.54596E-06	0.0179290	0.237160	7.66045E-05	0*	9.28856E-12*	0.255437
2-Methylpentane	0*	1.52906	0.131259	2.38399E-05	0.000492129	0.130766	1.66034*	0.000184562*	0.00221064	6.89338E-07	2.31506E-05	0.128556	1.52955	0.000492129	0*	2.32844E-11*	1.66034
3-Methylpentane	0*	1.03172	0.0985888	4.02372E-05	0.000331813	0.0982570	1.13035*	0.000124548*	0.00149327	2.76078E-06	3.74764E-05	0.0967638	1.03205	0.000331813	0*	8.36053E-11*	1.13035
n-Hexane	18.8522*	19.0945	2.35860	0.000143503	0.00608331	2.35252	2.60103*	0.00236244*	0.0276050	2.09123E-06	0.000141412	2.32492	19.1006	0.00608331	0*	4.99941E-11*	21.4532
Methylcyclopentane	0*	0.489386	0.0604599	3.25343E-05	0.000158293	0.0603016	0.549879*	5.51171E-05*	0.000717916	3.55150E-06	2.89828E-05	0.0595837	0.489545	0.000158293	0*	7.72919E-11*	0.549879
Benzene	0*	0.0832664	0.0118188	0.000512620	2.70926E-05	0.0117917	0.0955978*	7.29916E-06*	0.000123476	0.000469036	4.35835E-05	0.0116682	0.0832935	2.70926E-05	0*	6.90293E-09*	0.0955978
Cyclohexane	0*	0.467772	0.0835638	7.28525E-05	0.000149720	0.0834141	0.551408*	5.35130E-05*	0.000681195	1.61953E-05	5.66572E-05	0.0827329	0.467921	0.000149720	0*	2.46444E-10*	0.551408
2-Methylhexane	0*	1.57928	0.422138	1.68853E-05	0.000489865	0.421648	2.00144*	5.09748E-05*	0.00223124	3.37328E-07	1.65479E-05	0.419416	1.57977	0.000489865	0*	9.64496E-13*	2.00144
3-Methylhexane	0*	1.30086	0.386999	1.68113E-05	0.000403309	0.386596	1.68788*	0.000153904*	0.00184319	3.99384E-07	1.64119E-05	0.384753	1.30126	0.000403309	0*	3.75834E-12*	1.68788
2,2,4-Trimethylpentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Heptane	0*	2.80019	1.08871	1.49919E-05	0.000858285	1.08785	3.88892*	0.000316581*	0.00392547	1.61783E-07	1.48301E-05	1.08393	2.80105	0.000858285	0*	1.11160E-12*	3.88892
Methylcyclohexane	0*	1.86619	0.732421	0.000118451	0.000581910	0.731839	2.59873*	0.000217302*	0.00267212	1.28651E-05	0.000105586	0.729167	1.86677	0.000581910	0*	9.01944E-11*	2.59873
Toluene	0*	0.385512	0.194803	0.00168489	0.000120988	0.194682	0.582000*	3.49223E-05*	0.000557582	0.00149981	0.000185080	0.194124	0.385633	0.000120988	0*	6.34727E-09*	0.582000
Octane	0*	4.35503	5.40206	9.19179E-06	0.00128701	5.40077	9.75710*	0.000465288*	0.00591838	4.24803E-08	9.14931E-06	5.39486	4.35631	0.00128701	0*	8.61889E-14*	9.75710
Ethylbenzene	0*	0.249436	0.389754	0.000933524	7.51063E-05	0.389679	0.640123*	2.34523E-05*	0.000347660	0.000820311	0.000113213	0.389331	0.249511	7.51063E-05	0*	1.16243E-09*	0.640123
m-Xylene	0*	0.236408	0.402398	0.000552218	7.09354E-05	0.402327	0.639358*	2.88087E-05*	0.000328077	0.000454936	9.72820E-05	0.401999	0.236479	7.09354E-05	0*	7.66956E-10*	0.639358
o-Xylene	0*	0.337365	0.663404	0.00186116	0.000101190	0.663303	1.00263*	2.62850E-05*	0.000468961	0.00170313	0.000158028	0.662834	0.337466	0.000101190	0*	1.58881E-09*	1.00263
Nonane	0*	1.26592	4.96170	2.78353E-06	0.000359497	4.96134	6.22763*	0.000126652*	0.00166556	1.31484E-08	2.77039E-06	4.95968	1.26628	0.000359497	0*	7.89864E-15*	6.22763
C10+	0*	0.110256	18.6116	7.88425E-06	2.77837E-05	18.6116	18.7219*	6.79906E-06*	0.000129421	1.17908E-06	6.70517E-06	18.6115	0.110284	2.77837E-05	0*	1.01328E-14*	18.7219
Mass Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water	0*	0.192681	0.0136210	99.9618	0.341469	0.0102730	0*	0.000398747*	0.421629	99.9945	2.74191	0.00413526	0.192705	0.341469	100*	90.8702*	13.9765
H2S	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Nitrogen	0.570012*	0.565002	0.00171563	9.28167E-05	0.151610	0.000184895	0.00575889*	0.000580354*	0.0122483	3.44220E-06	0.265739	4.89957E-06	0.564937	0.151610	0*	0.00503135*	0.479413
Carbon Dioxide	0.460281*	0.455624	0.0117294	0.00299125	0.562523	0.00610464	0.00575738*	0.290509*	0.336032	0.00183840	3.42957	0.00118189	0.455641	0.562523	0*	4.35888*	0.387145
Methane	68.7333*	68.1223	0.612586	0.0221903	44.4635	0.164776	0.746536*	2.40839*	10.3670	0.00162905	61.1359	0.0125523	68.1185	44.4635	0*	3.22083*	57.8097
Ethane	19.3967*	19.2390	1.03584	0.00898171	31.2410	0.727387	1.47119*	41.0312*	32.8349	0.000949525	23.8829	0.248320	19.2409	31.2410	0*	1.48441*	16.3385
Propane	6.68646*	6.65505	1.33341	0.00208555	13.4335	1.20984	2.17890*	29.9679*	27.8870	0.000160695	5.72328	0.811800	6.65613	13.4335	0*	0.0554189*	5.66460
Isobutane	1.03701*	1.04091	0.521396	0.000224466	2.17072	0.504553	0.938504*	5.68219*	5.69709	1.23405E-05	0.630721	0.427076	1.04109	2.17072	0*	0.00152969*	0.890164
n-Butane	1.66897*	1.68707	1.22161	0.000456534	3.53727	1.19796	2.29303*	9.74164*	9.81074	3.24728E-05	1.26088	1.06945	1.68737	3.53727	0*	0.00275431*	1.44779
2,2-Dimethylpropane	0*	0.00179020	0.00166646	2.29811E-07	0.00371558	0.00164554	0.0795539*	0.00964548*	0.0105519	8.03041E-09	0.000659424	0.00151265	0.00179051	0.00371558	0*	4.76675E-07*	0.00154121
Isopentane	0.577143*	0.604294	1.05690	0.000111530	1.24134	1.05502	2.14526*	3.38487*	3.70683	5.72855E-06	0.314582	1.01545	0.604395	1.24134	0*	0.000177680*	0.526857
n-Pentane	0.412778*	0.448277	1.05113	3.14497E-05	0.922532	1.05244	2.44190*	2.52023*	2.80372	6.66488E-07	0.0915275	1.02631	0.448353	0.922532	0*	1.52269E-05*	0.394397
2,2-Dimethylbutane	0*	0.00359977	0.0130915	2.35848E-07	0.00734388	0.0131502	0.166688*	0.0197062*	0.0226034	4.52532E-09	0.000687791	0.0130091	0.00360037	0.00734388	0*	6.37683E-08*	0.00322926
Cyclopentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane	0*	0.00569992	0.0279988	8.54916E-07	0.0115637	0.0281667	0.268955*	0.0308592*	0.0359221	3.62326E-08	0.00243421	0.0280510	0.00570086	0.0115637	0*	3.70776E-07*	0.00521050
2-Methylpentane	0*	0.0367615	0.200297	3.51925E-06	0.0742887	0.201583	1.74821*	0.197432*	0.231803	1.01794E-07	0.0101611	0.201133	0.0367674	0.0742887	0*	9.29454E-07*	0.0338682
3-Methylpentane	0*	0.0248045	0.150444	5.93982E-06	0.0500884	0.151468	1.19017*	0.133234*	0.156581	4.07684E-07	0.0164490	0.151392	0.0248085	0.0500884	0*	3.33731E-06*	0.0230572
n-Hexane	0.457333*	0.459067	3.59916	2.11839E-05	0.918298	3.62654	2.73867*	2.52719*	2.89460	3.08812E-07	0.0620677	3.63746	0.459140	0.918298	0*	1.99564E-06*	0.437611
Methylcyclopentane	0*	0.0114905	0.0901018	4.69037E-06	0.0233360	0.0907836	0.565435*	0.0575816*	0.0735182	5.12181E-07	0.0124234	0.0910412	0.0114924	0.0233360	0*	3.01313E-06*	0.0109542
Benzene	0*	0.00181456	0.0163475	6.85922E-05	0.00370706	0.0164766	0.0912383*	0.00707757*	0.0117359	6.27816E-05	0.0173395	0.0165474	0.00181486	0.00370706	0*	0.000249764*	0.00176757
Cyclohexane	0*	0.0109830	0.124533	1.05029E-05	0.0220721	0.125579	0.567007*	0.0559057*	0.0697577	2.33561E-06	0.0242860	0.126412	0.0109848	0.0220721	0*	9.60731E-06*	0.0109847
2-Methylhexane	0*	0.0441490	0.749019	2.89832E-06	0.0859832	0.755790	2.45036*	0.0634054*	0.272044	5.79211E-08	0.00844536	0.763008	0.0441556	0.0859832	0*	4.47669E-08*	0.0474711
3-Methylhexane	0*	0.0363656	0.686671	2.88562E-06	0.0707905	0.692961	2.06647*	0.191435*	0.224732	6.85766E-08	0.00837593	0.699947	0.0363711	0.0707905	0*	1.74443E-07*	0.0400339
2,2,4-Trimethylpentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Heptane	0*	0.0782796	1.93176	2.57333E-06	0.150650	1.94995	4.76121*	0.393782*	0.478614	2.77790E-08	0.00756865	1.97190	0.0782911	0.150650	0*	5.15946E-08*	0.0922395
Methylcyclohexane	0*	0.0511200	1.27343	1.99229E-05	0.100084	1.28541	3.11762*	0.264854*	0.319244	2.16456E-06	0.0528025	1.29982	0.0511278	0.100084	0*	4.10213E-06*	0.0603981
Toluene	0*	0.00990977	0.317833	0.000265934	0.0195274	0.320879	0.655203*	0.0399427*	0.0625126	0.000236802	0.0868559	0.324734	0.00991130	0.0195274	0*	0.000270900*	0.0126933
Octane	0*	0.138787	10.9269	1.79861E-06	0.257523	11.0359	13.6178*	0.659767*	0.822612	8.31516E-09	0.00532305	11.1882	0.138806	0.257523	0*	4.56043E-09*	0.263820
Ethylbenzene	0*	0.00738796	0.732715	0.000169773	0.0139675	0.740055	0.830342*	0.0309073*	0.0449111	0.000149234	0.0612174	0.750427	0.00738901	0.0139675	0*	5.71646E-05*	0.0160863
m-Xylene	0*	0.00700211	0.756484	0.000100428	0.0131918	0.764075	0.829350*	0.0379664*	0.0423813	8.27638E-05	0.0526031	0.774843	0.00700310	0.0131918	0*	3.77166E-05*	0.0160671
o-Xylene	0*	0.00999231	1.24716	0.000338476	0.0188184	1.25970	1.30057*	0.0346405*	0.0605810	0.000309841	0.0854505	1.27760	0.00999372	0.0188184	0*	7.81330E-05*	0.0251961
Nonane	0*	0.0452966	11.2686	6.11553E-07	0.0807665	11.3828	9.75909*	0.201642*	0.259927	2.88973E-09	0.00180973	11.5488	0.0453023	0.0807665	0*	4.69253E-10*	0.189064
C10+	0*	0.00550911	59.0259	2.41890E-06	0.00871659	59.6286	40.9692*	0.0151161*	0.0282046	3.61866E-07	0.00611650	60.5179	0.00550962	0.00871659	0*	8.40632E-10*	0.793701
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0*	690.644	0.769212	58354.1	0.194935	0.574277	0*	3.21220E-05*	0.346507	58353.6	0.538338	0.227769	690.839	0.194935	59045.5*	0.196174*	59045.5
H2S	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0
Nitrogen	2024.87*	2025.19	0.0968857	0.0541831	0.0865498	0.0103359	0.471332*	4.67518E-05*	0.0100661	0.00200876	0.0521743	0.000269867	2025.28	0.0865498	0*	1.08619E-05*	2025.34
Carbon Dioxide	1635.07*	1633.13	0.662388	1.74618	0.321129	0.341259	0.471208*	0.0234027*	0.276161	1.07283	0.673351	0.0650981	1633.45	0.321129	0*	0.00941011*	1635.54
Methane	244163*	244177	34.5943	12.9539	25.3830	9.21127	61.0996*	0.194014*	8.51989	0.950662	12.0032	0.691377	244202	25.3830	0*	0.00695324*	244224

Ethane	68903.5*	68960.2	58.4968	5.24320	17.8346	40.6621	120.409*	3.30537*	26.9847	0.554112	4.68909	13.6774	68978.0	17.8346	0*	0.00320459*	69023.9	
Propane	23752.5*	23854.3	75.3010	1.21747	7.66883	67.6322	178.330*	2.41414*	22.9184	0.0937765	1.12369	44.7138	23862.0	7.66883	0*	0.000119640*	23930.8	
Isobutane	3683.80*	3731.03	29.4445	0.131035	1.23921	28.2053	76.8111*	0.457743*	4.68204	0.00720152	0.123834	23.5233	3732.27	1.23921	0*	3.30234E-06*	3760.61	
n-Butane	5928.71*	6047.13	68.9873	0.286508	2.01933	66.9679	187.671*	0.784762*	8.06276	0.0189501	0.247558	58.9052	6049.15	2.01933	0*	5.94611E-06*	6116.38	
2,2-Dimethylpropane	0*	6.41678	0.0941093	0.000134156	0.00212112	0.0919882	6.51102*	0.000777016*	0.00867189	4.68629E-06	0.000129469	0.0833163	6.41890	0.00212112	0*	1.02906E-09*	6.51102	
Isopentane	2050.20*	2166.02	59.6859	0.0651070	0.708645	58.9772	175.577*	0.272676*	3.04639	0.00334300	0.0617640	55.9308	2166.73	0.708645	0*	3.83581E-07*	2225.78	
n-Pentane	1466.32*	1606.80	59.3598	0.0183592	0.526648	58.8332	199.855*	0.203023*	2.30419	0.000388941	0.0179702	56.5290	1607.33	0.526648	0*	3.28723E-08*	1666.18	
2,2-Dimethylbutane	0*	12.9030	0.739308	0.000137680	0.00419242	0.735116	13.6424*	0.00158748*	0.0185761	2.64083E-06	0.000135039	0.716540	12.9072	0.00419242	0*	1.37665E-10*	13.6424	
Cyclopentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0	
2,3-Dimethylbutane	0*	20.4307	1.58116	0.000499069	0.00660142	1.57456	22.0124*	0.00248594*	0.0295218	2.11442E-05	0.000477925	1.54504	20.4373	0.00660142	0*	8.00445E-10*	22.0124	
2-Methylpentane	0*	131.767	11.3113	0.00205441	0.0424094	11.2688	143.081*	0.0159047*	0.190502	5.94039E-05	0.00199501	11.0783	131.810	0.0424094	0*	2.00654E-09*	143.081	
3-Methylpentane	0*	88.9088	8.49593	0.00346745	0.0285941	8.46733	97.4082*	0.0107330*	0.128683	0.000237911	0.00322954	8.33865	88.9374	0.0285941	0*	7.20472E-09*	97.4082	
n-Hexane	1624.60*	1645.47	203.254	0.0123664	0.524231	202.729	224.144*	0.203584*	2.37887	0.000180213	0.0121862	200.351	1646.00	0.524231	0*	4.30826E-09*	1848.74	
Methylcyclopentane	0*	41.1865	5.08827	0.00273807	0.0133219	5.07495	46.2775*	0.00463883*	0.0604194	0.000298892	0.00243918	5.01453	41.1998	0.0133219	0*	6.50485E-09*	46.2775	
Benzene	0*	6.50409	0.923186	0.0400417	0.00211626	0.921070	7.46732*	0.000570151*	0.00964490	0.0366373	0.00340439	0.911425	6.50621	0.00211626	0*	5.39200E-07*	7.46732	
Cyclohexane	0*	39.3674	7.03268	0.00613123	0.0126004	7.02008	46.4062*	0.00450362*	0.0573290	0.00136299	0.00476824	6.96275	39.3800	0.0126004	0*	2.07406E-08*	46.4062	
2-Methylhexane	0*	158.247	42.2990	0.00169194	0.0490854	42.2499	200.548*	0.00510778*	0.223574	3.38009E-05	0.00165814	42.0263	158.296	0.0490854	0*	9.66443E-11*	200.548	
3-Methylhexane	0*	130.349	38.7781	0.00168452	0.0404123	38.7376	169.128*	0.0154215*	0.184691	4.00191E-05	0.00164450	38.5529	130.389	0.0404123	0*	3.76593E-10*	169.128	
2,2,4-Trimethylpentane	0*	0	0	0	0	0	0*	0*	0	0	0	0	0	0	0*	0*	0	
Heptane	0*	280.585	109.091	0.00150222	0.0860018	109.005	389.677*	0.0317221*	0.393340	1.62109E-05	0.00148601	108.612	280.671	0.0860018	0*	1.11384E-10*	389.677	
Methylcyclohexane	0*	183.234	71.9135	0.0116302	0.0571355	71.8564	255.159*	0.0213360*	0.262364	0.00126317	0.0103671	71.5940	183.291	0.0571355	0*	8.85583E-09*	255.159	
Toluene	0*	35.5205	17.9488	0.155243	0.0111476	17.9377	53.6245*	0.00321768*	0.0513747	0.138190	0.0170530	17.8863	35.5316	0.0111476	0*	5.84828E-07*	53.6245	
Octane	0*	497.468	617.069	0.00104996	0.147013	616.922	1114.54*	0.00631491*	0.673048	4.85246E-06	0.00104511	616.246	497.615	0.147013	0*	9.84523E-12*	1114.54	
Ethylbenzene	0*	26.4813	41.3782	0.0991075	0.00797366	41.3703	67.9587*	0.00248981*	0.0369093	0.0870883	0.0120192	41.3334	26.4893	0.00797366	0*	1.23409E-07*	67.9587	
m-Xylene	0*	25.0983	42.7206	0.0586262	0.00753086	42.7130	67.8775*	0.00305848*	0.0348303	0.0482983	0.0103279	42.6782	25.1058	0.00753086	0*	8.14239E-08*	67.8775	
o-Xylene	0*	35.8163	70.4303	0.197590	0.0107429	70.4196	106.444*	0.00279055*	0.0497873	0.180813	0.0167771	70.3698	35.8271	0.0107429	0*	1.68676E-07*	106.444	
Nonane	0*	162.361	636.364	0.000357002	0.0461073	636.317	798.725*	0.0162438*	0.213616	1.68635E-06	0.000355316	636.104	162.407	0.0461073	0*	1.01304E-12*	798.725	
C10+	0*	19.7468	3333.34	0.00141207	0.00497606	3333.34	3353.09*	0.00121771*	0.0231794	0.000211173	0.00120090	3333.31	19.7518	0.00497606	0*	1.81479E-12*	3353.09	

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**		**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved		Solved	Solved	Solved
Phase: **Total**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Property	**Units**																	
Temperature	°F	85*	70*	70	70	70	70*	85*	75.9425*	75.94*	75.94	75.94*	75.94	69.9998	70*	85*	75.9425*	83.7625
Pressure	psig	1000*	169*	169	169	50	50*	1000*	5.42413	0*	0	0*	0	169	169*	1000*	-14.2211	1000
Mole Fraction Vapor	%	100	100	0	0	100	0	0	100*	100	0	100	0	100	99.6825	0	100*	84.6158
Mole Fraction Light Liquid	%	0	0	100	100	0	100	100	0	0	100	0	100	0	0.0824820	100	0	0.355167
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.235041	0	0	15.0290
Molecular Weight	lb/lbmol	19.3141	19.4161	124.821	18.0162	23.2493	130.650	107.015	38.4394	35.4061	18.0157	19.9277	136.113	19.4166	23.2493	18.0153	18.5365	19.4268
Mass Density	lb/ft^3	4.10923	0.654394	46.4177	62.2670	0.270384	46.6585	44.8897	0.136978	0.0915135	62.2226	0.0511199	46.7261	0.654413	0.802524	62.1852	0.00153204	4.85556
Molar Flow	lbmol/h	18392.4	18460.9	45.2428	3240.21	2.45544	42.7873	76.4790	0.209570	2.32115	3239.22	0.985249	40.4662	18463.4	2.45544	3277.52	0.0116464	21746.4
Mass Flow	lb/h	355233	358439	5647.25	58376.4	57.0872	5590.16	8184.42	8.05575*	82.1830	58356.8	19.6337	5507.98	358496	57.0872	59045.5	0.215884*	422463
Vapor Volumetric Flow	ft^3/h	86447.5	547742	121.661	937.517	211.126	119.810	182.323	58.8106	898.043	937.871	384.072	117.878	547813	71.1346	949.511	140.913	87006.0
Liquid Volumetric Flow	gpm	10777.9	68289.9	15.1682	116.885	26.3222	14.9374	22.7312	7.33223	111.964	116.929	47.8842	14.6965	68298.8	8.86873	118.381	17.5683	10847.5
Std Vapor Volumetric Flow	MMSCFD	167.511*	168.135	0.412054	29.5106	0.0223632	0.389691	0.696542	0.00190868	0.0211402	29.5016	0.00897327	0.368551	168.157	0.0223632	29.8504	0.000106071	198.058
Std Liquid Volumetric Flow	sgpm	2166.47	2175.42	15.3656	116.782	0.319350	15.0463	23.0608*	0.0364026	0.375768	116.667	0.115412	14.6705	2175.74	0.319350	118.036*	0.000480057	2307.57
Compressibility		0.815931	0.958855	0.0869030	0.00935054	0.978634	0.0318703	0.413845	0.982295	0.989188	0.000740266	0.996671	0.00744777	0.958853	0.936229	0.0502914	0.999551	0.696128
Specific Gravity		0.666864	0.670384	0.744244	0.998365	0.802735	0.748104	0.719743	1.32721	1.22248	0.997652	0.688048	0.749188	0.670402		0.997052	0.640015	
API Gravity				57.4465	10.0321		56.5038	61.8927			10.0025		55.5964			9.87799		
Enthalpy	Btu/h	-6.28178E+08	-6.24978E+08	-4.67114E+06	-3.98466E+08	-87787.5	-4.57732E+06	-6.99484E+06	-8853.19	-96880.8	-3.98112E+08	-36941.7	-4.45241E+06	-6.25066E+08	-88245.4	-4.02134E+08	-1186.29	-1.03731E+09
Mass Enthalpy	Btu/lb	-1768.36	-1743.61	-827.153	-6825.81	-1537.78	-818.816	-854.654	-1098.99	-1178.84	-6822.03	-1881.54	-808.357	-1743.58	-1545.80	-6810.58	-5495.05	-2455.38
Mass Cp	Btu/(lb*°F)	0.660484	0.511072	0.485034	0.982121	0.467613	0.482835	0.500250	0.411792	0.419433	0.981760	0.479015	0.484332	0.511068	0.487639	0.979420	0.440314	0.704547
Ideal Gas CpCv Ratio		1.26246	1.26525	1.04442	1.32582	1.22877	1.04245	1.05070	1.14501	1.15547	1.32555	1.26384	1.04034	1.26525	1.22877	1.32512	1.32170	1.26659
Dynamic Viscosity	cP	0.0130477	0.0108522	0.702895	0.995400	0.0102330	0.776742	0.503007	0.00877709	0.00905050	0.924420	0.0108398	0.814592	0.0108521		0.840378	0.0103076	
Kinematic Viscosity	cSt	0.198223	1.03528	0.945334	0.997973	2.36256	1.03926	0.699531	4.00018	6.17400	0.927472	13.2377	1.08833	1.03524		0.843659	420.016	
Thermal Conductivity	Btu/(h*ft*°F)	0.0226402	0.0181489	0.0694775	0.346565	0.0161104	0.0697646	0.0676959	0.0113062	0.0123836	0.349776	0.0173933	0.0697704	0.0181487		0.353848	0.0122565	
Surface Tension	lbf/ft			0.00155805?	0.00502983?		0.00164859	0.000843943			0.004987627		0.00167509			0.00492045		
Net Ideal Gas Heating Value	Btu/ft^3	1063.41	1066.38	6251.21	0.349793	1258.32	6537.73	5383.32	2026.66	1864.67	0.0349621	1035.43	6805.78	1066.41	1258.32	0	49.2475	918.329
Net Liquid Heating Value	Btu/lb	20847.1	20792.4	18844.6	-1052.01	20450.2	18828.2	18916.9	19855.0	19840.1	-1058.97	19636.5	18813.1	20792.4	20450.2	-1059.76	39.6246	17747.9
Gross Ideal Gas Heating Value	Btu/ft^3	1174.74	1177.95	6701.70	50.6793	1383.64	7006.88	5781.79	2206.77	2033.36	50.3466	1144.68	7292.17	1177.97	1383.64	50.3101	101.461	1021.48
Gross Liquid Heating Value	Btu/lb	23034.6	22973.0	20213.7	8.10344	22495.6	20190.4	20328.5	21633.0	21648.0	0.799629	21717.0	20168.7	22972.9	22495.6	0	1108.55	19762.8

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**		**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved		Solved	Solved	Solved
Phase: **Vapor**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water		0	0.207663			0.440677		0.000850811	0.828643		3.03297		0.207694	0.206338		93.4992	0.0730790	
H2S		0	0			0		0	0		0		0	0		0	0	
Nitrogen		0.393000	0.391603			0.125826		0.000796349	0.0154807		0.189036		0.391568	0.126225		0.00332925	0.392657	
Carbon Dioxide		0.202000	0.201012			0.297169		0.253741	0.270341		1.55292		0.201024	0.298068		1.83593	0.200670	
Methane		82.7506	82.4479			64.4381		5.77076	22.8802		75.9418		82.4455	64.6399		3.72155	82.6168	
Ethane		12.4590	12.4230			24.1555		52.4531	38.6629		15.8279		12.4245	24.2248		0.915083	12.4159	
Propane		2.92870	2.93033			7.08279		26.1239	22.3916		2.58646		2.93089	7.09760		0.0232964	2.91440	
Isobutane		0.344600	0.347723			0.868304		3.75794	3.47048		0.216247		0.347792	0.868772		0.000487851	0.343795	
n-Butane		0.554601	0.563577			1.41493		6.44268	5.97637		0.432304		0.563691	1.41401		0.000878413	0.554986	
2,2-Dimethylpropane		0	0.000481764			0.00119731		0.00513892	0.00517823		0.000182134		0.000481859	0.00119524		1.22468E-07	0.000473990	
Isopentane		0.154500	0.162623			0.409010		1.80339	1.81908		0.0868881		0.162654	0.397615		4.56495E-05	0.159052	
n-Pentane		0.110500	0.120637			0.297277		1.34273	1.37589		0.0252801		0.120660	0.294621		3.91209E-06	0.117322	
2,2-Dimethylbutane		0	0.000811060			0.00198131		0.00879014	0.00928685		0.000159049		0.000811216	0.00194937		1.37167E-08	0.000783152	
Cyclopentane		0	0			0		0	0		0		0	0		0	0	
2,3-Dimethylbutane		0	0.00128424			0.00311979		0.0137651	0.0147590		0.000562899		0.00128449	0.00304916		7.97547E-08	0.00123492	
2-Methylpentane		0	0.00828268			0.0200424		0.0880668	0.0952386		0.00234972		0.00828425	0.0195335		1.99927E-07	0.00796814	
3-Methylpentane		0	0.00558866			0.0135134		0.0594305	0.0643330		0.00380375		0.00558972	0.0131288		7.17863E-07	0.00536397	
n-Hexane		0.102500	0.103432			0.247748		1.12728	1.18928		0.0143529		0.103451	0.238528		4.29266E-07	0.0995212	
Methylcyclopentane		0	0.00265093			0.00644664		0.0263001	0.0309293		0.00294167		0.00265143	0.00620676		6.63654E-07	0.00251511	
Benzene		0	0.000451041			0.00110337		0.00348292	0.00531958		0.00442360		0.000451128	0.00106130		5.92708E-05	0.000425225	
Cyclohexane		0	0.00253385			0.00649749		0.0255946	0.0293472		0.00575055		0.00253432	0.00580569		2.11605E-06	0.00241142	
2-Methylhexane		0	0.00855472			0.0199502		0.0243235	0.0961261		0.00167957		0.00855624	0.0184277		8.28148E-09	0.00840351	
3-Methylhexane		0	0.00704655			0.0164251		0.0734381	0.0794084		0.00166576		0.00704780	0.0150391		3.22704E-08	0.00693774	
2,2,4-Trimethylpentane		0	0			0		0	0		0		0	0		0	0	
Heptane		0	0.0151682			0.0349544		0.151062	0.169117		0.00150521		0.0151708	0.0312378		9.54455E-09	0.0152937	
Methylcyclohexane		0	0.0101089			0.0236988		0.103689	0.115120		0.0107167		0.0101107	0.0211008		7.74439E-07	0.00989083	
Toluene		0	0.00208826			0.00492734		0.0166638	0.0240218		0.0187852		0.00208864	0.00432799		5.44998E-05	0.00204386	
Octane		0	0.0235905			0.0524146		0.222020	0.254976		0.000928629		0.0235943	0.0380202		7.40046E-10	0.0281663	
Ethylbenzene		0	0.00135115			0.00305877		0.0111907	0.0149779		0.0114908		0.00135138	0.00215231		9.98098E-06	0.00158865	
m-Xylene		0	0.00128059			0.00288891		0.0137466	0.0141342		0.00987385		0.00128080	0.00199668		6.58534E-06	0.00153417	
o-Xylene		0	0.00182745			0.00412107		0.0125424	0.0202038		0.0160394		0.00182776	0.00270699		1.36421E-05	0.00223477	
Nonane		0	0.00685729			0.0146408		0.0604343	0.0717555		0.000281186		0.00685833	0.00660427		6.78204E-11	0.0112331	
C10+		0	0.000597238			0.00113152		0.00324429	0.00557574		0.000680556		0.000597309	2.51794E-05		8.70037E-11	0.00326041	
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0	38.3365			0.0108206		1.78304E-06	0.0192341		0.0298823		38.3474	0.00505041		0.0108893	13.4472	
H2S		0	0			0		0	0		0		0	0		0	0	
Nitrogen		72.2822	72.2936			0.00308958		1.66891E-06	0.000359330		0.00186248		72.2967	0.00308954		3.87738E-07	72.2524	
Carbon Dioxide		37.1527	37.1086			0.00729680		0.000531764	0.00627504		0.0153001		37.1159	0.00729564		0.000213820	36.9251	
Methane		15219.8	15220.7			1.58224		0.0120938	0.531084		0.748216		15222.2	1.58215		0.000433427	15202.2	
Ethane		2291.51	2293.39			0.593123		0.109926	0.897425		0.155944		2293.99	0.592936		0.000106574	2284.64	
Propane		538.658	540.967			0.173914		0.0547478	0.519742		0.0254831		541.141	0.173724		2.71320E-06	536.275	
Isobutane		63.3802	64.1929			0.0213207		0.00787552	0.0805552		0.00213058		64.2142	0.0212644		5.68172E-08	63.2613	

n-Butane	102.004	104.042			0.0347429			0.0135019	0.138721		0.00425927		104.076	0.0346099		1.02304E-07	102.122
2,2-Dimethylpropane	0	0.0889381			2.93993E-05			1.07696E-05	0.000120195		1.79448E-06		0.0889675	2.92553E-05		1.42631E-11	0.0872184
Isopentane	28.4163	30.0216			0.00982200			0.00377936	0.0422237		0.000856064		30.0315	0.00973220		5.31653E-09	29.2669
n-Pentane	20.3236	22.2707			0.00729947			0.00281395	0.0319366		0.000249072		22.2780	0.00721128		4.55619E-10	21.5883
2,2-Dimethylbutane	0	0.149729			4.86499E-05			1.84215E-05	0.000215562		1.56702E-06		0.149778	4.77137E-05		1.59750E-12	0.144107
Cyclopentane	0	0			0			0	0		0		0	0		0	0
2,3-Dimethylbutane	0	0.237083			7.66045E-05			2.88475E-05	0.000342579		5.54596E-06		0.237160	7.46326E-05		9.28856E-12	0.227236
2-Methylpentane	0	1.52906			0.000492129			0.000184562	0.00221064		2.31506E-05		1.52955	0.000478111		2.32844E-11	1.46621
3-Methylpentane	0	1.03172			0.000331813			0.000124548	0.00149327		3.74764E-05		1.03205	0.000321346		8.36053E-11	0.987018
n-Hexane	18.8522	19.0945			0.00608331			0.00236244	0.0276050		0.000141412		19.1006	0.00583831		4.99941E-11	18.3128
Methylcyclopentane	0	0.489386			0.000158293			5.51171E-05	0.000717916		2.89828E-05		0.489545	0.000151919		7.72919E-11	0.462802
Benzene	0	0.0832664			2.70926E-05			7.29916E-06	0.000123476		4.35835E-05		0.0832935	2.59768E-05		6.90293E-09	0.0782451
Cyclohexane	0	0.467772			0.000149720			5.35130E-05	0.000681195		5.66572E-05		0.467921	0.000142103		2.46444E-10	0.443723
2-Methylhexane	0	1.57928			0.000489865			5.09748E-05	0.00223124		1.65479E-05		1.57977	0.000451044		9.64496E-13	1.54632
3-Methylhexane	0	1.30086			0.000403309			0.000153904	0.00184319		1.64119E-05		1.30126	0.000368104		3.75834E-12	1.27661
2,2,4-Trimethylpentane	0	0			0			0	0		0		0	0		0	0
Heptane	0	2.80019			0.000858285			0.000316581	0.00392547		1.48301E-05		2.80105	0.000764591		1.11160E-12	2.81417
Methylcyclohexane	0	1.86619			0.000581910			0.000217302	0.00267212		0.000105586		1.86677	0.000516473		9.01944E-11	1.82000
Toluene	0	0.385512			0.000120988			3.49223E-05	0.000557582		0.000185080		0.385633	0.000105934		6.34727E-09	0.376089
Octane	0	4.35503			0.00128701			0.000465288	0.00591838		9.14931E-06		4.35631	0.000930600		8.61889E-14	5.18284
Ethylbenzene	0	0.249436			7.51063E-05			2.34523E-05	0.000347660		0.000113213		0.249511	5.26810E-05		1.16243E-09	0.292325
m-Xylene	0	0.236408			7.09354E-05			2.88087E-05	0.000328077		9.72820E-05		0.236479	4.88716E-05		7.66956E-10	0.282300
o-Xylene	0	0.337365			0.000101190			2.62850E-05	0.000468961		0.000158028		0.337466	6.62574E-05		1.58881E-09	0.411218
Nonane	0	1.26592			0.000359497			0.000126652	0.00166556		2.77039E-06		1.26628	0.000161649		7.89864E-15	2.06700
C10+	0	0.110256			2.77837E-05			6.79906E-06	0.000129421		6.70517E-06		0.110284	6.16303E-07		1.01328E-14	0.599944
Mass Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water	0	0.192681			0.341469			0.000398747	0.421629		2.74191		0.192705	0.160141		90.8702	0.0678288
H2S	0	0			0			0	0		0		0	0		0	0
Nitrogen	0.570012	0.565002			0.151610			0.000580354	0.0122483		0.265739		0.564937	0.152333		0.00503135	0.566709
Carbon Dioxide	0.460281	0.455624			0.562523			0.290509	0.336032		3.42957		0.455641	0.565125		4.35888	0.454999
Methane	68.7333	68.1223			44.4635			2.40839	10.3670		61.1359		68.1185	44.6740		3.22083	68.2842
Ethane	19.3967	19.2390			31.2410			41.0312	32.8349		23.8829		19.2409	31.3807		1.48441	19.2344
Propane	6.68646	6.65505			13.4335			29.9679	27.8870		5.72328		6.65613	13.4831		0.0554189	6.62102
Isobutane	1.03701	1.04091			2.17072			5.68219	5.69709		0.630721		1.04109	2.17536		0.00152969	1.02949
n-Butane	1.66897	1.68707			3.53727			9.74164	9.81074		1.26088		1.68737	3.54060		0.00275431	1.66190
2,2-Dimethylpropane	0	0.00179020			0.00371558			0.00964548	0.0105519		0.000659424		0.00179051	0.00371509		4.76675E-07	0.00176189
Isopentane	0.577143	0.604294			1.24134			3.38487	3.70683		0.314582		0.604395	1.23588		0.000177680	0.591219
n-Pentane	0.412778	0.448277			0.922532			2.52023	2.80372		0.0915275		0.448353	0.915748		1.52269E-05	0.436103
2,2-Dimethylbutane	0	0.00359977			0.00734388			0.0197062	0.0226034		0.000687791		0.00360037	0.00723704		6.37683E-08	0.00347704
Cyclopentane	0	0			0			0	0		0		0	0		0	0
2,3-Dimethylbutane	0	0.00569992			0.0115637			0.0308592	0.0359221		0.00243421		0.00570086	0.0113200		3.70776E-07	0.00548280
2-Methylpentane	0	0.0367615			0.0742887			0.197432	0.231803		0.0101611		0.0367674	0.0725181		9.29454E-07	0.0353770
3-Methylpentane	0	0.0248045			0.0500884			0.133234	0.156581		0.0164490		0.0248085	0.0487405		3.33731E-06	0.0238150
n-Hexane	0.457333	0.459067			0.918298			2.52719	2.89460		0.0620677		0.459140	0.885533		1.99564E-06	0.441855
Methylcyclopentane	0	0.0114905			0.0233360			0.0575816	0.0735182		0.0124234		0.0114924	0.0225035		3.01313E-06	0.0109054
Benzene	0	0.00181456			0.00370706			0.00707757	0.0117359		0.0173395		0.00181486	0.00357139		0.000249764	0.00171126
Cyclohexane	0	0.0109830			0.0220721			0.0559057	0.0697577		0.0242860		0.0109848	0.0210494		9.60731E-06	0.0104558
2-Methylhexane	0	0.0441490			0.0859832			0.0634054	0.272044		0.00844536		0.0441556	0.0795481		4.47669E-08	0.0433828
3-Methylhexane	0	0.0363656			0.0707905			0.191435	0.224732		0.00837593		0.0363711	0.0649204		1.74443E-07	0.0358158
2,2,4-Trimethylpentane	0	0			0			0	0		0		0	0		0	0
Heptane	0	0.0782796			0.150650			0.393782	0.478614		0.00756865		0.0782911	0.134847		5.15946E-08	0.0789529
Methylcyclohexane	0	0.0511200			0.100084			0.264854	0.319244		0.0528025		0.0511278	0.0892550		4.10213E-06	0.0500338
Toluene	0	0.00990977			0.0195274			0.0399427	0.0625126		0.0868559		0.00991130	0.0171795		0.000270900	0.00970227
Octane	0	0.138787			0.257523			0.659767	0.822612		0.00532305		0.138806	0.187099		4.56043E-09	0.165762
Ethylbenzene	0	0.00738796			0.0139675			0.0309073	0.0449111		0.0612174		0.00738901	0.00984397		5.71646E-05	0.00868940
m-Xylene	0	0.00700211			0.0131918			0.0379664	0.0423813		0.0526031		0.00700310	0.00913215		3.77166E-05	0.00839141
o-Xylene	0	0.00999231			0.0188184			0.0346405	0.0605810		0.0854505		0.00999372	0.0123809		7.81330E-05	0.0122235
Nonane	0	0.0452966			0.0807665			0.201642	0.259927		0.00180973		0.0453023	0.0364907		4.69253E-10	0.0742261
C10+	0	0.00550911			0.00871659			0.0151161	0.0282046		0.00611650		0.00550962	0.000194278		8.40632E-10	0.0300849
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0	690.644			0.194935			3.21220E-05	0.346507		0.538338		690.839	0.0909846		0.196174	242.255
H2S	0	0			0			0	0		0		0	0		0	0
Nitrogen	2024.87	2025.19			0.0865498			4.67518E-05	0.0100661		0.0521743		2025.28	0.0865484		1.08619E-05	2024.04
Carbon Dioxide	1635.07	1633.13			0.321129			0.0234027	0.276161		0.673351		1633.45	0.321078		0.00941011	1625.06
Methane	244163	244177			25.3830			0.194014	8.51989		12.0032		244202	25.3816		0.00695324	243881
Ethane	68903.5	68960.2			17.8346			3.30537	26.9847		4.68909		68978.0	17.8290		0.00320459	68697.0
Propane	23752.5	23854.3			7.66883			2.41414	22.9184		1.12369		23862.0	7.66046		0.000119640	23647.4
Isobutane	3683.80	3731.03			1.23921			0.457743	4.68204		0.123834		3732.27	1.23594		3.30234E-06	3676.89
n-Butane	5928.71	6047.13			2.01933			0.784762	8.06276		0.247558		6049.15	2.01160		5.94611E-06	5935.58
2,2-Dimethylpropane	0	6.41678			0.00212112			0.000777016	0.00867189		0.000129469		6.41890	0.00211074		1.02906E-09	6.29270
Isopentane	2050.20	2166.02			0.708645			0.272676	3.04639		0.0617640		2166.73	0.702166		3.83581E-07	2111.57
n-Pentane	1466.32	1606.80			0.526648			0.203023	2.30419		0.0179702		1607.33	0.520285		3.28723E-08	1557.57
2,2-Dimethylbutane	0	12.9030			0.00419242			0.00158748	0.0185761		0.000135039		12.9072	0.00411174		1.37665E-10	12.4185
Cyclopentane	0	0			0			0	0		0		0	0		0	0
2,3-Dimethylbutane	0	20.4307			0.00660142			0.00248594	0.0295218		0.000477925		20.4373	0.00643149		8.00445E-10	19.5822
2-Methylpentane	0	131.767			0.0424094			0.0159047	0.190502		0.00199501		131.810	0.0412014		2.00654E-09	126.351
3-Methylpentane	0	88.9088			0.0285941			0.0107330	0.128683		0.00322954		88.9374	0.0276921		7.20472E-09	85.0567
n-Hexane	1624.60	1645.47			0.524231			0.203584	2.37887		0.0121862		1646.00	0.503118		4.30826E-09	1578.11
Methylcyclopentane	0	41.1865			0.0133219			0.00463863	0.0604194		0.00243918		41.1998	0.0127855		6.50485E-09	38.9491
Benzene	0	6.50409			0.00211626			0.000570151	0.00964490		0.00340439		6.50621	0.00202909		5.39200E-07	6.11187
Cyclohexane	0	39.3674			0.0126004			0.00450362	0.0573290		0.00476824		39.3800	0.0119593		2.07406E-08	37.3435
2-Methylhexane	0	158.247			0.0490854			0.00510778	0.223574		0.00165814		158.296	0.0451955		9.66443E-11	154.944
3-Methylhexane	0	130.349			0.0404123			0.0154215	0.184691		0.00164450		130.389	0.0368847		3.76593E-10	127.918
2,2,4-Trimethylpentane	0	0			0			0	0		0		0	0		0	0
Heptane	0	280.585			0.0860018			0.0317221	0.393340		0.00148601		280.671	0.0766135		1.11384E-10	281.985
Methylcyclohexane	0	183.234			0.0571355			0.0213360	0.262364		0.0103671		183.291	0.0507105		8.85583E-09	178.699
Toluene	0	35.5205			0.0111476			0.00321768	0.0513747		0.0170530		35.5316	0.00976058		5.84828E-07	34.6523
Octane	0	497.468			0.147013			0.0531491	0.676048		0.00104511		497.615	0.106301		9.84523E-12	592.029
Ethylbenzene	0	26.4813			0.00797366			0.00248981	0.0369093		0.0120192		26.4893	0.00559288		1.23409E-07	31.0347
m-Xylene	0	25.0983			0.00753086			0.00305848	0.0348303		0.0103279		25.1058	0.00518845		8.14239E-08	29.9704
o-Xylene	0	35.8163			0.0107429			0.00279055	0.0497873		0.0167771		35.8271	0.00703422		1.68676E-07	43.6569
Nonane	0	162.361			0.0461073			0.0162438	0.213616		0.000355316		162.407	0.0207323		1.01304E-12	265.103
C10+	0	19.7468			0.00497606			0.00121771	0.0231794		0.00120090		19.7518	0.000110380		1.81479E-12	107.450

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Vapor**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Property	**Units**																	
Temperature	°F	85	70			70			75.9425	75.94		75.94		69.9998	70		75.9425	83.7625
Pressure	psig	1000	169			50			5.42413	0		0		169	169		-14.2211	1000
Mole Fraction Vapor	%	100	100			100			100	100		100		100	100		100	100
Mole Fraction Light Liquid	%	0	0			0			0	0		0		0	0		0	0
Mole Fraction Heavy Liquid	%	0	0			0			0	0		0		0	0		0	0
Molecular Weight	lb/lbmol	19.3141	19.4161			23.2493			38.4394	35.4061		19.9277		19.4166	23.2122		18.5365	19.4097
Mass Density	lb/ft^3	4.10923	0.654394			0.270394			0.136978	0.0915135		0.0511199		0.654413	0.798765		0.00153204	4.15753
Molar Flow	lbmol/h	18392.4	18460.9			2.45544			0.209570	2.32115		0.985249		18463.4	2.44764		0.0116464	18400.9
Mass Flow	lb/h	355233	358439			57.0872			8.05575	82.1830		19.6337		358496	56.8153		0.215884	357156
Vapor Volumetric Flow	ft^3/h	86447.5	547742			211.126			58.8106	898.043		384.072		547813	71.1289		140.913	85905.8
Liquid Volumetric Flow	gpm	10777.9	68289.9			26.3222			7.33223	111.964		47.8842		68298.8	8.86802		17.5683	10710.3
Std Vapor Volumetric Flow	MMSCFD	167.511	168.135			0.0223632			0.00190868	0.0211402		0.00897327		168.157	0.0222922		0.000106071	167.588
Std Liquid Volumetric Flow	sgpm	2166.47	2175.42			0.319350			0.0364026	0.375768		0.115412		2175.74	0.318631		0.000480057	2169.87

Compressibility		0.815931	0.958855		0.978634		0.982295	0.989188		0.996671	0.958853	0.939137	0.999551	0.812289
Specific Gravity		0.666864	0.670384		0.802735		1.32721	1.22248		0.688048	0.670402	0.801456	0.640015	0.670165
API Gravity														
Enthalpy	Btu/h	-6.28178E+08	-6.24978E+08		-87787.5		-8853.19	-96880.8		-36941.7	-6.25066E+08	-87376.9	-1186.29	-6.30703E+08
Mass Enthalpy	Btu/lb	-1768.36	-1743.61		-1537.78		-1098.99	-1178.84		-1881.54	-1743.58	-1537.91	-5495.05	-1765.90
Mass Cp	Btu/(lb*°F)	0.660484	0.511072		0.467613		0.411792	0.419433		0.479015	0.511068	0.486631	0.440314	0.662321
Ideal Gas CpCv Ratio		1.26246	1.26525		1.22877		1.14501	1.15547		1.26384	1.26525	1.22907	1.32170	1.26163
Dynamic Viscosity	cP	0.0130477	0.0108522		0.0102330		0.00877709	0.00905050		0.0108398	0.0108521	0.0104321	0.0103076	0.0130517
Kinematic Viscosity	cSt	0.198223	1.03528		2.36256		4.00018	6.17400		13.2377	1.03524	0.815324	420.016	0.195980
Thermal Conductivity	Btu/(h*ft*°F)	0.0226402	0.0181489		0.0161104		0.0113062	0.0123836		0.0173933	0.0181487	0.0165864	0.0122565	0.0226037
Surface Tension	lbf/ft													
Net Ideal Gas Heating Value	Btu/ft^3	1063.41	1066.38		1258.32		2026.66	1864.67		1035.43	1066.41	1258.84	49.2475	1067.40
Net Liquid Heating Value	Btu/lb	20847.1	20792.4		20450.2		19855.0	19840.1		19636.5	20792.4	20493.5	39.6246	20820.6
Gross Ideal Gas Heating Value	Btu/ft^3	1174.74	1177.95		1383.64		2206.77	2033.36		1144.68	1177.97	1384.17	101.461	1179.02
Gross Liquid Heating Value	Btu/lb	23034.6	22973.0		22495.6		21633.0	21648.0		21717.0	22972.9	22542.3	1108.55	23002.9

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Light Liquid**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	HP Compressor Engine	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water				0.0943747	99.9671		0.0745015	0			99.9966		0.0312437		0.0427933	100		0.101959
H2S				0	0		0	0			0		0		0	0		0
Nitrogen				0.00764442	5.96932E-05		0.000862320	0.0219998			2.21371E-06		2.38063E-05		0.00236718	0		0.0471140
Carbon Dioxide				0.0332672	0.00122453		0.0181227	0.0139999			0.000752566		0.00365535		0.0520932	0		0.125847
Methane				4.76633	0.0249205		1.34194	4.97995			0.00182942		0.106500		4.12318	0		23.1241
Ethane				4.29995	0.00538150		3.16050	5.23595			0.000568902		1.12407		9.19822	0		13.4144
Propane				3.77447	0.000852097		3.58462	5.28795			6.56534E-05		2.50584		9.36378	0		8.24277
Isobutane				1.11973	6.95782E-05		1.13416	1.72798			3.82509E-06		1.00015		2.77656	0		1.86033
n-Butane				2.62348	0.000141513		2.69283	4.22196			1.00653E-05		2.50449		6.56626	0		4.01772
2,2-Dimethylpropane				0.00288306	5.73861E-08		0.00297980	0.117999			2.00521E-09		0.00285370		0.00710563	0		0.00391448
Isopentane				1.82849	2.78500E-05		1.91047	3.18197			1.43043E-06		1.91571		4.43364	0		2.04804
n-Pentane				1.81850	7.85328E-06		1.90580	3.62196			1.66423E-07		1.93620		4.35430	0		1.94861
2,2-Dimethylbutane				0.0189624	4.93076E-08		0.0199369	0.206998			9.46055E-10		0.0205478		0.0462245	0		0.0183871
Cyclopentane				0	0		0	0			0		0		0	0		0
2,3-Dimethylbutane				0.0405550	1.78733E-07		0.0427033	0.333997			7.57471E-09		0.0443062		0.0973585	0		0.0365057
2-Methylpentane				0.290120	7.35752E-07		0.305619	2.17098			2.12809E-08		0.317687		0.692153	0		0.251321
3-Methylpentane				0.217911	1.24181E-06		0.229640	1.47799			8.52296E-08		0.239122		0.516812	0		0.185522
n-Hexane				5.21322	4.42881E-06		5.49817	3.40097			6.45597E-08		5.74533		12.0970	0		4.06587
Methylcyclopentane				0.133634	1.00408E-06		0.140933	0.718993			1.09640E-07		0.147243		0.314711	0		0.112698
Benzene				0.0261230	1.58206E-05		0.0275588	0.124999			1.44799E-05		0.0288345		0.0549950	0		0.0217903
Cyclohexane				0.184701	2.24839E-06		0.194950	0.720993			4.99974E-07		0.204449		0.376103	0		0.161335
2-Methylhexane				0.933049	5.21116E-07		0.985450	2.61697			1.04138E-08		1.03646		1.91679	0		0.589238
3-Methylhexane				0.855383	5.18833E-07		0.903528	2.20698			1.23296E-08		0.950800		1.73824	0		0.532469
2,2,4-Trimethylpentane				0	0		0	0			0		0		0	0		0
Heptane				2.40638	4.62683E-07		2.54247	5.08495			4.99449E-09		2.67861		4.62618	0		1.39150
Methylcyclohexane				1.61887	3.65566E-06		1.71041	3.39797			3.97165E-07		1.80192		3.23096	0		1.00813
Toluene				0.430572	5.19993E-05		0.454998	0.760992			4.63014E-05		0.479719		0.743006	0		0.264794
Octane				11.9402	2.83679E-07		12.6224	12.7579			1.31143E-09		13.3318		17.5978	0		5.92243
Ethylbenzene				0.861472	2.88106E-05		0.910734	0.836992			2.53243E-05		0.962115		1.10714	0		0.449474
m-Xylene				0.889418	1.70427E-05		0.940294	0.835992			1.40446E-05		0.993419		1.08934	0		0.461775
o-Xylene				1.46632	5.74395E-05		1.55023	1.31099			5.25784E-05		1.63799		1.72461	0		0.764022
Nonane				10.9668	8.59060E-08		11.5953	8.14292			4.05913E-10		12.2563		9.76884	0		5.38690
C10+				41.1372	2.43325E-07		43.4979	24.4798			3.64001E-08		45.9926		1.34140	0		23.4631
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water				0.0426978	3239.14		0.0318772	0			3239.11		0.0126431		8.66691E-07	3277.52		0.0787494
H2S				0	0		0	0			0		0		0	0		0
Nitrogen				0.00345855	0.00193418		0.000368964	0.0168252			7.17071E-05		9.63351E-06		4.79423E-08	0		0.0363890
Carbon Dioxide				0.0150510	0.0396775		0.00775422	0.0107070			0.0243773		0.00147918		1.05504E-06	0		0.0971993
Methane				2.15642	0.807475		0.574181	3.80862			0.0592591		0.0430967		8.35066E-05	0		17.8601
Ethane				1.94542	0.174372		1.35229	4.00440			0.0184280		0.454867		0.000186291	0		10.3608
Propane				1.70768	0.0276097		1.53376	4.04417			0.00212666		1.01402		0.000189644	0		6.36639
Isobutane				0.506597	0.00225448		0.485276	1.32154			0.000123903		0.404721		5.62335E-05	0		1.43685
n-Butane				1.18694	0.00458531		1.15219	3.22891			0.000326038		1.01347		0.000132986	0		3.10313
2,2-Dimethylpropane				0.00130438	1.85943E-06		0.00127498	0.0902444			6.49531E-08		0.00115478		1.43910E-07	0		0.00302339
Isopentane				0.827261	0.000902399		0.817439	2.43354			4.63348E-05		0.775215		8.97945E-05	0		1.58183
n-Pentane				0.822742	0.000254463		0.815442	2.77004			5.39082E-06		0.783506		8.81875E-05	0		1.50503
2,2-Dimethylbutane				0.00857911	1.59767E-06		0.00853046	0.158310			3.06449E-08		0.00831490		9.36183E-07	0		0.0142015
Cyclopentane				0	0		0	0			0		0		0	0		0
2,3-Dimethylbutane				0.0183482	5.79132E-06		0.0182716	0.255437			2.45362E-07		0.0179290		1.97180E-06	0		0.0281955
2-Methylpentane				0.131259	2.38399E-05		0.130766	1.66034			6.89338E-07		0.128556		1.40181E-05	0		0.194110
3-Methylpentane				0.0985888	4.02372E-05		0.0982570	1.13035			2.76078E-06		0.0967638		1.04670E-05	0		0.143290
n-Hexane				2.35860	0.000143503		2.35252	2.60103			2.09123E-06		2.32492		0.000245000	0		3.14031
Methylcyclopentane				0.0604599	3.25343E-05		0.0603016	0.549879			3.55150E-06		0.0595837		6.37382E-06	0		0.0870434
Benzene				0.0118188	0.000512620		0.0117917	0.0955978			0.000469036		0.0116682		1.11381E-06	0		0.0168300
Cyclohexane				0.0835638	7.28525E-05		0.0834141	0.551408			1.61953E-05		0.0827329		7.61721E-06	0		0.107617
2-Methylhexane				0.422138	1.68853E-05		0.421648	2.00144			3.37328E-07		0.419416		3.88208E-05	0		0.455104
3-Methylhexane				0.386999	1.68113E-05		0.386596	1.68788			3.99384E-07		0.384753		3.52046E-05	0		0.411258
2,2,4-Trimethylpentane				0	0		0	0			0		0		0	0		0
Heptane				1.08871	1.49919E-05		1.08785	3.88892			1.61783E-07		1.08393		9.36939E-05	0		1.07474
Methylcyclohexane				0.732421	0.000118451		0.731839	2.59873			1.28651E-05		0.729167		6.54365E-05	0		0.778639
Toluene				0.194803	0.00168489		0.194682	0.582000			0.00149981		0.194124		1.50481E-05	0		0.204517
Octane				5.40206	9.19179E-06		5.40077	9.75710			4.24803E-08		5.39486		0.000356408	0		4.57425
Ethylbenzene				0.389754	0.000933524		0.389679	0.640123			0.000820311		0.389331		2.24228E-05	0		0.347156
m-Xylene				0.402398	0.000552218		0.402327	0.639358			0.000454936		0.401999		2.20624E-05	0		0.356657
o-Xylene				0.663404	0.00186116		0.663303	1.00263			0.00170313		0.662834		3.49285E-05	0		0.590101
Nonane				4.96170	2.78353E-06		4.96134	6.22763			1.31484E-08		4.95968		0.000197848	0		4.16063
C10+				18.6116	7.88425E-06		18.6116	18.7219			1.17908E-06		18.6115		2.71674E-05	0		18.1219
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water				0.0136210	99.9618		0.0102730	0			99.9945		0.00413526		0.00929632	100		0.0220902
H2S				0	0		0	0			0		0		0	0		0
Nitrogen				0.00171563	9.28167E-05		0.000184895	0.00575889			3.44220E-06		4.89957E-06		0.000799633	0		0.0158725
Carbon Dioxide				0.0117294	0.00299125		0.00610464	0.00575738			0.00183840		0.00118189		0.0276453	0		0.0666070
Methane				0.612586	0.0221903		0.164776	0.746536			0.00162905		0.0125523		0.797622	0		4.46134
Ethane				1.03584	0.00898171		0.727387	1.47119			0.000949525		0.248320		3.33517	0		4.85090
Propane				1.33341	0.00208555		1.20984	2.17890			0.000160695		0.811800		4.97899	0		4.37118
Isobutane				0.521396	0.000224466		0.504553	0.938504			1.23405E-05		0.427076		1.94600	0		1.30036
n-Butane				1.22161	0.000456534		1.19796	2.29303			3.24728E-05		1.06945		4.60209	0		2.80835
2,2-Dimethylpropane				0.00166646	2.29811E-07		0.00164554	0.0795539			8.03041E-09		0.00151265		0.00618196	0		0.00339651
Isopentane				1.05690	0.000111530		1.05502	2.14526			5.72855E-06		1.01545		3.85731	0		1.77704
n-Pentane				1.05113	3.14497E-05		1.05244	2.44190			6.66488E-07		1.02631		3.78828	0		1.69077
2,2-Dimethylbutane				0.0130915	2.35848E-07		0.0131502	0.166688			4.52532E-09		0.0130091		0.0480341	0		0.0190558
Cyclopentane				0	0		0	0			0		0		0	0		0
2,3-Dimethylbutane				0.0279988	8.54916E-07		0.0281667	0.268955			3.62326E-08		0.0280510		0.101170	0		0.0378333
2-Methylpentane				0.200297	3.51925E-06		0.201583	1.74821			1.01794E-07		0.201133		0.719249	0		0.260461
3-Methylpentane				0.150444	5.93982E-06		0.151468	1.19017			4.07684E-07		0.151392		0.537044	0		0.192269
n-Hexane				3.59916	2.11839E-05		3.62654	2.73867			3.08812E-07		3.63746		12.5706	0		4.21373
Methylcyclopentane				0.0901018	4.69037E-06		0.0907836	0.565435			5.12181E-07		0.0910412		0.319381	0		0.114064
Benzene				0.0163475	6.85922E-05		0.0164766	0.0912383			6.27816E-05		0.0165474		0.0518006	0		0.0204696
Cyclohexane				0.124533	1.05029E-05		0.125579	0.567007			2.33561E-06		0.126412		0.381685	0		0.141024
2-Methylhexane				0.749019	2.89832E-06		0.755790	2.45036			5.79211E-08		0.763008		2.31604	0		0.710064
3-Methylhexane				0.686671	2.88562E-06		0.692961	2.06647			6.85766E-08		0.699947		2.10030	0		0.641653

2,2,4-Trimethylpentane			0	0		0	0			0	0		0	0	0				
Heptane			1.93176	2.57333E-06		1.94995	4.76121			2.77790E-08	1.97190		5.58976	0	1.67684				
Methylcyclohexane			1.27343	1.99229E-05		1.28541	3.11762			2.16456E-06	1.29982		3.82539	0	1.19041				
Toluene			0.317833	0.000265934		0.320879	0.655203			0.000236802	0.324734		0.825520	0	0.293413				
Octane			10.9269	1.79861E-06		11.0359	13.6178			8.31516E-09	11.1882		24.2397	0	8.13588				
Ethylbenzene			0.732715	0.000169773		0.740055	0.830342			0.000149234	0.750427		1.41735	0	0.573873				
m-Xylene			0.756484	0.000100428		0.764075	0.829350			8.27638E-05	0.774843		1.39457	0	0.589579				
o-Xylene			1.24716	0.000338476		1.25970	1.30057			0.000309841	1.27760		2.20784	0	0.975478				
Nonane			11.2686	6.11553E-07		11.3828	9.75909			2.88973E-09	11.5488		15.1082	0	8.30890				
C10+			59.0259	2.41890E-06		59.6286	40.9692			3.61866E-07	60.5179		2.89701	0	50.5371				
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Water			0.769212	58354.1		0.574277	0			58353.6	0.227769		1.56137E-05	59045.5	1.41869				
H2S			0	0		0	0			0	0		0	0	0				
Nitrogen			0.0968857	0.0541831		0.0103359	0.471332			0.00200876	0.000269867		1.34303E-06	0	1.01938				
Carbon Dioxide			0.662388	1.74618		0.341259	0.471208			1.07283	0.0650981		4.64318E-05	0	4.27769				
Methane			34.5943	12.9539		9.21127	61.0996			0.950662	0.691377		0.00133965	0	286.520				
Ethane			58.4968	5.24320		40.6621	120.409			0.554112	13.6774		0.00560160	0	311.539				
Propane			75.3010	1.21747		67.6322	178.330			0.0937765	44.7138		0.00836248	0	280.730				
Isobutane			29.4445	0.131035		28.2053	76.8111			0.00720152	23.5233		0.00326842	0	83.5128				
n-Butane			68.9873	0.266508		66.9679	187.671			0.0189501	58.9052		0.00772946	0	180.361				
2,2-Dimethylpropane			0.0941093	0.000134156		0.0919882	6.51102			4.68629E-06	0.0833163		1.03829E-05	0	0.218134				
Isopentane			59.6859	0.0651070		58.9772	175.577			0.00334300	55.9308		0.00647856	0	114.127				
n-Pentane			59.3598	0.0183592		58.8332	199.855			0.000388941	56.5290		0.00636262	0	108.586				
2,2-Dimethylbutane			0.739308	0.000137680		0.735116	13.6424			2.64083E-06	0.716540		8.06759E-05	0	1.22382				
Cyclopentane			0	0		0	0			0	0		0	0	0				
2,3-Dimethylbutane			1.58116	0.000499069		1.57456	22.0124			2.11442E-05	1.54504		0.000169920	0	2.42976				
2-Methylpentane			11.3113	0.00205441		11.2688	143.081			5.94039E-05	11.0783		0.00120802	0	16.7275				
3-Methylpentane			8.49593	0.00346745		8.46733	97.4082			0.000237911	8.33865		0.000901996	0	12.3481				
n-Hexane			203.254	0.0123664		202.729	224.144			0.000180213	200.351		0.0211130	0	270.618				
Methylcyclopentane			5.08827	0.00273807		5.07495	46.2775			0.000298892	5.01453		0.000536418	0	7.32553				
Benzene			0.923186	0.0400417		0.921070	7.46732			0.0366373	0.911425		8.70020E-05	0	1.31462				
Cyclohexane			7.03268	0.00613123		7.02008	46.4062			0.00136299	6.96275		0.000641060	0	9.05695				
2-Methylhexane			42.2990	0.00169194		42.2499	200.548			3.38009E-05	42.0263		0.00388992	0	45.6023				
3-Methylhexane			38.7781	0.00168452		38.7376	169.128			4.00191E-05	38.5529		0.00352757	0	41.2088				
2,2,4-Trimethylpentane			0	0		0	0			0	0		0	0	0				
Heptane			109.091	0.00150222		109.005	389.677			1.62109E-05	108.612		0.00938832	0	107.691				
Methylcyclohexane			71.9135	0.0116302		71.8564	255.159			0.00126317	71.5940		0.00642495	0	76.4515				
Toluene			17.9488	0.155243		17.9377	53.6245			0.138190	17.8863		0.00138651	0	18.8438				
Octane			617.069	0.00104996		616.922	1114.54			4.85246E-06	616.246		0.0407120	0	522.509				
Ethylbenzene			41.3782	0.0991075		41.3703	67.9587			0.0870883	41.3334		0.00238052	0	36.8558				
m-Xylene			42.7206	0.0586262		42.7130	67.8775			0.0482983	42.6782		0.00234225	0	37.8645				
o-Xylene			70.4303	0.197590		70.4196	106.444			0.180813	70.3698		0.00370818	0	62.6480				
Nonane			636.364	0.00357002		636.317	798.725			1.68635E-06	636.104		0.0253750	0	533.821				
C10+			3333.34	0.00141207		3333.34	3353.09			0.000211173	3333.31		0.00486568	0	3245.64				

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**
Phase: **Light Liquid**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Property	**Units**																	
Temperature	°F			70	70		70	85			75.94		75.94		70	85		83.7625
Pressure	psig			169	169		50	1000			0		0		169	1000		1000
Mole Fraction Vapor	%			0	0		0	0			0		0		0	0		0
Mole Fraction Light Liquid	%			100	100		100	100			100		100		100	100		100
Mole Fraction Heavy Liquid	%			0	0		0	0			0		0		0	0		0
Molecular Weight	lb/lbmol			124.821	18.0162		130.650	107.015			18.0157		136.113		82.9288	18.0153		83.1514
Mass Density	lb/ft^3			46.4177	62.2670		46.6585	44.8897			62.2226		46.7261		41.8414	62.1852		42.2558
Molar Flow	lbmol/h			45.2428	3240.21		42.7873	76.4790			3239.22		40.4662		0.00202530	3277.52		77.2360
Mass Flow	lb/h			5647.25	58376.4		5590.16	8184.42			58356.8		5507.98		0.167956	59045.5		6422.29
Vapor Volumetric Flow	ft^3/h			121.661	937.517		119.810	182.323			937.871		117.878		0.00401410	949.511		151.986
Liquid Volumetric Flow	gpm			15.1682	116.885		14.9374	22.7312			116.929		14.6965		0.000500459	118.381		18.9489
Std Vapor Volumetric Flow	MMSCFD			0.412054	29.5106		0.389691	0.696542			29.5016		0.368551		1.84456E-05	29.8504		0.704436
Std Liquid Volumetric Flow	sgpm			15.3656	116.782		15.0463	23.0608			116.667		14.6705		0.000511539	118.036		19.6505
Compressibility				0.0869030	0.00935054		0.0318703	0.413845			0.000740266		0.00744777		0.0640516	0.0502914		0.342382
Specific Gravity				0.744244	0.998365		0.748104	0.719743			0.997652		0.749188		0.670869	0.997052		0.677512
API Gravity				57.4465	10.0321		56.5038	61.8927			10.0025		55.5964		77.7347	9.87799		73.2423
Enthalpy	Btu/h			-4.67114E+06	-3.98466E+08		-4.57732E+06	-6.99484E+06			-3.98112E+08		-4.45241E+06		-158.799	-4.02134E+08		-5.88281E+06
Mass Enthalpy	Btu/lb			-827.153	-6825.81		-818.816	-854.654			-6822.03		-808.357		-945.484	-6810.58		-916.000
Mass Cp	Btu/(lb*°F)			0.485034	0.982121		0.482835	0.500250			0.981760		0.484332		0.522716	0.979420		0.522361
Ideal Gas CpCv Ratio				1.04442	1.32582		1.04245	1.05070			1.32555		1.04034		1.06687	1.32512		1.06500
Dynamic Viscosity	cP			0.702895	0.995400		0.776742	0.503007			0.924420		0.814592		0.308922	0.840378		0.308408
Kinematic Viscosity	cSt			0.945334	0.997973		1.03926	0.699531			0.927472		1.08833		0.460916	0.843659		0.454159
Thermal Conductivity	Btu/(h*ft*°F)			0.0694775	0.346565		0.0697646	0.0676959			0.349776		0.0697704		0.0682176	0.353848		0.0653779
Surface Tension	lbf/ft			0.00155805	0.00502983?		0.00164859	0.000843943			0.00498762?		0.00167509		0.00116097	0.00492045		0.000758266
Net Ideal Gas Heating Value	Btu/ft^3			6251.21	0.349793		6537.73	5383.32			0.0349621		6805.78		4212.13	0		4207.13
Net Liquid Heating Value	Btu/lb			18844.6	-1052.01		18828.2	18916.9			-1058.97		18813.1		19099.8	-1059.76		19046.2
Gross Ideal Gas Heating Value	Btu/ft^3			6701.70	50.6793		7006.88	5781.79			50.3466		7292.17		4541.61	50.3101		4525.28
Gross Liquid Heating Value	Btu/lb			20213.7	8.10344		20190.4	20328.5			0.799629		20168.7		20606.1	0		20497.7

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**
Phase: **Heavy Liquid**	**From Block:**	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water															99.9652			99.8693
H2S															0			0
Nitrogen															1.95012E-05			0.000311830
Carbon Dioxide															0.00181849			0.00431581
Methane															0.0196526			0.107964
Ethane															0.0104080			0.0156746
Propane															0.00202277			0.00188033
Isobutane															0.000168655			0.000111239
n-Butane															0.000344066			0.000235866
2,2-Dimethylpropane															1.37138E-07			7.74217E-08
Isopentane															6.55708E-05			3.21826E-05
n-Pentane															1.83834E-05			1.03857E-05
2,2-Dimethylbutane															1.12438E-07			5.24228E-08
Cyclopentane															0			0
2,3-Dimethylbutane															4.01748E-07			1.71784E-07
2-Methylpentane															1.64030E-06			7.62390E-07
3-Methylpentane															2.75711E-06			1.24152E-06
n-Hexane															9.63445E-06			4.35284E-06
Methylcyclopentane															2.22937E-06			1.03172E-06
Benzene															3.56091E-05			1.59955E-05
Cyclohexane															4.90405E-06			2.09216E-06
2-Methylhexane															1.05036E-06			3.66860E-07
3-Methylhexane															1.03620E-06			3.56386E-07
2,2,4-Trimethylpentane															0			0
Heptane															8.90553E-07			3.42832E-07
Methylcyclohexane															7.17243E-06			2.86200E-06

Toluene															0.000101670			4.26510E-05
Octane															4.21993E-07			2.05517E-07
Ethylbenzene															4.28797E-05			1.96511E-05
m-Xylene															2.47995E-05			1.22716E-05
o-Xylene															7.94222E-05			4.01347E-05
Nonane															7.53211E-08			5.20967E-08
C10+															8.98628E-09			1.99590E-07
Molar Flow	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**
Water															0.00576928			3264.00
H2S															0			0
Nitrogen															1.12547E-09			0.0101915
Carbon Dioxide															1.04950E-07			0.141052
Methane															1.13420E-06			3.52854
Ethane															6.00674E-07			0.512289
Propane															1.16740E-07			0.0614543
Isobutane															9.73356E-09			0.00363560
n-Butane															1.98570E-08			0.00770874
2,2-Dimethylpropane															7.91464E-12			2.53035E-06
Isopentane															3.78428E-09			0.00105181
n-Pentane															1.06096E-09			0.000339434
2,2-Dimethylbutane															6.48910E-12			1.71332E-06
Cyclopentane															0			0
2,3-Dimethylbutane															2.31860E-11			5.61437E-06
2-Methylpentane															9.46664E-11			2.49170E-05
3-Methylpentane															1.59121E-10			4.05761E-05
n-Hexane															5.56031E-10			0.000142262
Methylcyclopentane															1.28663E-10			3.37193E-05
Benzene															2.05510E-09			0.000522775
Cyclohexane															2.83026E-10			6.83775E-05
2-Methylhexane															6.06195E-11			1.19900E-05
3-Methylhexane															5.98022E-11			1.16477E-05
2,2,4-Trimethylpentane															0			0
Heptane															5.13964E-11			1.12047E-05
Methylcyclohexane															4.13941E-10			9.35380E-05
Toluene															5.86768E-09			0.00139395
Octane															2.43544E-11			6.71684E-06
Ethylbenzene															2.47471E-09			0.000642251
m-Xylene															1.43125E-09			0.000401069
o-Xylene															4.58368E-09			0.00131171
Nonane															4.34700E-12			1.70266E-06
C10+															5.18624E-13			6.52313E-06
Mass Fraction	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Water															99.9520			99.8600
H2S															0			0
Nitrogen															3.03200E-05			0.000484845
Carbon Dioxide															0.00444181			0.0105421
Methane															0.0174981			0.0961318
Ethane															0.0173695			0.0261599
Propane															0.00495044			0.00460202
Isobutane															0.000544055			0.000358855
n-Butane															0.00110991			0.000760897
2,2-Dimethylpropane															5.49148E-07			3.10035E-07
Isopentane															0.00026568			0.000128875
n-Pentane															7.36135E-05			4.15898E-05
2,2-Dimethylbutane															5.37770E-07			2.50739E-07
Cyclopentane															0			0
2,3-Dimethylbutane															1.92149E-06			8.21647E-07
2-Methylpentane															7.84528E-06			3.64652E-06
3-Methylpentane															1.31868E-05			5.93819E-06
n-Hexane															4.60799E-05			2.08197E-05
Methylcyclopentane															1.04133E-05			4.81928E-06
Benzene															0.000154376			6.93478E-05
Cyclohexane															2.29065E-05			9.77275E-06
2-Methylhexane															5.84141E-06			2.04030E-06
3-Methylhexane															5.76265E-06			1.98205E-06
2,2,4-Trimethylpentane															0			0
Heptane															4.95265E-06			1.90667E-06
Methylcyclohexane															3.90857E-05			1.55969E-05
Toluene															0.000519920			0.000218116
Octane															2.67535E-06			1.30299E-06
Ethylbenzene															0.000252859			0.000115794
m-Xylene															0.000146126			7.23104E-05
o-Xylene															0.000467978			0.000236494
Nonane															5.36159E-07			3.70854E-07
C10+															8.93259E-08			1.98405E-06
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Water															0.103935			58801.8
H2S															0			0
Nitrogen															3.15282E-08			0.285497
Carbon Dioxide															4.61881E-06			6.20764
Methane															1.81954E-05			56.6065
Ethane															1.80617E-05			15.4040
Propane															5.14771E-06			2.70986
Isobutane															5.65736E-07			0.211309
n-Butane															1.15414E-06			0.448049
2,2-Dimethylpropane															5.71031E-10			0.000182562
Isopentane															2.73031E-07			0.0758870
n-Pentane															7.65470E-08			0.0244898
2,2-Dimethylbutane															5.59201E-10			0.000147646
Cyclopentane															0			0
2,3-Dimethylbutane															1.99807E-09			0.000483821
2-Methylpentane															8.15791E-09			0.00214723
3-Methylpentane															1.37123E-08			0.00349666
n-Hexane															4.79162E-08			0.0122595
Methylcyclopentane															1.08283E-08			0.00283780
Benzene															1.60528E-07			0.0408350
Cyclohexane															2.38194E-08			0.00575461
2-Methylhexane															6.07419E-09			0.00120142
3-Methylhexane															5.99229E-09			0.00116712
2,2,4-Trimethylpentane															0			0
Heptane															5.15002E-09			0.00112273
Methylcyclohexane															4.06433E-08			0.00918412
Toluene															5.40639E-07			0.128436
Octane															2.78197E-09			0.000767254
Ethylbenzene															2.62728E-07			0.0681846
m-Xylene															1.51949E-07			0.0425795
o-Xylene															4.86627E-07			0.139258
Nonane															5.57525E-10			0.000218375
C10+															9.28855E-11			0.00116829

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**

Phase: **Heavy Liquid**	From Block:	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Property	**Units**																	
Temperature	°F														70			83.7625
Pressure	psig														169			1000
Mole Fraction Vapor	%														0			0
Mole Fraction Light Liquid	%														0			0
Mole Fraction Heavy Liquid	%														100			100
Molecular Weight	lb/lbmol														18.0176			18.0170
Mass Density	lb/ft^3														62.2670			62.1003
Molar Flow	lbmol/h														0.00577129			3268.27
Mass Flow	lb/h														0.103985			58884.3
Vapor Volumetric Flow	ft^3/h														0.00166999			948.212
Liquid Volumetric Flow	gpm														0.000208206			118.219
Std Vapor Volumetric Flow	MMSCFD														5.25626E-05			29.7661
Std Liquid Volumetric Flow	sgpm														0.000208039			118.043
Compressibility															0.00935127			0.0504794
Specific Gravity															0.998365			0.995692
API Gravity															10.0321			10.0959
Enthalpy	Btu/h														-709.724			-4.00721E+08
Mass Enthalpy	Btu/lb														-6825.26			-6805.24
Mass Cp	Btu/(lb*°F)														0.982130			0.980534
Ideal Gas CpCv Ratio															1.32579			1.32510
Dynamic Viscosity	cP														0.995341			0.843759
Kinematic Viscosity	cSt														0.997914			0.848210
Thermal Conductivity	Btu/(h*ft*°F)														0.346483			0.351390
Surface Tension	lbf/ft														0.005039987			0.004918097
Net Ideal Gas Heating Value	Btu/ft^3														0.426976			1.29776
Net Liquid Heating Value	Btu/lb														-1050.30			-1031.00
Gross Ideal Gas Heating Value	Btu/ft^3														50.7613			51.6794
Gross Liquid Heating Value	Btu/lb														9.82990			30.1694

Process Streams		Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	LP Separator Gas	LP Separator Oil	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Vapor recovery by VRU (to sale)	Water	Water W/B	Well Stream
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Mixed Liquid**	From Block:	--	3 Phase Separator	3 Phase Separator	3 Phase Separator	2 Phase Separator	2 Phase Separator	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	HP Compressor Engine	--	--	MIX-101
	To Block:	MIX-101	MIX-100	2 Phase Separator	PW Tanks	HP Compressor Engine	Condensate Tanks	MIX-101	--	--	--	--	--	--	MIX-100	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water															74.0086			97.5660
H2S															0			0
Nitrogen															0.000629350			0.00139233
Carbon Dioxide															0.0148782			0.00712154
Methane															1.08561			0.639325
Ethane															2.39710			0.325005
Propane															2.43390			0.192134
Isobutane															0.721384			0.0430573
n-Butane															1.70595			0.0929856
2,2-Dimethylpropane															0.00184591			9.04472E-05
Isopentane															1.15176			0.0473135
n-Pentane															1.13112			0.0449968
2,2-Dimethylbutane															0.0120077			0.000424545
Cyclopentane															0			0
2,3-Dimethylbutane															0.0252908			0.000842956
2-Methylpentane															0.179800			0.00580287
3-Methylpentane															0.134253			0.00428427
n-Hexane															3.14241			0.0938709
Methylcyclopentane															0.0817531			0.00260281
Benzene															0.0143123			0.000518688
Cyclohexane															0.0977030			0.00321879
2-Methylhexane															0.497921			0.0136038
3-Methylhexane															0.451540			0.0122932
2,2,4-Trimethylpentane															0			0
Heptane															1.20173			0.0321253
Methylcyclohexane															0.839303			0.0232770
Toluene															0.193084			0.00615484
Octane															4.57134			0.136728
Ethylbenzene															0.287630			0.0103960
m-Xylene															0.282993			0.0106728
o-Xylene															0.448056			0.0176778
Nonane															2.53763			0.124365
C10+															0.348453			0.541680
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water															0.00577014			3264.08
H2S															0			0
Nitrogen															4.90678E-08			0.0465805
Carbon Dioxide															1.15999E-06			0.238252
Methane															8.46408E-05			21.3886
Ethane															0.00186892			10.8731
Propane															0.00189761			6.42784
Isobutane															5.62433E-05			1.44048
n-Butane															0.000133006			3.11084
2,2-Dimethylpropane															1.43918E-07			0.00302592
Isopentane															8.97982E-05			1.58288
n-Pentane															8.81886E-05			1.50537
2,2-Dimethylbutane															9.36190E-07			0.0142032
Cyclopentane															0			0
2,3-Dimethylbutane															1.97182E-06			0.0282012
2-Methylpentane															1.40182E-05			0.194135
3-Methylpentane															1.04671E-05			0.143330
n-Hexane															0.000245001			3.14046
Methylcyclopentane															6.37395E-06			0.0870772
Benzene															1.11587E-06			0.0173527
Cyclohexane															7.61749E-06			0.107685
2-Methylhexane															3.88208E-05			0.455116
3-Methylhexane															3.52047E-05			0.411269
2,2,4-Trimethylpentane															0			0
Heptane															9.36940E-05			1.07475
Methylcyclohexane															6.54369E-05			0.778732
Toluene															1.50539E-05			0.205910
Octane															0.000356408			4.57425
Ethylbenzene															2.24253E-05			0.347798
m-Xylene															2.20638E-05			0.357058
o-Xylene															3.49331E-05			0.591412
Nonane															0.000197848			4.16063
C10+															2.71674E-05			18.1219
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water															38.2255			90.0419
H2S															0			0
Nitrogen															0.000505462			0.00199808
Carbon Dioxide															0.0187727			0.0160556
Methane															0.499317			0.525409
Ethane															2.06650			0.500628
Propane															3.07701			0.434014

Isobutane														1.20209			0.128202
n-Butane														2.84276			0.276861
2,2-Dimethylpropane														0.00381830			0.000334294
Isopentane														2.38245			0.174872
n-Pentane														2.33974			0.166309
2,2-Dimethylbutane														0.0296670			0.00187418
Cyclopentane														0			0
2,3-Dimethylbutane														0.0624851			0.00372129
2-Methylpentane														0.444225			0.0256172
3-Methylpentane														0.331694			0.0189132
n-Hexane														7.76384			0.414399
Methylcyclopentane														0.197259			0.0112215
Benzene														0.0320520			0.00207552
Cyclohexane														0.235744			0.0138772
2-Methylhexane														1.43043			0.0698299
3-Methylhexane														1.29719			0.0631024
2,2,4-Trimethylpentane														0			0
Heptane														3.45234			0.164903
Methylcyclohexane														2.36265			0.117080
Toluene														0.510055			0.0290511
Octane														14.9709			0.800088
Ethylbenzene														0.875478			0.0565394
m-Xylene														0.861366			0.0580448
o-Xylene														1.36378			0.0961424
Nonane														9.33109			0.817103
C10+														1.78924			4.96985
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Water														0.103951			58803.3
H2S														0			0
Nitrogen														1.37456E-06			1.30488
Carbon Dioxide														5.10506E-05			10.4853
Methane														0.00135785			343.126
Ethane														0.00561966			326.943
Propane														0.00836763			283.440
Isobutane														0.00326898			83.7241
n-Butane														0.00773061			180.809
2,2-Dimethylpropane														1.03835E-05			0.218316
Isopentane														0.00647883			114.203
n-Pentane														0.00636270			108.611
2,2-Dimethylbutane														8.06765E-05			1.22396
Cyclopentane														0			0
2,3-Dimethylbutane														0.000169922			2.43024
2-Methylpentane														0.00120803			16.7297
3-Methylpentane														0.000902009			12.3516
n-Hexane														0.0211130			270.630
Methylcyclopentane														0.000536428			7.32837
Benzene														8.71625E-05			1.35545
Cyclohexane														0.000641084			9.06271
2-Methylhexane														0.00388992			45.6035
3-Methylhexane														0.00352758			41.2100
2,2,4-Trimethylpentane														0			0
Heptane														0.00938832			107.692
Methylcyclohexane														0.00642499			76.4606
Toluene														0.00138705			18.9723
Octane														0.0407120			522.510
Ethylbenzene														0.00238078			36.9240
m-Xylene														0.00234240			37.9070
o-Xylene														0.00370867			62.7873
Nonane														0.0253750			533.622
C10+														0.00486568			3245.64

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**LP Separator Gas**	**LP Separator Oil**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Vapor recovery by VRU (to sale)**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**	**Solved**
Phase: **Mixed Liquid**	**From Block:**	**--**	**3 Phase Separator**	**3 Phase Separator**	**3 Phase Separator**	**2 Phase Separator**	**2 Phase Separator**	**--**	**--**	**Condensate Tanks**	**PW Tanks**	**PW Tanks**	**Condensate Tanks**	**MIX-100**	**HP Compressor Engine**	**--**	**--**	**MIX-101**
	To Block:	**MIX-101**	**MIX-100**	**2 Phase Separator**	**PW Tanks**	**HP Compressor Engine**	**Condensate Tanks**	**MIX-101**	**--**	**--**	**--**	**--**	**--**	**--**	**MIX-100**	**MIX-101**	**--**	**3 Phase Separator**
Property	**Units**																	
Temperature	°F														70			83.7625
Pressure	psig														169			1000
Mole Fraction Vapor	%														0			0
Mole Fraction Light Liquid	%														25.9767			2.30865
Mole Fraction Heavy Liquid	%														74.0233			97.6913
Molecular Weight	lb/lbmol														34.8795			19.5207
Mass Density	lb/ft^3														47.8425			59.3589
Molar Flow	lbmol/h														0.00779658			3345.50
Mass Flow	lb/h														0.271941			65306.6
Vapor Volumetric Flow	ft^3/h														0.00568408			1100.20
Liquid Volumetric Flow	gpm														0.000708665			137.167
Std Vapor Volumetric Flow	MMSCFD														7.10083E-05			30.4696
Std Liquid Volumetric Flow	sgpm														0.000719579			137.694
Compressibility															0.0235606			0.0572184
Specific Gravity															0.767087			0.951738
API Gravity															51.9522			16.3973
Enthalpy	Btu/h														-868.524			-4.06604E+08
Mass Enthalpy	Btu/lb														-3193.80			-6226.09
Mass Cp	Btu/(lb*°F)														0.698387			0.935477
Ideal Gas CpCv Ratio															1.16243			1.29761
Dynamic Viscosity	cP														0.510592			0.769665
Kinematic Viscosity	cSt														0.666254			0.809459
Thermal Conductivity	Btu/(h*ft*°F)														0.149972			0.311879
Surface Tension	lbf/ft														0.00229740?			0.00434343?
Net Ideal Gas Heating Value	Btu/ft^3														1094.49			98.3957
Net Liquid Heating Value	Btu/lb														11394.8			943.403
Gross Ideal Gas Heating Value	Btu/ft^3														1217.34			154.959
Gross Liquid Heating Value	Btu/lb														12730.5			2042.96

November 5, 2014

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: Antero Resources Appalachian Corp.
1615 Wynkoop Street
Denver, Colorado 80202

Sample: Gaskins No. 1H
First Stage Separator Hydrocarbon Liquid
Sampled @ 174 psig & 75 °F

Date Sampled: 10/14/14 Job Number: 45834.002

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.022	0.005	0.006
Carbon Dioxide	0.014	0.005	0.006
Methane	4.980	1.779	0.750
Ethane	5.236	2.952	1.478
Propane	5.288	3.071	2.189
Isobutane	1.728	1.192	0.943
n-Butane	4.222	2.806	2.303
2,2 Dimethylpropane	0.118	0.095	0.080
Isopentane	3.182	2.453	2.155
n-Pentane	3.622	2.768	2.453
2,2 Dimethylbutane	0.207	0.182	0.167
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.334	0.289	0.270
2 Methylpentane	2.171	1.900	1.756
3 Methylpentane	1.478	1.272	1.195
n-Hexane	3.401	2.949	2.751
Heptanes Plus	63.998	76.283	81.498
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity	0.7603	(Water=1)
°API Gravity	54.61	@ 60°F
Molecular Weight	135.7	
Vapor Volume	17.79	CF/Gal
Weight	6.33	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity	0.7117	(Water=1)
°API Gravity	67.33	@ 60°F
Molecular Weight	106.5	
Vapor Volume	21.20	CF/Gal
Weight	5.93	Lbs/Gal

Base Conditions: 14.850 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: XG
Processor: XGdjv
Cylinder ID: W-1001

David Dannhaus 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.014	0.005	0.006
Nitrogen	0.022	0.005	0.006
Methane	4.980	1.779	0.750
Ethane	5.236	2.952	1.478
Propane	5.288	3.071	2.189
Isobutane	1.728	1.192	0.943
n-Butane	4.340	2.901	2.383
Isopentane	3.182	2.453	2.155
n-Pentane	3.622	2.768	2.453
Other C-6's	4.190	3.642	3.389
Heptanes	11.349	10.668	10.446
Octanes	16.156	16.097	16.471
Nonanes	8.143	9.394	9.702
Decanes Plus	24.480	37.097	41.155
Benzene	0.125	0.074	0.091
Toluene	0.761	0.537	0.658
E-Benzene	0.837	0.681	0.834
Xylenes	2.148	1.735	2.140
n-Hexane	3.401	2.949	2.751
2,2,4 Trimethylpentane	0.000	0.000	0.000
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity	0.7117	(Water=1)
°API Gravity	67.33	@ 60°F
Molecular Weight	106.5	
Vapor Volume	21.20	CF/Gal
Weight	5.93	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity	0.7895	(Water=1)
Molecular Weight	179.1	

Characteristics of Atmospheric Sample:

°API Gravity	60.81	@ 60°F
Reid Vapor Pressure (ASTM D-5191)	6.09	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	W-1001*	W-1020
Pressure, PSIG	174	169	167
Temperature, °F	75	70	70

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.022	0.005	0.006
Carbon Dioxide	0.014	0.005	0.006
Methane	4.980	1.779	0.750
Ethane	5.236	2.952	1.478
Propane	5.288	3.071	2.189
Isobutane	1.728	1.192	0.943
n-Butane	4.222	2.806	2.303
2,2 Dimethylpropane	0.118	0.095	0.080
Isopentane	3.182	2.453	2.155
n-Pentane	3.622	2.768	2.453
2,2 Dimethylbutane	0.207	0.182	0.167
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.334	0.289	0.270
2 Methylpentane	2.171	1.900	1.756
3 Methylpentane	1.478	1.272	1.195
n-Hexane	3.401	2.949	2.751
Methylcyclopentane	0.719	0.536	0.568
Benzene	0.125	0.074	0.091
Cyclohexane	0.721	0.517	0.570
2-Methylhexane	2.617	2.565	2.462
3-Methylhexane	2.207	2.135	2.075
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C-7's	1.175	1.111	1.094
n-Heptane	3.910	3.803	3.678
Methylcyclohexane	3.398	2.880	3.132
Toluene	0.761	0.537	0.658
Other C-8's	9.031	9.193	9.343
n-Octane	3.727	4.025	3.996
E-Benzene	0.837	0.681	0.834
M & P Xylenes	0.836	0.684	0.833
O-Xylene	1.311	1.051	1.307
Other C-9's	5.402	6.142	6.401
n-Nonane	2.741	3.252	3.300
Other C-10's	5.326	6.654	7.062
n-decane	1.836	2.375	2.452
Undecanes(11)	4.811	6.168	6.639
Dodecanes(12)	3.141	4.350	4.747
Tridecanes(13)	2.308	3.427	3.792
Tetradecanes(14)	1.592	2.532	2.839
Pentadecanes(15)	1.165	1.986	2.254
Hexadecanes(16)	0.846	1.540	1.762
Heptadecanes(17)	0.634	1.221	1.410
Octadecanes(18)	0.560	1.134	1.318
Nonadecanes(19)	0.448	0.946	1.106
Eicosanes(20)	0.328	0.719	0.845
Heneicosanes(21)	0.269	0.621	0.735
Docosanes(22)	0.225	0.542	0.645
Tricosanes(23)	0.175	0.436	0.522
Tetracosanes(24)	0.146	0.378	0.455
Pentacosanes(25)	0.100	0.269	0.324
Hexacosanes(26)	0.099	0.276	0.334
Heptacosanes(27)	0.089	0.255	0.311
Octacosanes(28)	0.064	0.192	0.235
Nonacosanes(29)	0.061	0.188	0.230
Triacontanes(30)	0.048	0.151	0.186
Hentriacontanes Plus(31+)	0.209	0.737	0.950
Total	100.000	100.000	100.000

October 30, 2014

FESCO, Ltd.
1100 Fesco Avenue - Alice, Texas 78332

For: Antero Resources Appalachian Corp.
1615 Wynkoop Street
Denver, Colorado 80202

Date Sampled: 10/14/14

Date Analyzed: 10/25/14

Sample: Gaskins No. 1H

Job Number: J45834

FLASH LIBERATION OF HYDROCARBON LIQUID		
	First Stage Separator HC Liquid	Stock Tank
Pressure, psig	174	0
Temperature, °F	75	70
Gas Oil Ratio (1)	------	136
Gas Specific Gravity (2)	------	1.226
Separator Volume Factor (3)	1.0823	1.000

STOCK TANK FLUID PROPERTIES	
Shrinkage Recovery Factor (4)	0.9240
Oil API Gravity at 60 °F	60.81
Reid Vapor Pressure, psi (5)	6.09

Quality Control Check			
	Sampling Conditions	Test Samples	
Cylinder No.	------	W-1001*	W-1020
Pressure, psig	174	169	167
Temperature, °F	75	70	70

(1) - Scf of flashed vapor per barrel of stock tank oil
(2) - Air = 1.000
(3) - Separator volume / Stock tank volume
(4) - Fraction of first stage separator liquid
(5) - Absolute pressure at 100 deg F

Analyst: T. G.

* Sample used for flash study

Base Conditions: 14.85 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

October 28, 2014

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Antero Resources Appalachian Corp.
1615 Wynkoop Street
Denver, Colorado 80202

Sample: Gaskins No. 1H
Gas Evolved from Hydrocarbon Liquid Flashed
From 174 psig & 75 °F to 0 psig & 70 °F

Date Sampled: 10/14/14 Job Number: 45834.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.065	
Carbon Dioxide	0.114	
Methane	33.358	
Ethane	29.183	7.866
Propane	19.082	5.299
Isobutane	3.640	1.201
n-Butane	6.763	2.149
2-2 Dimethylpropane	0.092	0.035
Isopentane	2.212	0.815
n-Pentane	1.818	0.664
Hexanes	1.906	0.792
Heptanes Plus	1.767	0.789
Totals	100.000	19.609

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.585	(Air=1)
Molecular Weight	102.61	
Gross Heating Value	5482	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.226	(Air=1)
Compressibility (Z)	0.9883	
Molecular Weight	35.09	
Gross Heating Value		
Dry Basis	2069	BTU/CF
Saturated Basis	2034	BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stain Tube Method (GPA 2377)
Results: 0.063 Gr/100 CF, 1.0 PPMV or 0.0001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: MR
Processor: IM
Cylinder ID: FL-11S

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.065		0.052
Carbon Dioxide	0.114		0.143
Methane	33.358		15.252
Ethane	29.183	7.866	25.011
Propane	19.082	5.299	23.982
Isobutane	3.640	1.201	6.030
n-Butane	6.763	2.149	11.204
2,2 Dimethylpropane	0.092	0.035	0.189
Isopentane	2.212	0.815	4.549
n-Pentane	1.818	0.664	3.738
2,2 Dimethylbutane	0.090	0.038	0.221
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.134	0.055	0.329
2 Methylpentane	0.608	0.254	1.493
3 Methylpentane	0.376	0.155	0.924
n-Hexane	0.698	0.289	1.714
Methylcyclopentane	0.073	0.025	0.175
Benzene	0.024	0.007	0.053
Cyclohexane	0.092	0.032	0.221
2-Methylhexane	0.188	0.088	0.537
3-Methylhexane	0.185	0.085	0.528
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.199	0.087	0.563
n-Heptane	0.245	0.114	0.700
Methylcyclohexane	0.199	0.081	0.557
Toluene	0.041	0.014	0.108
Other C8's	0.273	0.128	0.858
n-Octane	0.078	0.040	0.254
Ethylbenzene	0.003	0.001	0.009
M & P Xylenes	0.019	0.007	0.057
O-Xylene	0.003	0.001	0.009
Other C9's	0.088	0.045	0.317
n-Nonane	0.020	0.011	0.073
Other C10's	0.028	0.016	0.113
n-Decane	0.006	0.004	0.024
Undecanes (11)	0.003	0.002	0.013
Totals	100.000	19.609	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.226	(Air=1)
Compressibility (Z)	0.9883	
Molecular Weight	35.09	
Gross Heating Value		
Dry Basis	2069	BTU/CF
Saturated Basis	2034	BTU/CF

GAS ANALYTICAL SERVICES

C6+ Gas Analysis Report

Gas Analytical

Report Date: Sep 25, 2014 1:20p

Client:	Antero Resources	Date Sampled:	Sep 20, 2014 12:00a
Site:	Mt. Salem Revival Unit 2H	Analysis Date:	Sep 24, 2014 9:55a
Field No:	9998	Collected By:	Mike Gray
Meter:		Date Effective:	Sep 20, 2014 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	257.0
Lab File No:	**117114.CHR**	Sample Temp (°F):	53
Sample Type:	Spot	Field H2O (PPM):	No Test
		Field H2S (PPM):	No Test

Component	Mol %	Gal/MSCF
Methane	82.7505	
Ethane	12.4590	3.31
Propane	2.9287	0.81
I-Butane	0.3446	0.11
N-Butane	0.5546	0.17
I-Pentane	0.1545	0.06
N-Pentane	0.1105	0.04
Nitrogen	0.3930	
Oxygen	<MDL	
CO2	0.2021	
Hexanes+	0.1025	0.04
TOTAL	100.0000	4.54

Analytical Results at Base Conditions (Real)		
BTU/SCF (Dry):	1,181.3729	BTU/ft³
BTU/SCF (Saturated):	1,161.6896	BTU/ft³
PSIA:	14.73	PSI
Temperature (°F):	60.00	°F
Z Factor (Dry):	0.99700	
Z Factor (Saturated):	0.99661	

Analytical Results at Contract Conditions (Real)		
BTU/SCF (Dry):	1,181.3729	BTU/ft³
BTU/SCF (Saturated):	1,161.6896	BTU/ft³
PSIA:	14.7300	PSI
Temperature (°F):	60.0000	°F
Z Factor (Dry):	0.99700	
Z Factor (Saturated):	0.99661	

Calculated Specific Gravities			
Ideal Gravity:	0.6669	Real Gravity:	0.6686
Molecular Wt:	19.3142	lb/lbmol	

Gross Heating Values are Based on:
GPA 2145-09, 2172, 2261
Compressibility is Calculated using AGA-8.

Source	Date	Notes

<MDL = Less than Method Detection Limits, NG = Not Given, NT = Not Tested

Attachment U
Facility-wide Emissions Summary Sheet(s)

ATTACHMENT U – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

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

Emission Point ID#	NOx		CO		VOC		SO2		PM10		PM2.5		CH_4		GHG (CO_2e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EP-HR001									3.4748	7.0730						
EP-PCV					0.0607	0.2658							0.3848	1.6852	9.6213	42.1414
F001					3.3756	14.7850							3.7179	16.2845	92.9480	407.1121
EP-L001					14.3963	5.5065							0.6162	0.2357	15.4789	5.9205
EP-L002					0.0007	0.0022							0.0383	0.1165	1.0090	3.0689
EP-ENG001(emissions per EPN)	0.0625	0.2738	0.4126	1.8073	0.0183	0.0803	0.0004	0.0016	0.0059	0.0258	0.0059	0.0258	0.1425	0.6241	71.7083	314.0825
EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007, EP-GPU008, EP-GPU009, EP-GPU010 (emissions per EPN)	0.1270	0.5561	0.1067	0.4672	0.0070	0.0306	0.0008	0.0033	0.0096	0.0423	0.0096	0.0423	0.0029	0.0128	152.3655	667.3608
EP-LH001, EP-LH002, EP-LH003, EP-LH004, EP-LH005, EP-LH006, EP-LH007, EP-LH008, EP-LH009, EP-LH010 (emissions per EPN)	0.1693	0.7415	0.1422	0.6229	0.0093	0.0408	0.0010	0.0044	0.0129	0.0564	0.0129	0.0564	0.0039	0.0171	203.1540	889.8144
EP-EC001 -003 (emissions per EPN)	0.8177	3.5815	3.7214	16.2999	0.3485	1.5263	1.02E-05	4.47E-05	0.0034	0.0150	0.0026	0.0112	0.1397	0.6121	104.6523	458.3769
TOTAL	5.4783	23.9949	14.0655	61.6071	15.6238	10.8815	0.0182	0.0796	0.2413	1.0569	0.2387	1.0456	1.2843	3.1109	3957.3474	17269.9541

Annual emissions shall be based on 8760 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 U – FACILITY-WIDE 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
EP-HR001														
EP-PCV			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0026	0.0112	0.0026	0.0112
F001			0.0028	0.0121	0.0199	0.0871	0.0252	0.1103	0.0646	0.2830	0.1077	0.4716	0.2201	0.9642
EP-L001			0.0018	0.0007	0.0102	0.0039	0.0079	0.0030	0.0186	0.0071	0.6466	0.2473	0.6851	0.2620
EP-L002			2.97E-06	9.03E-06	3.22E-06	9.79E-06	6.80E-07	2.07E-06	1.38E-06	4.19E-06	2.37E-08	7.22E-08	8.27E-06	2.52E-05
EP-ENG001(emissions per EPN)	0.0127	0.0556	0.0010	0.0043	3.46E-04	0.0015	1.54E-05	6.73E-05	1.21E-04	5.29E-04			0.0142	0.0623
EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007, EP-GPU008, EP-GPU009, EP-GPU010 (emissions per EPN)	9.52E-05	4.17E-04	2.67E-06	1.17E-05	4.32E-06	1.89E-05			0.00E+00	0.00E+00	0.0023	0.0100	0.0024	0.0105
EP-LH001, EP-LH002, EP-LH003, EP-LH004, EP-LH005, EP-LH006, EP-LH007, EP-LH008, EP-LH009, EP-LH010 (emissions per EPN)	1.27E-04	5.56E-04	3.56E-06	1.56E-05	5.76E-06	2.52E-05			0.00E+00	0.00E+00	0.0030	0.0133	0.0032	0.0140
EP-EC001 -003 (emissions per EPN)	1.28E-06	5.58E-06	9.08E-05	3.98E-04	4.78E-04	0.0021	3.43E-04	0.0015	0.0008	0.0034	0.0173	0.0759	0.0190	0.0833
TOTAL	0.0149	0.0654	0.0031	0.0065	0.0121	0.0122	0.0090	0.0076	0.0211	0.0179	0.7519	0.7086	0.8122	0.8186

Annual emissions shall be based on 8760 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
Class I Legal Advertisement

Attachment V

Air Quality Permit Notice
Notice of Application
Lemley Well Pad
Antero Resources Corporation
Doddridge County, West Virginia

Notice is given that Antero Resources Corporation has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-D General Permit Modification for an Oil and Natural Gas Production facility located at 3126 Morgans Run Rd. , in Doddridge County, West Virginia.

The latitude and longitude coordinates are: 39.326345 and -80.680251

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

Pollutants	TOTALS (tpy):
NO_X	23.9949
CO	61.6071
$PM_{2.5}$	1.0456
PM_{10}	1.0569
VOC	10.8815
SO_2	0.0796
CO_{2e}	17,269.95
Formaldehyde	0.0654
Benzene	0.0065
Toluene	0.0122
Ethylbenzene	0.0076
Xylenes	0.0179
Hexane	0.7086
Total HAPs	0.8186

Proposed new equipment will be installed by July 1, 2018 and the facility is expected to begin the operations by July 01, 2019. 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 the __ day of _____, 2017

By: Antero Resources Corporation
Barry Schatz
Senior Environmental & Regulatory Manager
1615 Wynkoop Street
Denver, CO 80202

www.ghd.com