January 26, 2018 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
Diane Davis 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 Diane Davis Well Pad.

A General Permit Registration Modification is requested due to the planned operational change below:

1. Removal of one Kubota VRU engine.

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 512005 in the amount of $1,500.00.

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

Sincerely,

GHD Services Inc.

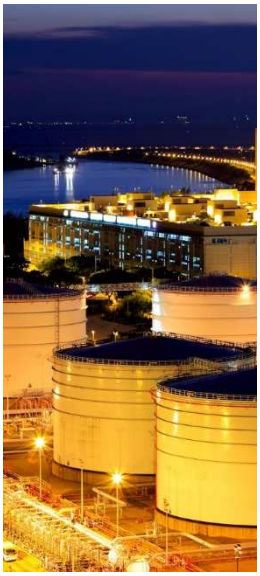
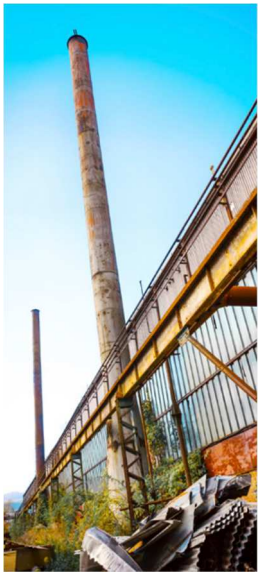
Manuel Bautista

MB/ma/379

Encl.

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

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

G70-D General Permit Registration Modification Application

Removal of one Kubota VRU engine

Diane Davis Well Pad

Antero Resources Corporation

GHD | 6320 Rothway Suite 100 Houston Texas 77040
082715 | Report No 379 | January 2018

Table of Contents

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: Diane Davis Well Pad

Operating Site Physical Address: 2899 Sam Cavins Rd

City: West Union	Zip Code: 26456	County: Doddridge

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: 39.30410,
Longitude: -80.82270

SIC Code: 1311 NAICS Code: 211111	DAQ Facility ID No. (For existing facilities) 017-00103

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 S Schatz
Name and Title: Barry Schatz/ Senior Environmental & Regulatory Manager Phone: 303-357-7276 Fax: 303-357-7315
Email: bschatz@anteroresources.com Date: 1/26/2018

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: Removal of one Kubota VRU engine.	
Directions to the facility: From Clarksburg head west on US-50 for 27.9 miles. Drive to Co Rte 11/Arnolds Creek Rd/Co Rte 1/1. Turn right onto Co Rte 11/Arnolds Creek Rd/Central Station Rd/ Co Rte 1/1/Right Fork Run Rd for 2.1 miles Turn right onto Co Rte 11/Arnolds Creek Rd/Co Rte 1/1 and the Diane Davis Pad will be on the left after 0.7 miles.	
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 ☒

Diane Davis 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 Jonathan Davis Well Pad. It is located approximately 0.40 miles southwest of Diane Davis Well Pad.

Attachment B
Siting Criteria Waiver

Attachment B

Siting Waiver
Diane Davis 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 Diane Davis 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:

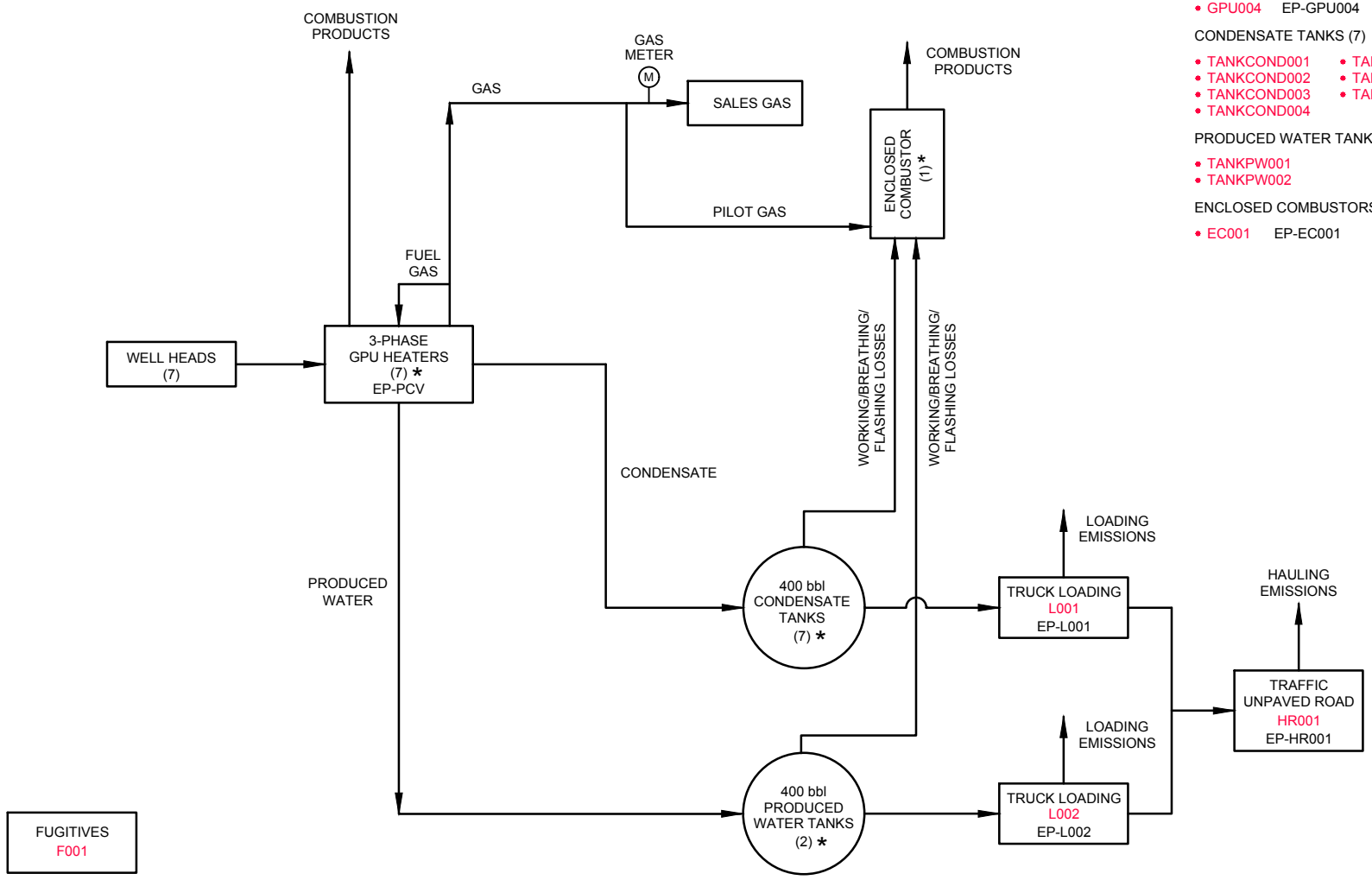
FIRST. The name of the Corporation is Antero Resources Corporation.

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



* 3-PHASE SEPARATORS WITH HEATERS (7)

- GPU001 EP-GPU001
- GPU002 EP-GPU002
- GPU003 EP-GPU003
- GPU004 EP-GPU004
- GPU005 EP-GPU005
- GPU006 EP-GPU006
- GPU007 EP-GPU007

CONDENSATE TANKS (7)

- TANKCOND001
- TANKCOND002
- TANKCOND003
- TANKCOND004
- TANKCOND005
- TANKCOND006
- TANKCOND007

PRODUCED WATER TANKS (2)

- TANKPW001
- TANKPW002

ENCLOSED COMBUSTORS (1)

- EC001 EP-EC001

Attachment D

PROCESS FLOW DIAGRAM - ANTERO RESOURCES
DIANE DAVIS WELL PAD
Doddridge County, West Virginia

Attachment E
Process Description

Attachment E

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

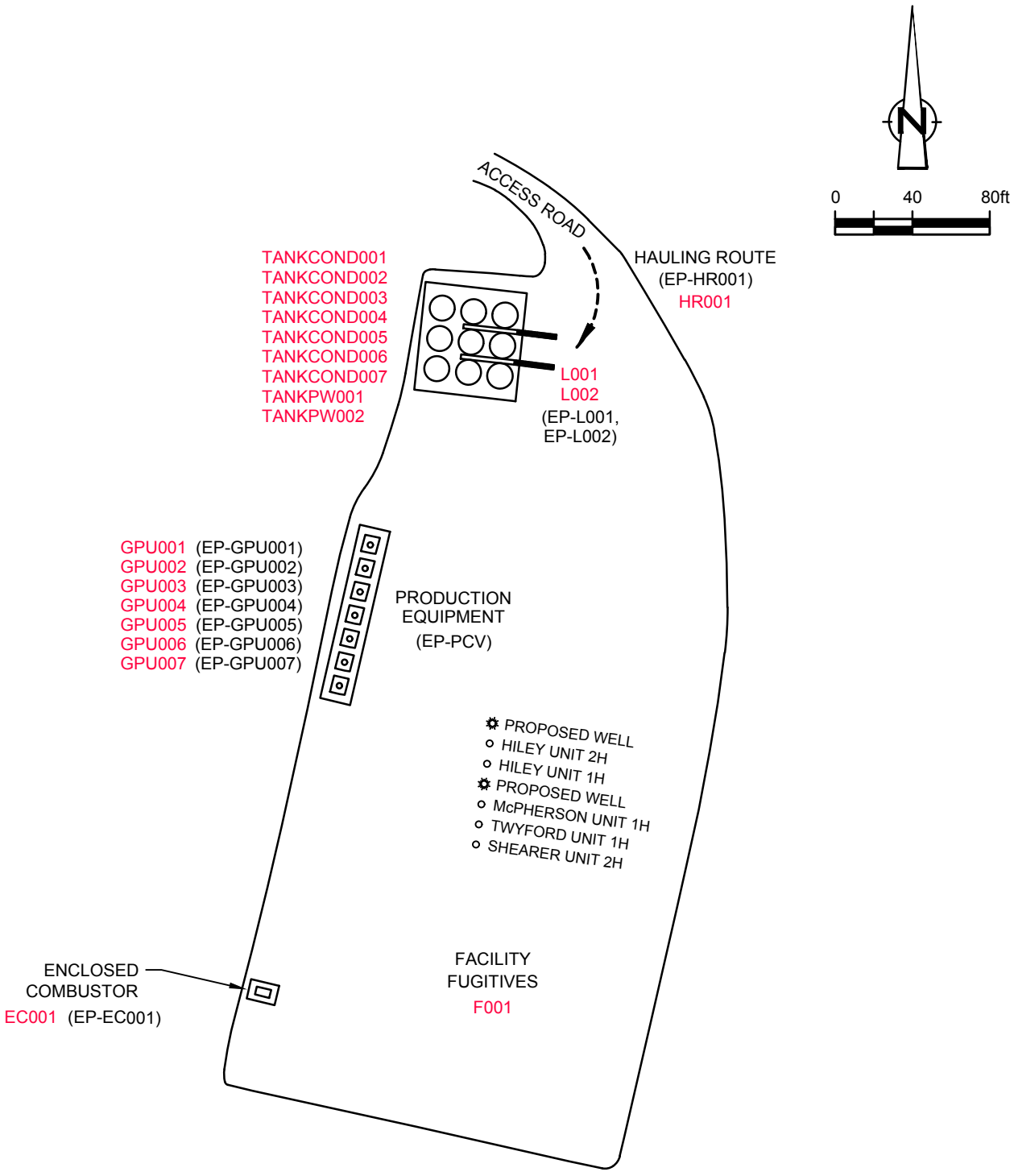
A mixture of condensate, water, and entrained gas from the condensate and gas wells enters the facility through a series of gas production units (GPU001-GPU007) which are 3 phase separators where the gas, condensate, and produced water are separated. The GPUs are fueled by a slip stream of the separated gas. The separated gas is then metered and sent to the sales gas pipeline. The separated condensate and water from the separators flow to their respective storage tanks (TANKCOND001-007 and TANKPW001-002).

The facility has seven (7) tanks (TANKCOND001-007) on site to store condensate and two (2) tanks (TANKPW001-002) to store produced water prior to removal from the site. The flashing, working and breathing losses from the tanks are routed to the enclosed combustor (EC001) to control the emissions. The enclosed combustor that will be used to control emissions is 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 Central Unit 2H, one of the wells in Jonathan Davis Well Pad and gas from Hiley Unit 2H, one of the wells in Diane Davis Well Pad. The extended analysis of the condensate is considered representative of the materials from Diane Davis Well Pad, being in the same Marcellus rock formation.

Attachment F
Plot Plan



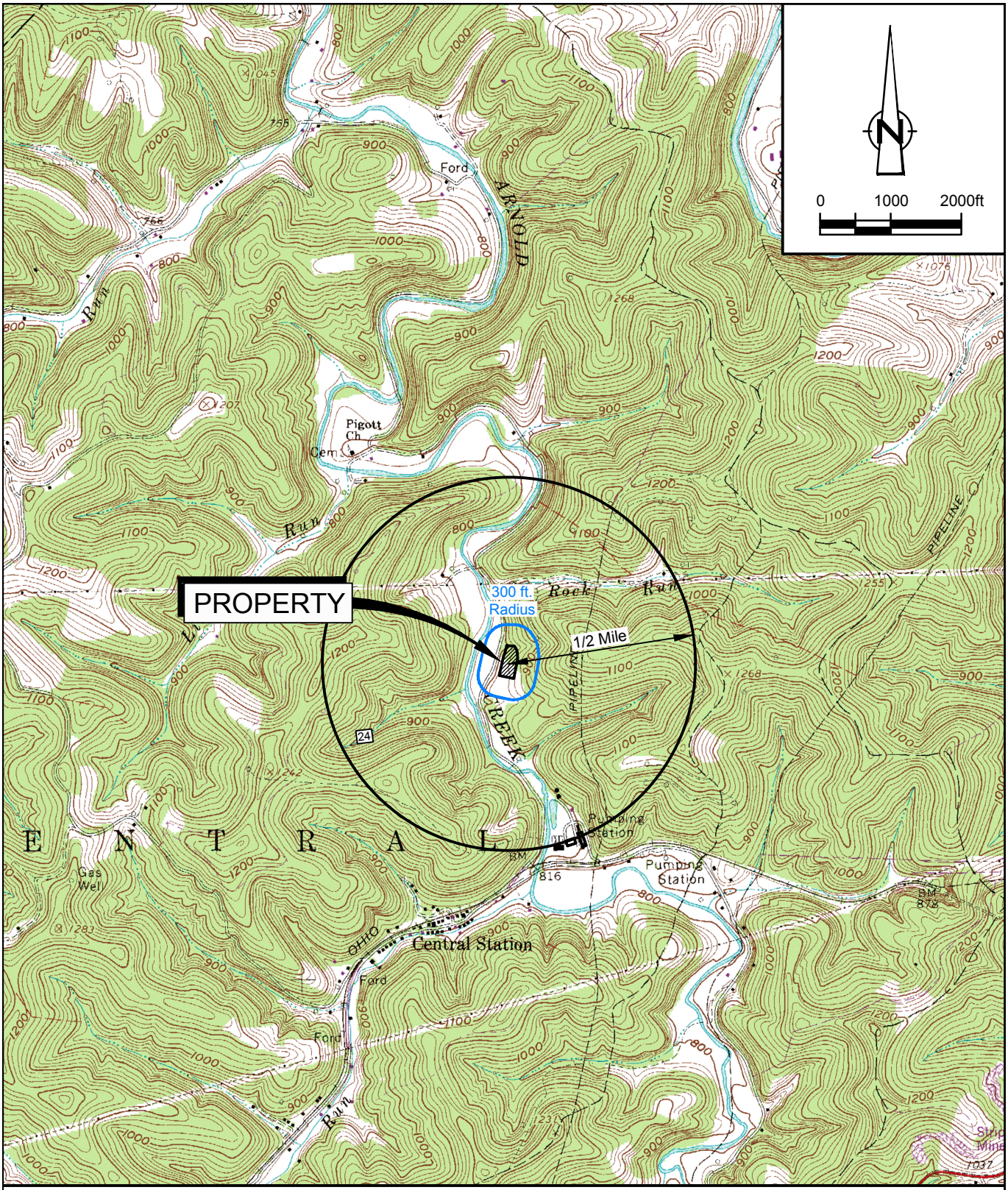
LEGEND

- ○ EXISTING WELL LOCATION
- ✡ PROPOSED WELL LOCATION

Attachment F

PLOT PLAN
DIANE DAVIS WELL PAD
ANTERO RESOURCES
Doddridge County, West Virginia

Attachment G
Area Map



SOURCE: USGS QUADRANGLE MAP;
WEST UNION, WEST VIRGINIA

SITE COORDINATES: LAT. 39.30410, LONG. -80.822705
SITE ELEVATION: 830 ft AMSL

GHD

Attachment G

AREA MAP
DIANE DAVIS WELL PAD
ANTERO RESOURCES
Doddridge County, West Virginia

Attachment H
G70-C 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	EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007	Gas Production Unit Heater	2014		1.5 MMBtu/hr	Existing	N/A	
F001	F001	Fugitives	2014		N/A	Existing	N/A	
TANKCOND001-007	EP-EC001	Condensate Tank F/W/B	2014		400 bbl each	Existing	EP-EC001	
TANKPW001-002	EP-EC001	PW Tank F/W/B	2014		400 bbl each	Existing	EP-EC001	
L001	EP-L001	Loading (Condensate)	2014		10080 gal/hr 1533000 gal/yr	Existing	N/A	
L002	EP-L002	Loading (Produced Water)	2014		10080 gal/hr 3066000 gal/yr	Existing	N/A	
HR001	EP-HR001	Haul Road	2014		Tanker Trucks Condensate: 183 trips per year Tanker Trucks PW: 365 trips per year Pick Up Truck: 730 trips per year	Existing	N/A	
EC001	EP-EC001	Enclosed Combustor	2014		12 MMBtu/hr	Existing	N/A	
PCV	EP-PCV	Pneumatic CV	2014		6.6 scf/day/PCV	Existing	N/A	
ENG001	EP-ENG001	VRU/Compressor Engine	2014	2014	24HP	Removal - 2018	Non-Selective Catalytic Reduction	

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

Attachment J
Fugitive Emissions Summary Sheet

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	350	EPA	gas	1.778	0.235	10.061	251.532
Valves	☐ Yes ☑ No	364	EPA	liquid	8.391	0.790	0.116	2.894
Connections (Not sampling)	☐ Yes ☑ No	413	EPA	gas	0.093	0.012	0.528	13.191
Flanges	☐ Yes ☑ No	91	EPA	gas	0.040	0.005	0.227	5.668

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?
47017063590000	10/19/2014	10/19/2014	Green Completion	OOOO
47017064020000	10/28/2014	10/28/2014	Green Completion	OOOO
47017064880000	3/31/2016	3/31/2016	Green Completion	OOOOa
47017066130000	3/26/2016	3/26/2016	Green Completion	OOOOa
47017066140000	3/22/2016	3/22/2016	Green Completion	OOOOa
2 wells TBD				

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 Vessel Data Sheets

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 001-007
3. Emission Unit ID number: TANKCOND001-007	4. Emission Point ID number. EP-EC001
5. Date Installed , Modified or Relocated (for existing tanks)	6. Type of change:
2014 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): 1,533,000	13B. Maximum daily throughput (gal/day): 4,200
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume): 14	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 2014

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)	1.8280
39A. Average Liquid Surface Temperature (°F)	72.10	39B. Corresponding Vapor Pressure (psia)	3.0683
40A. Maximum Liquid Surface Temperature (°F)	75.94	40B. Corresponding Vapor Pressure (psia)	3.3028

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)	5.4900		
41D. Liquid Molecular Weight (lb/lb-mole)	83.00		
41E. Vapor Molecular Weight (lb/lb-mole)	41.8876		
Maximum Vapor Pressure 41F. True (psia)	3.3028		
41G. Reid (psia)	4.41		
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.	246 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 001-002
3. Emission Unit ID number: TANKPW001-002	4. Emission Point ID number. EP-EC001
5. Date Installed , Modified or Relocated (for existing tanks) 2014 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	6. Type of change: ☑ 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): 3,066,000	13B. Maximum daily throughput (gal/day): 8,400
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume): 92	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 2014

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 ☐ O

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)	0.2281
39A. Average Liquid Surface Temperature (°F)	72.10	39B. Corresponding Vapor Pressure (psia)	0.4526
40A. Maximum Liquid Surface Temperature (°F)	75.94	40B. Corresponding Vapor Pressure (psia)	0.4990

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)	18.56		
41E. Vapor Molecular Weight (lb/lb-mole)	18.5604		
Maximum Vapor Pressure 41F. True (psia)	0.4990		
41G. Reid (psia)	1.0336		
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.	246 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	2014	Existing	1.5	1206.8951
GPU002	EP-GPU002	Gas Production Unit Heater	2014	Existing	1.5	1206.8951
GPU003	EP-GPU003	Gas Production Unit Heater	2014	Existing	1.5	1206.8951
GPU004	EP-GPU004	Gas Production Unit Heater	2014	Existing	1.5	1206.8951
GPU005	EP-GPU005	Gas Production Unit Heater	2014	Existing	1.5	1206.8951
GPU006	EP-GPU006	Gas Production Unit Heater	2014	Existing	1.5	1206.8951
GPU007	EP-GPU007	Gas Production Unit Heater	2014	Existing	1.5	1206.8951

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 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:	2014

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	3	3	3	3
Days/week	2	2	2	2

Bulk Liquid Data (use extra pages as necessary)

Liquid Name		Condensate	Produced Water	
Max. Daily Throughput (1000 gal/day)		4.20	8.40	
Max. Annual Throughput (1000 gal/yr)		1,533	3,066	
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		3.1	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)	11.4656	0.0006	
	Annual (ton/yr)	0.8719	0.0001	
Max HAP Emission Rate	Loading (lb/hr)	1.7381	1.10E-05	
	Annual (ton/yr)	0.1322	1.68E-06	
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
TANKCOND001-007	Condensate Tanks		
TANKPW001-002	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
16.96 (scfm)	2,100.42 BTU/ft^3	0.0325 (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?
1	17 scfh	20517 BTU/hr	☑ Yes ☐ No

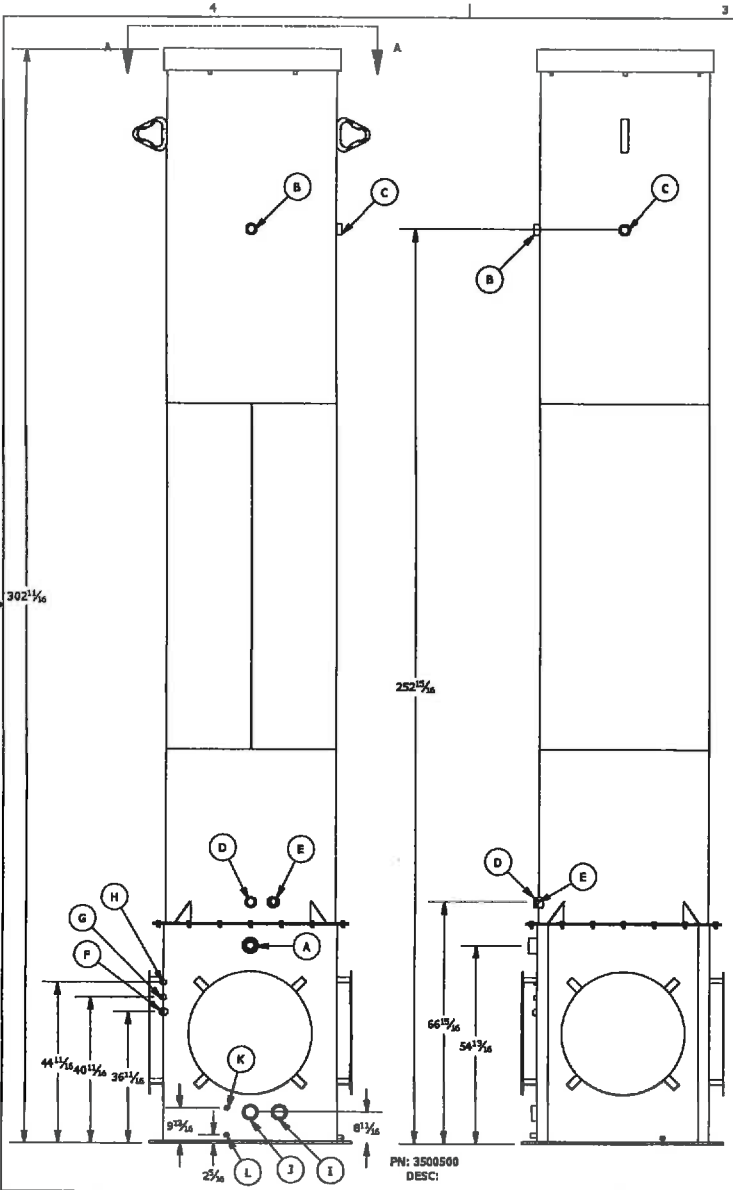
If automatic re-ignition is used, please describe the method. Flame Rectification, a thermocouple equivalent

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).*

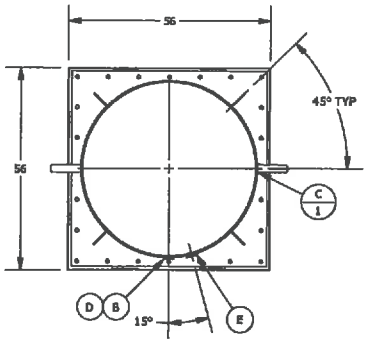
Additional information attached? ☑ Yes ☐ No Manufacturer's specs sheet

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
Diane Davis 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	Diane Davis Well Pad
Nearest City/Town	West Union
API Number/SIC Code	1311
Latitude/Longitude	39.3041, -80.822705
County	Doddridge County

Technical Information	
Max Condensate Site Throughput (bbl/day):	100
Max Produced Water Site Throughput (bbl/day):	200
Are there any sour gas streams at this site?	No
Is this site currently operational/producing?	Yes

Equipment/Processes at Site	
Equipment/Process Types	**How many for this site?**
Fugitives	7
Gas Production Unit Heaters	7
Condensate Tanks	7
Produced Water Tanks	2
Loading Jobs	2
Enclosed Combustors	1

Table 2

Uncontrolled/Controlled Emissions Summary
Diane Davis 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)																										
Fugitive Emissions (Component Count, PCV and Hauling)[1]	2.3985	10.5056			2.7590	12.0846	68.977	302.12							8.4567	1.1675			0.2441	1.0691	0.0018	0.0079	0.0474	0.2074		
Flashing, Working and Breathing (F/W/B) Losses[2]	68.1222	298.3754			14.8369	64.9856	371.2031	1625.8697											11.0643	48.4617	0.0199	0.0873	0.1221	0.5347		
Gas Production Unit Heater Emissions[3]	0.0479	0.2096	0.8700	3.8106	0.0200	0.0876	1,044.00	4,572.73	0.7308	3.2009	0.0052	0.0229	0.0661	0.2896	0.0661	0.2896	4.35E-06	1.91E-05	0.016	0.072	1.83E-05	8.00E-05			0.0007	0.0029
TOTALS:	**70.5686**	**309.0905**	**0.8700**	**3.8106**	**17.6159**	**77.1578**	**1484.1818**	**6500.7162**	**0.7308**	**3.2009**	**0.0052**	**0.0229**	**0.0661**	**0.2896**	**8.5228**	**1.4571**	**4.35E-06**	**1.91E-05**	**11.3248**	**49.6026**	**0.0218**	**0.0953**	**0.1694**	**0.7421**	**0.0007**	**0.0029**
UNCONTROLLED (Truck Loading Emissions)																										
Truck Loading Emissions[4]	11.4662	0.8719			0.6544	0.0526	16.4493	1.3261											1.7381	0.1322	0.0020	1.53E-04	0.0137	0.0010		
CONTROLLED EMISSIONS																										
Enclosed Combustor Emissions (from F/W/B losses)[5]	1.3625	5.9679	0.8177	3.5815	0.2698	1.1816	298.8106	1308.7906	3.7214	16.2999	1.02E-05	4.47E-05	0.0059	0.0258	0.0079	0.0344	5.17E-07	2.27E-06	0.2213	0.9694	0.0004	0.0017	0.0024	0.0107	1.28E-06	5.58E-06
Controlled Fugitive Emissions from Hauling															4.2283	0.5837										
TOTALS:	**1.363**	**5.968**	**0.818**	**3.582**	**0.270**	**1.182**	**298.811**	**1308.791**	**3.721**	**16.300**	**1.02E-05**	**4.47E-05**	**0.006**	**0.026**	**4.236**	**0.618**	**5.17E-07**	**2.27E-06**	**0.221**	**0.969**	**3.99E-04**	**0.0017**	**0.0024**	**0.011**	**1.28E-06**	**5.58E-06**
POTENTIAL TO EMIT[6]	**15.2751**	**17.5550**	**1.6877**	**7.3921**	**3.7032**	**13.4065**	**1428.2386**	**6184.9632**	**4.4522**	**19.5008**	**0.0052**	**0.0229**	**0.0720**	**0.3154**	**4.3023**	**0.9078**	**4.87E-06**	**2.13E-05**	**2.2199**	**2.2424**	**0.0042**	**0.0099**	**0.0635**	**0.2191**	**0.0007**	**0.0029**
POTENTIAL TO EMIT (Excluding Fugitives)	**12.8766**	**7.0494**	**1.6877**	**7.3921**	**0.9442**	**1.3219**	**1359.2612**	**5882.8422**	**4.4522**	**19.5008**	**0.0052**	**0.0229**	**0.0720**	**0.3154**	**0.0740**	**0.3240**	**4.87E-06**	**2.13E-05**	**1.9758**	**1.1733**	**0.0024**	**0.0020**	**0.0162**	**0.0117**	**0.0007**	**0.0029**

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 9 for gas production unit heater emission calculations 4 - The maximum emission was calculated based on actual filling rate of 4 barrels per minute. At a production rate of 100 barrels per day, VOC emissions would be 11.4662 pounds per hour when there are truck loading activities. Average hourly VOC emissions from truck loading is 0.1991 pound per hour. 5 - See Table 10 and 11 for enclosed combustion emission calculations. 6 - The maximum hourly potential to emit is the sum of emissions from gas production unit heaters, storage tanks, enclosed combustors, loading, and fugitives. PM 10 TPY is the sum of uncontrolled hauling and other PM10 sources.

Table 3

Permits Summary

Diane Davis Well Pad

Doddridge County, West Virginia

Antero Resources Corporation

Pollutant		Emissions		Threshold Exceeded?		
		Uncontrolled	Controlled	Threshold	Uncontrolled	Controlled
VOC	lbs/hr	82.0348	15.2751	6	**Yes**	**Yes**
	tons/yr	309.9625	17.5550	10	**Yes**	**Yes**
NO_X	lbs/hr	0.8700	1.6877	6		
	tons/yr	3.8106	7.3921	10		
CH_4	lbs/hr	18.2704	3.7032			**Yes**
	tons/yr	77.2104	13.4065			**Yes**
CO	lbs/hr	0.7308	4.4522	6		
	tons/yr	3.2009	19.5008	10		**Yes**
SO_2	lbs/hr	0.0052	0.0052	6		
	tons/yr	0.0229	0.0229	10		
$PM_{2.5}$	lbs/hr	0.0661	0.0720	6		
	tons/yr	0.2896	0.3154	10		
PM_{10}	lbs/hr	8.5228	4.3023	6	**Yes**	
	tons/yr	1.4571	0.9078	10		
Lead	lbs/hr	4.35E-06	4.87E-06	6		
	tons/yr	1.91E-05	2.13E-05	10		
Total HAPs	lbs/hr	13.0629	2.2199	2	**Yes**	**Yes**
	tons/yr	49.7348	2.2424	5	**Yes**	
Total TAPs	lbs/hr	0.0244	0.0049	1.14		
n-Hexane	lbs/hr	12.6501	2.0984			
	tons/yr	48.0640	1.8475			
Toluene	lbs/hr	0.1279	0.0280			
	tons/yr	0.5155	0.0782			
Ethylbenzene	lbs/hr	0.0773	0.0250			
	tons/yr	0.3137	0.0847			
Xylenes	lbs/hr	0.1832	0.0635			
	tons/yr	0.7431	0.2191			
Benzene	lbs/hr	0.0238	0.0042			
	tons/yr	0.0955	0.0099			

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
Diane Davis 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	0.117
	Benzene frac	0.000
	Toluene	0.000
	Ethylbenzene	0.000
	Xylenes	0.000
	n-Hexane	0.015
	HAPs	0.015
	Methane	0.663

Gas					
Number	Component	Pollutant	Emission Factor (kg/hr of THC per component)	kg/hr	lb/yr
350	Valves	Gas VOC	0.004500	0.18	3,555.59
		Non VOC	0.004500	1.39	26,797.81
		HAPs	0.004500	0.02	469.21
		CO2e	0.004500	26.10	503,064.93
413	Connectors	VOC	0.000200	0.01	186.47
		Non-VOC	0.000200	0.07	1,405.40
		HAPs	0.000200	0.00	24.61
		CO2e	0.000200	1.37	26,382.96
91	Flanges	VOC	0.000390	0.00	80.12
		Non-VOC	0.000390	0.03	603.84
		HAPs	0.000390	0.00	10.57
		CO2e	0.000390	0.588197	11335.729716
			Total VOCs:	0.20	3822.18
			Total THC:	1.69	32629.23
			Total CH4:	1.12	21631.34

Light Liquid Weight Fraction From Analysis:	VOC frac	0.957
	Benzene frac	0.001
	Toluene	0.008
	Ethylbenzene	0.009
	Xylenes	0.024
	n-hexane	0.049
	HAPs	0.090
	Methane	0.013

Light Liquid					
Number	Component	Pollutant	Emission Factor (kg/hr of THC per component)	kg/hr	lb/yr
364	Valves	Light Liquid VOC	0.002500	0.87	16,781.45
		Light Liquid Non-VOC	0.002500	0.04	756.07
		Light Liquid HAPs	0.002500	0.08	1,580.10
		CO2e	0.002500	0.30	5788.10
			Total VOC:	0.87	16,781.45
			Total THC:	0.91	17,537.52
			Total CH4:	0.01	231.52

Fugitive Total Emissions			
	Annual Emissions (lb/yr)	Annual Emissions (lb/hr)	Annual Emissions (tpy)
VOC	20,603.62	2.35	10.30
Ethylbenzene		0.02	0.08
Toluene		0.02	0.07
Xylenes		0.05	0.21
n-Hexane		0.16	0.68
TAPs (Benzene)		0.00	0.01
HAPs		0.24	1.04
CH_4 [3]		2.50	10.93
CO_{2e}	546,571.72	62.39	273.29

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
Diane Davis Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Number of PCVs	28
Bleed Rate (scf/day/PCV)	6.6
Total Bleed Rate (scf/day)	184.8

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	0.4085	28.01	0.7549	1.99E-03	0.0557	0.0023	0.0102
Carbon Dioxide	0.1743	44.01	0.3221	8.49E-04	0.0374	0.0016	0.0068
Methane	80.8909	16.04	149.4864	0.3939	6.3185	0.2633	1.1531
Ethane	14.3137	30.07	26.4517	0.0697	2.0960	0.0873	0.3825
Propane	2.2213	44.10	4.1050	0.0108	0.4770	0.0199	0.0871
Isobutane	0.4547	58.12	0.8403	2.21E-03	0.1287	0.0054	0.0235
n-Butane	0.7773	58.12	1.4365	0.0038	0.2200	0.0092	0.0402
2,2 Dimethylpropane	0.00E+00	72.15	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Isopentane	0.2153	72.15	0.3979	0.0010	0.0756	0.0032	0.0138
n-Pentane	0.1929	72.15	0.3565	0.0009	0.0678	0.0028	0.0124
2,2 Dimethylbutane	0.00E+00	86.18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cyclopentane	0.00E+00	70.10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,3 Dimethylbutane	0.00E+00	86.18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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	0.3511	86.17	0.6488	0.0017	0.1473	0.0061	0.0269
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
Cyclohexane	0.00E+00	84.16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Methylhexane	0.00E+00	100.20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3-Methylhexane	0.00E+00	100.20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,2,4 Trimethylpentane	0.00E+00	114.23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heptane	0.00E+00	100.20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylcyclohexane	0.00E+00	98.19	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	106.17	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
o-Xylene	0.00E+00	106.17	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nonane	0.00E+00	128.26	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C10+	0.00E+00	159.20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	lb/hr	tpy
VOC Emissions	0.0465	0.2038
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	0.0061	0.0269
HAPs Emissions	0.0061	0.0269
TAPs Emissions	0.00E+00	0.00E+00
CH_4 Emissions	0.2633	1.1531
CO_{2e} emissions	6.5834	28.8352

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
Diane Davis 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	0.1047	0.1085	0.4752	2.7129	0.0384	0.1681
H2S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	0.0372	0.0385	0.1687	0.2759	0.0039	0.0171
Carbon Dioxide	0.2118	0.2194	0.9612	3.4682	0.0491	0.2149
Methane	13.3340	13.8124	60.4982	59.2507	0.8383	3.6717
Ethane	23.9785	24.8388	108.7938	26.5655	0.3758	1.6462
Propane	15.0500	15.5899	68.2840	4.1184	0.0583	0.2552
Isobutane	6.7194	6.9605	30.4870	0.7576	0.0107	0.0470
n-Butane	13.6478	14.1374	61.9218	1.6272	0.0230	0.1008
2,2 Dimethylpropane	0.0205	0.0213	0.0932	0.0011	0.0000	0.0001
Isopentane	5.9468	6.1602	26.9817	0.3888	0.0055	0.0241
n-Pentane	5.8188	6.0276	26.4008	0.1407	0.0020	0.0087
2,2 Dimethylbutane	0.0570	0.0590	0.2584	0.0012	0.0000	0.0001
Cyclopentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2,3 Dimethylbutane	0.0910	0.0943	0.4130	0.0043	0.0001	0.0003
2-Methylpentane	0.6116	0.6335	2.7748	0.0185	0.0003	0.0011
3-Methylpentane	0.4139	0.4288	1.8779	0.0302	0.0004	0.0019
n-Hexane	9.8976	10.2527	44.9070	0.1431	0.0020	0.0089
Methylcyclopentane	0.1545	0.1600	0.7009	0.0184	0.0003	0.0011
Benzene	0.0183	0.0190	0.0831	0.0258	0.0004	0.0016
Cyclohexane	0.1606	0.1663	0.7285	0.0407	0.0006	0.0025
2-Methylhexane	0.5474	0.5671	2.4837	0.0113	0.0002	0.0007
3-Methylhexane	0.4459	0.4619	2.0232	0.0111	0.0002	0.0007
2,2,4 Trimethylpentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heptane	0.8391	0.8692	3.8071	0.0088	0.0001	0.0005
Methylcyclohexane	0.4511	0.4673	2.0469	0.0514	0.0007	0.0032
Toluene	0.0937	0.0971	0.4251	0.1200	0.0017	0.0074
Octane	0.9009	0.9332	4.0876	0.0038	0.0001	0.0002
Ethylbenzene	0.0490	0.0508	0.2224	0.0606	0.0009	0.0038
m & p-Xylene	0.0517	0.0535	0.2345	0.0568	0.0008	0.0035
o-Xylene	0.0603	0.0625	0.2737	0.0785	0.0011	0.0049
Nonane	0.2009	0.2081	0.9115	0.0009	0.0000	0.0001
C10+	0.0858	0.0889	0.3894	0.0076	0.0001	0.0005
Total VOCs	62.334	64.57	282.8	7.727	0.1093	0.4788
Total CO_{2e}		345.53	1,513.4		21.01	92.0
CH_4		13.81	60.50		0.84	3.67
Total TAPs (Benzene)		0.0190	0.0831		0.0004	0.0016
Toluene		0.0971	0.4251		0.0017	0.0074
Ethylbenzene		0.0508	0.2224		0.0009	0.0038
Xylenes		0.1160	0.5082		0.0019	0.0084
n-Hexane		10.253	44.907		0.0020	0.0089
Total HAPs		10.536	46.146		0.0069	0.0300
Total	100.00	103.59	453.7	100.00	1.415	6.20

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

Table 7

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

Condensate Tank Information	
Number of Tanks	7
Maximum Working Losses (lbs/hr)	1.8341
Maximum Breathing Losses (lbs/hr)	3.6348
# 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	0.0018	3.21E-05	1.41E-04	0.0001	0.0003	0.0001	0.0004
Carbon Dioxide	0.1968	0.0036	0.0158	0.0072	0.0313	0.0108	0.0471
Methane	3.3873	0.0621	0.2721	0.1231	0.5393	0.1852	0.8114
Ethane	33.4623	0.6137	2.6881	1.2163	5.3273	1.8300	8.0154
Propane	17.1979	0.3154	1.3815	0.6251	2.7380	0.9405	4.1195
Isobutane	6.9760	0.1279	0.5604	0.2536	1.1106	0.3815	1.6710
n-Butane	14.2508	0.2614	1.1448	0.5180	2.2688	0.7794	3.4136
2,2 Dimethylpropane	0.0193	0.0004	0.0016	0.0007	0.0031	0.0011	0.0046
Isopentane	5.5895	0.1025	0.4490	0.2032	0.8899	0.3057	1.3389
n-Pentane	5.3908	0.0989	0.4331	0.1959	0.8582	0.2948	1.2913
2,2 Dimethylbutane	0.0538	0.0010	0.0043	0.0020	0.0086	0.0029	0.0129
Cyclopentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2,3 Dimethylbutane	0.0848	0.0016	0.0068	0.0031	0.0135	0.0046	0.0203
2-Methylpentane	0.5658	0.0104	0.0455	0.0206	0.0901	0.0309	0.1355
3-Methylpentane	0.3825	0.0070	0.0307	0.0139	0.0609	0.0209	0.0916
n-Hexane	9.3679	0.1718	0.7525	0.3405	1.4914	0.5123	2.2439
Methylcyclopentane	0.1305	0.0024	0.0105	0.0047	0.0208	0.0071	0.0313
Benzene	0.0110	0.0002	0.0009	0.0004	0.0017	0.0006	0.0026
Cyclohexane	0.1277	0.0023	0.0103	0.0046	0.0203	0.0070	0.0306
2-Methylhexane	0.1371	0.0025	0.0110	0.0050	0.0218	0.0075	0.0328
3-Methylhexane	0.4081	0.0075	0.0328	0.0148	0.0650	0.0223	0.0977
2,2,4 Trimethylpentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heptane	0.7284	0.0134	0.0585	0.0265	0.1160	0.0398	0.1745
Methylcyclohexane	0.4029	0.0074	0.0324	0.0146	0.0641	0.0220	0.0965
Toluene	0.0569	1.04E-03	4.57E-03	0.0021	0.0091	0.0031	0.0136
Octane	0.7499	0.0138	0.0602	0.0273	0.1194	0.0410	0.1796
Ethylbenzene	0.0317	5.81E-04	2.55E-03	0.0012	0.0050	0.0017	0.0076
m & p-Xylene	0.0430	7.88E-04	3.45E-03	0.0016	0.0068	0.0023	0.0103
o-Xylene	0.0324	5.94E-04	0.0026	0.0012	0.0052	0.0018	0.0078
Nonane	0.1610	0.0030	0.0129	0.0059	0.0256	0.0088	0.0386
C10+	0.0523	9.58E-04	0.0042	0.0019	0.0083	0.0029	0.0125
Total VOCs	62.952	1.1546	5.057	2.2882	10.0222	3.4428	15.079
Total CO_{2e}		1.5567	6.8184	3.0852	13.5131	4.6419	20.332
CH_4		0.0621	0.2721	0.1231	0.5393	0.1852	0.8114
Total TAPs (Benzene)		2.01E-04	8.82E-04	0.0004	0.0017	0.0006	0.0026
Toluene		1.04E-03	4.57E-03	0.0021	0.0091	0.0031	0.0136
Ethylbenzene		5.81E-04	2.55E-03	0.0012	0.0050	0.0017	0.0076
Xylenes		1.38E-03	0.0061	0.0027	0.0120	0.0041	0.0181
n-Hexane		0.1718	0.7525	0.3405	1.4914	0.5123	2.2439
Total HAPs		0.1750	0.7666	0.3469	1.5193	0.5219	2.2858
Total	100.00	1.8341	8.0331	3.6348	15.9205	5.4689	23.954

Table 7

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

Produced Water Tank Information	
Number of Tanks	2
Maximum Working Losses (lbs/hr)	0.0236
Maximum Breathing Losses (lbs/hr)	0.0084

	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	90.6880	0.0214	0.0937	0.0076	0.0333	0.0290	0.1270
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.0053	1.24E-06	5.44E-06	4.42E-07	1.94E-06	1.69E-06	7.38E-06
Carbon Dioxide	4.4460	0.0010	0.0046	0.0004	0.0016	0.0014	0.0062
Methane	3.1485	0.0007	0.0033	0.0003	0.0012	0.0010	0.0044
Ethane	1.6653	0.0004	0.0017	0.0001	0.0006	0.0005	0.0023
Propane	0.0402	9.49E-06	0.0000	3.38E-06	1.48E-05	1.29E-05	0.0001
Isobutane	0.0019	4.37E-07	1.91E-06	1.56E-07	6.81E-07	5.93E-07	2.60E-06
n-Butane	0.0036	8.46E-07	3.70E-06	3.01E-07	1.32E-06	1.15E-06	5.02E-06
2,2 Dimethylpropane	0.0000	1.91E-10	8.35E-10	6.78E-11	2.97E-10	2.58E-10	1.13E-09
Isopentane	0.0002	5.22E-08	2.29E-07	1.86E-08	8.14E-08	7.08E-08	3.10E-07
n-Pentane	0.0000	5.57E-09	2.44E-08	1.98E-09	8.68E-09	7.55E-09	3.31E-08
2,2 Dimethylbutane	0.0000	2.69E-11	1.18E-10	9.58E-12	4.19E-11	3.65E-11	1.60E-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	1.56E-10	6.81E-10	5.54E-11	2.42E-10	2.11E-10	9.24E-10
2-Methylpentane	1.70E-06	4.02E-10	1.76E-09	1.43E-10	6.26E-10	5.45E-10	2.39E-09
3-Methylpentane	6.18E-06	1.46E-09	6.38E-09	5.19E-10	2.27E-09	1.98E-09	8.65E-09
n-Hexane	4.64E-06	1.09E-09	4.79E-09	3.90E-10	1.71E-09	1.48E-09	6.50E-09
Methylcyclopentane	4.49E-06	1.06E-09	4.64E-09	3.77E-10	1.65E-09	1.44E-09	6.29E-09
Benzene	3.74E-04	8.83E-08	3.87E-07	3.14E-08	1.38E-07	1.20E-07	5.24E-07
Cyclohexane	1.62E-05	3.83E-09	1.68E-08	1.36E-09	5.97E-09	5.20E-09	2.28E-08
2-Methylhexane	6.05E-08	1.43E-11	6.25E-11	5.08E-12	2.22E-11	1.93E-11	8.47E-11
3-Methylhexane	2.33E-07	5.49E-11	2.40E-10	1.95E-11	8.55E-11	7.44E-11	3.26E-10
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	6.03E-08	1.42E-11	6.23E-11	5.06E-12	2.22E-11	1.93E-11	8.45E-11
Methylcyclohexane	4.02E-06	9.49E-10	4.16E-09	3.38E-10	1.48E-09	1.29E-09	5.64E-09
Toluene	3.77E-04	8.90E-08	3.90E-07	3.17E-08	1.39E-07	1.21E-07	5.29E-07
Octane	3.32E-09	7.83E-13	3.43E-12	2.79E-13	1.22E-12	1.06E-12	4.65E-12
Ethylbenzene	5.71E-05	1.35E-08	5.90E-08	4.79E-09	2.10E-08	1.83E-08	8.00E-08
m & p-Xylene	4.11E-05	9.69E-09	4.24E-08	3.45E-09	1.51E-08	1.31E-08	5.75E-08
o-Xylene	7.23E-05	1.71E-08	7.47E-08	6.07E-09	2.66E-08	2.31E-08	1.01E-07
Nonane	2.38E-10	5.62E-14	2.46E-13	2.00E-14	8.76E-14	7.62E-14	3.34E-13
C10+	6.58E-09	1.55E-12	6.80E-12	5.53E-13	2.42E-12	2.11E-12	9.22E-12
Total VOCs	0.0469	1.11E-05	0.0000	3.93E-06	1.72E-05	1.50E-05	0.0001
Total CO_{2e}		0.0196	0.0859	0.0070	0.0306	0.0266	0.1165
CH_4		0.0007	0.0033	0.0003	0.0012	0.0010	0.0044
Total TAPs (Benzene)		8.83E-08	3.87E-07	3.14E-08	1.38E-07	1.20E-07	5.24E-07
Toluene		8.90E-08	3.90E-07	3.17E-08	1.39E-07	1.21E-07	5.29E-07
Ethylbenzene		1.35E-08	5.90E-08	4.79E-09	2.10E-08	1.83E-08	8.00E-08
Xylenes		2.68E-08	1.17E-07	9.52E-09	4.17E-08	3.63E-08	1.59E-07
n-Hexane		1.09E-09	4.79E-09	3.90E-10	1.71E-09	1.48E-09	6.50E-09
Total HAPs		2.19E-07	9.58E-07	7.78E-08	3.41E-07	2.96E-07	1.30E-06
Total	100.00	0.0236	0.1033	0.0084	0.0368	0.0320	0.1401

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

Table 8

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

Annual Loading	Oil Truck Loading	Water Truck Loading
RVP	4.41	1.0336
Annual Average Temp (F)	72.1	72.1
S (saturation factor)	0.6	0.6
P (true vapor pressure)	3.07	0.45
M (MW of vapor)	41.89	18.56
Collection Efficiency (%)	0.00	0.00
Total Hydrocarbon Loading Loss (lb/10^3 gal)*	1.81	0.12
Maximum Throughput (gallons/hr)**	10,080	10,080
Average Throughput (gallons/yr)	1,533,000	3,066,000
Total Hydrocarbon Loading Emissions (lbs/hr)	18.21	1.19
Total Hydrocarbon Loading Emissions (tpy)	1.38	0.18

	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	0.0018	3.19E-04	2.42E-05	0.0053	6.27E-05	9.54E-06
Carbon Dioxide	0.1968	0.0358	2.73E-03	4.4460	5.29E-02	8.05E-03
Methane	3.3873	0.6169	4.69E-02	3.1485	3.75E-02	5.70E-03
Ethane	33.4623	6.0946	0.4634	1.6653	1.98E-02	3.02E-03
Propane	17.1979	3.1323	2.38E-01	0.0402	4.79E-04	7.28E-05
Isobutane	6.9760	1.2706	9.66E-02	0.0019	2.21E-05	3.36E-06
n-Butane	14.2508	2.5955	1.97E-01	0.0036	4.27E-05	6.49E-06
2,2 Dimethylpropane	0.0193	0.0035	2.68E-04	0.0000	9.62E-09	1.46E-09
Isopentane	5.5895	1.0180	7.74E-02	0.0002	2.64E-06	4.01E-07
n-Pentane	5.3908	0.9818	7.47E-02	0.0000	2.81E-07	4.27E-08
2,2 Dimethylbutane	0.0538	0.0098	7.45E-04	0.0000	1.36E-09	2.07E-10
Cyclopentane	0.0000	0.0000	0.00E+00	0.0000	0.00E+00	0.00E+00
2,3 Dimethylbutane	0.0848	0.0155	1.18E-03	0.0000	7.85E-09	1.19E-09
2-Methylpentane	0.5658	0.1031	7.84E-03	1.70E-06	2.03E-08	3.08E-09
3-Methylpentane	0.3825	0.0697	5.30E-03	6.18E-06	7.35E-08	1.12E-08
n-Hexane	9.3679	1.7062	1.30E-01	4.64E-06	5.53E-08	8.40E-09
Methylcyclopentane	0.1305	0.0238	1.81E-03	4.49E-06	5.34E-08	8.13E-09
Benzene	0.0110	0.0020	1.52E-04	0.0004	4.46E-06	6.78E-07
Cyclohexane	0.1277	0.0233	1.77E-03	0.0000	1.93E-07	2.94E-08
2-Methylhexane	0.1371	0.0250	1.90E-03	0.0000	7.20E-10	1.09E-10
3-Methylhexane	0.4081	0.0743	5.65E-03	0.0000	2.77E-09	4.21E-10
2,2,4 Trimethylpentane	0.0000	0.0000	0.00E+00	0.0000	0.00E+00	0.00E+00
Heptane	0.7284	0.1327	1.01E-02	6.03E-08	7.18E-10	1.09E-10
Methylcyclohexane	0.4029	0.0734	5.58E-03	4.02E-06	4.79E-08	7.29E-09
Toluene	0.0569	0.0104	7.88E-04	0.0004	4.49E-06	6.83E-07
Octane	0.7499	0.1366	1.04E-02	3.32E-09	3.95E-11	6.01E-12
Ethylbenzene	0.0317	0.0058	4.39E-04	5.71E-05	6.80E-07	1.03E-07
m & p-Xylene	0.0430	0.0078	5.95E-04	4.11E-05	4.89E-07	7.44E-08
o-Xylene	0.0324	0.0059	4.49E-04	7.23E-05	8.61E-07	1.31E-07
Nonane	0.1610	0.0293	2.23E-03	2.38E-10	2.84E-12	4.31E-13
C10+	0.0523	0.0095	7.24E-04	6.58E-09	7.84E-11	1.19E-11
Total VOCs	62.9519	11.4656	0.8719	0.0469	0.0006	0.0001
Total CH_4		0.6169	0.0469		0.0375	0.0057
Total CO_{2e}		15.4592	1.1755		0.9901	0.1506
Total TAPs (Benzene)		0.0020	0.0002		4.46E-06	6.78E-07
Toluene		0.0104	0.0008		4.49E-06	6.83E-07
Ethylbenzene		0.0058	0.0004		6.80E-07	1.03E-07
Xylenes		0.0137	0.0010		1.35E-06	2.05E-07
n-Hexane		1.7062	0.1297		5.53E-08	8.40E-09
Total HAPs		1.7381	0.1322		1.10E-05	1.68E-06
Total	100.0000	18.2133	1.3850	100.0000	1.1906	0.1811

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 condensate throughput in gallons per hour is based on actual filling rate of 4 barrels per minute. (10080 gal/hr = 4 bbl/ 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
Diane Davis Well Pad
Doddridge County, West Virginia
Antero Resources Corporation

Gas Production Unit Heater Emissions

Number of Units	7
GPU Heater Rating (MMBtu/hr)	1.50
Operating hours/year	8760
Fuel Heat Value (Btu/scf)	1,206.90

Pollutant	Emission Factors (lb/MMscf)	lb/hr	tpy
NOx	100	0.870	3.811
CO	84	0.731	3.201
CO_2	120,000	1044.001	4572.726
Lead	0.0005	4.35E-06	1.91E-05
N_2O	2.2	0.019	0.084
PM (Total)	7.6	0.066	0.290
SO_2	0.6	0.005	0.023
TOC	11	0.096	0.419
Methane	2.3	0.020	0.088
VOC	5.5	0.048	0.210
HAPS			
2-Methylnaphthalene	2.40E-05	2.09E-07	9.15E-07
Benzene	2.10E-03	1.83E-05	8.00E-05
Dichlorobenzene	1.20E-03	1.04E-05	4.57E-05
Fluoranthene	3.00E-06	2.61E-08	1.14E-07
Fluorene	2.80E-06	2.44E-08	1.07E-07
Formaldehyde	7.50E-02	6.53E-04	2.86E-03
Hexane	1.80E+00	1.57E-02	6.86E-02
Naphthalene	6.10E-04	5.31E-06	2.32E-05
Phenanathrene	1.70E-05	1.48E-07	6.48E-07
Toluene	3.40E-03	2.96E-05	1.30E-04

	lb/hr	tpy
TOTAL Uncontrolled VOC	0.048	0.210
TOTAL Uncontrolled HAPs	0.016	0.072
TOTAL Uncontrolled TAPs (Benzene)	1.83E-05	8.00E-05
TOTAL Uncontrolled Toluene	2.96E-05	1.30E-04
TOTAL Uncontrolled Hexane	0.016	0.069
TOTAL Uncontrolled TAPs (Formaldehyde)	0.001	0.003
TOTAL CH_4	0.020	0.088
TOTAL CO_{2e} Emissions	1,050.21	4,599.90

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

Table 10

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

General Information	
Unit Name:	EC001

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 weigl	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	1
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)	17	--	938.46	28.93	49.55	0.65	1,034.58
Maximum Expected Annual Volumetric Flow Rate of Stream (scf/yr)	148,920.00	--	8,220,876.34	253,398.91	434,017.04	5,728.57	9,062,940.86
Heating Content (Btu/ft3)	1,207		2,153.66	1,155.10	2,390.87	102.48	2,100.42

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	-	-	64.570	0.109	3.443	0.000	68.12
Benzene	-	-	0.019	0.000	0.001	0.000	0.020
Toluene	-	-	0.097	0.002	0.003	0.000	0.102
Ethylbenzene	-	-	0.051	0.001	0.002	0.000	0.053
Xylenes	-	-	0.116	0.002	0.004	0.000	0.122
n-Hexane	-	-	10.253	0.002	0.512	0.000	10.767
HAPs	-	-	10.536	0.007	0.522	0.000	11.064
Total Mass Flow	-	-	103.588	1.415	5.469	0.032	110.503
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	-	-	282.817	0.479	15.079	0.000	298.375
Benzene	-	-	0.083	0.002	0.003	0.000	0.087
Toluene	-	-	0.425	0.007	0.014	0.000	0.446
Ethylbenzene	-	-	0.222	0.004	0.008	0.000	0.234
Xylenes	-	-	0.508	0.008	0.018	0.000	0.535
n-Hexane	-	-	44.907	0.009	2.244	0.000	47.160
HAP	-	-	46.146	0.030	2.286	0.000	48.462
Total Mass Flow	-	-	453.714	6.197	23.954	0.140	484.005

Table 10

Enclosed Combustor Emissions
Diane Davis 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	0.002	-	0.816				0.82
CO	0.001	-	3.720				3.72
PM2.5	0.000	-	0.005	0.000	0.000	0.000	0.01
PM10	0.000	-	0.007	0.000	0.000	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	2.040	-	-	-	-	-	2.04
Total VOC	0.000	-	1.291	0.002	0.069	0.000	1.36
Benzene	0.000	-	0.000	0.000	0.000	0.000	0.00
Toluene	0.000	-	0.002	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	0.000	0.000	0.000	0.00
n-Hexane	0.000	-	0.205	0.000	0.010	0.000	0.22
HAP	0.000	-	0.211	0.000	0.010	0.000	0.22
N_2O	0.000	-	0.002	0.000	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	0.007	-	3.574				3.58
CO	0.006	-	16.294				16.30
PM2.5	0.000	-	0.023	0.001	0.001	0.000	0.03
PM10	0.001	-	0.031	0.001	0.002	0.000	0.03
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	8.935	-	-	-	-	-	8.94
Total VOC	0.000	-	5.656	0.010	0.302	0.000	5.97
Benzene	0.000	-	0.002	0.000	0.000	0.000	0.00
Toluene	0.000	-	0.009	0.000	0.000	0.000	0.01
Ethylbenzene	0.000	-	0.004	0.000	0.000	0.000	0.00
Xylenes	0.000	-	0.010	0.000	0.000	0.000	0.01
n-Hexane	0.000	-	0.898	0.000	0.045	0.000	0.94
HAP	0.000	-	0.923	0.001	0.046	0.000	0.97
N_2O	0.000	-	0.009	0.000	0.000	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	1.36	5.97
NOx	0.818	3.582
CO	3.721	16.300
PM2.5	0.006	0.026
PM10	0.008	0.034
H_2S	5.43E-06	2.38E-05
SO_2	1.02E-05	4.47E-05
Benzene (TAPs)	3.99E-04	1.75E-03
Toluene	2.04E-03	8.92E-03
Ethylbenzene	1.07E-03	4.67E-03
Xylenes	2.44E-03	0.011
Hexanes	0.215	0.943
Formaldehyde (TAPs)	1.28E-06	5.58E-06
HAPs	0.22	0.97
CH_4	0.27	1.18
CO_2e	298.81	1308.79
N_2O	0.002	0.00997
Lead	5.17E-07	2.27E-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
Diane Davis 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	0.002	8,220,876	0.0158	253,399	0.0019	434,017	0.019	5,729	19,783	1	0	--	19,783	21,857,727
Methane	0.312	8,220,876	0.7424	253,399	0.0885	434,017	0.036	5,729	2,791,140	1	0.98	2,735,318	55,823	55,823
Ethane	0.299	8,220,876	0.1776	253,399	0.4661	434,017	0.010	5,729	2,707,281	2	0.98	5,306,270	--	
Propane	0.128	8,220,876	0.0188	253,399	0.1634	434,017	0.000	5,729	1,128,424	3	0.98	3,317,568	--	
i-Butane	0.043	8,220,876	0.0026	253,399	0.0503	434,017	0.000	5,729	379,131	4	0.98	1,486,195	--	
n-Butane	0.088	8,220,876	0.0056	253,399	0.1027	434,017	0.000	5,729	770,385	4	0.98	3,019,909	--	
Pentane	0.061	8,220,876	0.0015	253,399	0.0639	434,017	0.000	5,729	532,022	5	0.98	2,606,909	--	
Hexane	0.050	8,220,876	0.0006	253,399	0.0521	434,017	0.000	5,729	430,609	6	0.98	2,531,979	--	
Benzene	0.000	8,220,876	0.0001	253,399	0.0001	434,017	0.000	5,729	766	6	0.98	4,502	--	
Heptanes	0.009	8,220,876	0.0002	253,399	0.0070	434,017	0.000	5,729	73,685	7	0.98	505,479	--	
Toluene	0.000	8,220,876	0.0003	253,399	0.0003	434,017	0.000	5,729	3,316	7	0.98	22,746	--	
Octane	0.003	8,220,876	0.0000	253,399	0.0027	434,017	0.000	5,729	25,525	8	0.98	200,116	--	
Ethyl benzene	0.000	8,220,876	0.0001	253,399	0.0001	434,017	0.000	5,729	1,507	8	0.98	11,818	--	
Xylenes	0.000	8,220,876	0.0003	253,399	0.0003	434,017	0.000	5,729	3,449	8	0.98	27,040	--	
Nonane	0.001	8,220,876	0.0000	253,399	0.0005	434,017	0.000	5,729	5,062	9	0.98	44,651	--	
Decane plus	0.000	8,220,876	0.0000	253,399	0.0001	434,017	0.000	5,729	1,780	10	0.98	17,444	--	
Subtotal												**21,837,944**	--	

Pollutant	Volume Emitted *scf/year*	Density of GHG[c] *lb/scf*	Conversion Factor *lb/ton*	GWF	Emissions[c] *lbs/hr*	Emissions[c] *(tons/yr)*
CO_2	21,857,727	0.12	2000	1	289.35	1,267.34
CH_4	55,823	0.04	2000	25	0.27	1.18
				CO_2e Emissions	**296.1**	**1296.88**

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
Diane Davis 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)	100
PW Production (bbl/day)	200
Condensate Truck Capacity (bbl)	200
PW 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	2.4500	1	183	2.4500	448.3500	3.8175	1.7179
Tanker Trucks PW	10	40	10	2.4500	1	365	2.4500	894.2500	3.8175	1.7179
Pick Up Truck	4	3	10	0.2500	1	730	0.2500	182.5000	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	9.3529	1711.5893	0.8558	4.2088	770.2152	0.3851	4.6765	855.7947	0.4279	2.1044	385.1076	0.1926
Tanker Trucks PW	9.3529	3413.8257	1.7069	4.2088	1536.2215	0.7681	4.6765	1706.9128	0.8535	2.1044	768.1108	0.3841
Pick Up Truck	0.0867	63.2690	0.0316	0.0390	28.4711	0.0142	0.0433	31.6345	0.0158	0.0195	14.2355	0.0071
Total Emissions	18.7926	5,188.6840	2.5943	8.4567	2,334.9078	1.1675	9.3963	2,594.3420	1.2972	4.2283	1,167.4539	0.5837

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

Bryan Research & Engineering, Inc.

ProMax® 4.0

Simulation Report

Project: PROMAX SCENARIO 3.pmx

Licensed to GHD Limited and Affiliates

Client Name: Antero Resources Corporation
Location: West Virginia
Job: Diane Davis

ProMax Filename: \\HOU-S1.CRA.INT\SHARED\AIR QUALITY\6-CHARS\08----\0827--\082715\ANTERO RESOURCES\01-PROMAX\MODEL 2017-2018\HP\PROMAX SCENARIO 3.pmx
ProMax Version: 4.0.16071.0
Simulation Initiated: 1/11/2018 10:16:48 AM

Bryan Research & Engineering, Inc.
Chemical Engineering Consultants
P.O. Box 4747 Bryan, Texas 77805
Office: (979) 776-5220
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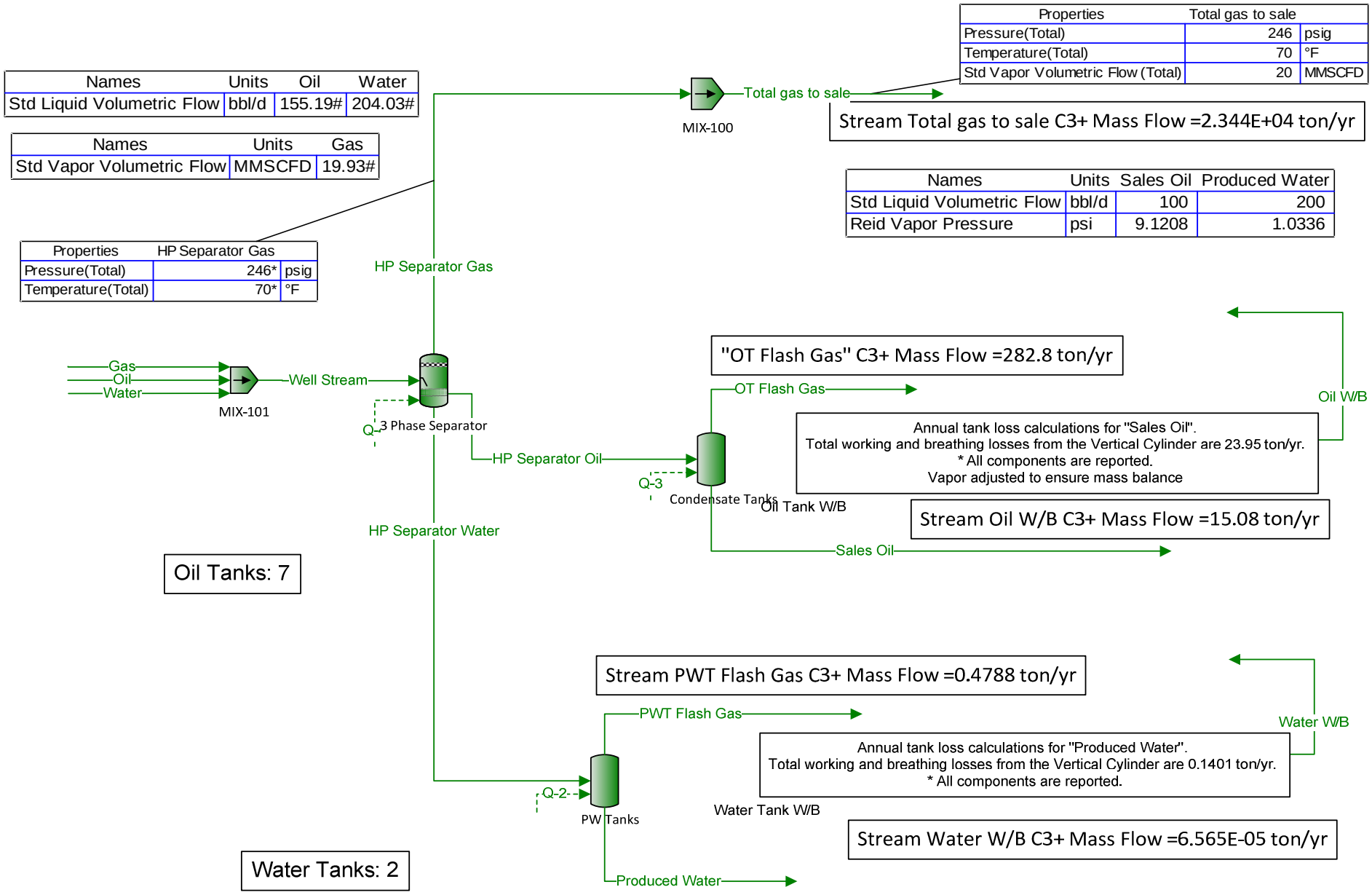
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.


Names | Units | Oil | Water
Std Liquid Volumetric Flow | bbl/d | 155.19# | 204.03#
Names | Units | Gas
Std Vapor Volumetric Flow | MMSCFD | 19.93#
Properties | HP Separator Gas
Pressure(Total) | 246* | psig
Temperature(Total) | 70* | °F
Properties | Total gas to sale
Pressure(Total) | 246 | psig
Temperature(Total) | 70 | °F
Std Vapor Volumetric Flow (Total) | 20 | MMSCFD
Names | Units | Sales Oil | Produced Water
Std Liquid Volumetric Flow | bbl/d | 100 | 200
Reid Vapor Pressure | psi | 9.1208 | 1.0336
MIX-100
Total gas to sale
Stream Total gas to sale C3+ Mass Flow =2.344E+04 ton/yr
HP Separator Gas
Gas
Oil
Water
MIX-101
Well Stream
3 Phase Separator
Q-1
"OT Flash Gas" C3+ Mass Flow =282.8 ton/yr
OT Flash Gas
Oil W/B
Annual tank loss calculations for "Sales Oil".
Total working and breathing losses from the Vertical Cylinder are 23.95 ton/yr.
* All components are reported.
Vapor adjusted to ensure mass balance
HP Separator Oil
Q-3
Condensate Tanks
Oil Tank W/B
Stream Oil W/B C3+ Mass Flow =15.08 ton/yr
HP Separator Water
Sales Oil
Oil Tanks: 7
Stream PWT Flash Gas C3+ Mass Flow =0.4788 ton/yr
PWT Flash Gas
Water W/B
Annual tank loss calculations for "Produced Water".
Total working and breathing losses from the Vertical Cylinder are 0.1401 ton/yr.
* All components are reported.
Q-2
PW Tanks
Water Tank W/B
Stream Water W/B C3+ Mass Flow =6.565E-05 ton/yr
Produced Water
Water Tanks: 2

Process Streams		Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Water	Water W/B	Well Stream
Composition	Status:	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water		0*	0.149218	0.0515765	99.9545	0*	0.000133964*	0.218287	99.9966	3.03288	0.00470154	0.149218	100*	93.4319*	6.96808
H2S		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Nitrogen		0.4085*	0.406974	0.0109957	8.83227E-05	0.0150009*	0.00261719*	0.0498439	2.32306E-06	0.198363	7.25252E-05	0.406974	0*	0.00349118*	0.377073
Carbon Dioxide		0.1743*	0.173492	0.0416664	0.00145692	0.0260016*	0.187277*	0.180723	0.000769153	1.58713	0.00256712	0.173492	0*	1.87504*	0.161038
Methane		80.8909*	80.5919	6.96734	0.0340404	6.88641*	8.84435*	31.2054	0.00179195	74.3840	0.152202	80.5919	0*	3.64269*	74.6973
Ethane		14.3137*	14.2836	7.30836	0.00835355	8.32250*	46.6145*	29.9394	0.000639530	17.7933	0.945077	14.2836	0*	1.02795*	13.2712
Propane		2.2213*	2.26111	3.97268	0.000863229	8.76153*	16.3368*	12.8139	4.77433E-05	1.88099	1.48675	2.26111	0*	0.0169290*	2.11575
Isobutane		0.4547*	0.462384	1.94393	0.000118462	2.53215*	5.02745*	4.34041	4.64331E-06	0.262531	1.27010	0.462384	0*	0.000591781*	0.438654
n-Butane		0.7773*	0.804498	4.89303	0.000257580	7.16543*	10.2703*	8.81578	1.31269E-05	0.563851	3.79005	0.804498	0*	0.00114477*	0.771222
2,2-Dimethylpropane		0*	0.000919006	0.00696325	1.37501E-07	0.118007*	0.0112199*	0.0106909	3.40483E-09	0.000309301	0.00591514	0.000919006	0*	2.07800E-07*	0.000888265
Isopentane		0.2153*	0.230583	3.23378	4.88370E-05	4.26126*	3.24511*	3.09456	1.78644E-06	0.108525	3.27292	0.230583	0*	5.69700E-05*	0.230753
n-Pentane		0.1929*	0.214578	4.00907	1.72873E-05	5.58334*	3.12975*	3.02794	2.58535E-07	0.0392777	4.28494	0.214578	0*	6.07300E-06*	0.220034
2,2-Dimethylbutane		0*	0.00168409	0.0507647	1.25325E-07	0.243015*	0.0261603*	0.0248132	1.69586E-09	0.000285157	0.0580616	0.00168409	0*	2.45703E-08*	0.00182922
Cyclopentane		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane		0*	0.00264571	0.107077	4.48491E-07	0.401024*	0.0412398*	0.0396572	1.34989E-08	0.00100334	0.126033	0.00264571	0*	1.42028E-07*	0.00301860
2-Methylpentane		0*	0.0177145	0.793736	1.91014E-06	2.73916*	0.275029*	0.266447	3.90786E-08	0.00431569	0.941996	0.0177145	0*	3.66866E-07*	0.0206183
3-Methylpentane		0*	0.0119342	0.593996	3.21743E-06	1.88711*	0.185931*	0.180324	1.58084E-07	0.00705663	0.710310	0.0119342	0*	1.33054E-06*	0.0142047
n-Hexane		0.3511*	0.284295	18.1455	1.46528E-05	4.72528*	4.55348*	4.31211	1.50429E-07	0.0334502	22.0351	0.284295	0*	9.99505E-07*	0.359561
Methylcyclopentane		0*	0.00446581	0.284568	2.06790E-06	0.750045*	0.0649399*	0.0689124	1.63678E-07	0.00439232	0.345205	0.00446581	0*	9.90030E-07*	0.00564575
Benzene		0*	0.000568514	0.0380742	2.46096E-05	0.0970058*	0.00589067*	0.00880322	2.17392E-05	0.00664232	0.0463045	0.000568514	0*	8.89214E-05*	0.000730184
Cyclohexane		0*	0.00469909	0.392858	5.07085E-06	0.855051*	0.0635565*	0.0716306	8.46985E-07	0.00974332	0.483179	0.00469909	0*	3.58213E-06*	0.00643616
2-Methylhexane		0*	0.0139198	1.85441	9.99842E-07	3.01918*	0.0572960*	0.205111	1.40943E-08	0.00227367	2.31816	0.0139198	0*	1.12002E-08*	0.0227260
3-Methylhexane		0*	0.0113070	1.67343	9.81856E-07	2.57015*	0.170583*	0.167075	1.64778E-08	0.00222669	2.09698	0.0113070	0*	4.30964E-08*	0.0193461
2,2,4-Trimethylpentane		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Heptane		0*	0.0216026	4.07029	7.70276E-07	5.52533*	0.304483*	0.314394	5.84908E-09	0.00176318	5.12636	0.0216026	0*	1.11696E-08*	0.0415904
Methylcyclohexane		0*	0.0115337	2.25144	4.95778E-06	3.00518*	0.171874*	0.172503	3.90360E-07	0.0105353	2.83598	0.0115337	0*	7.60622E-07*	0.0226207
Toluene		0*	0.00254332	0.559914	7.59917E-05	0.708042*	0.0258507*	0.0381818	6.46462E-05	0.0262334	0.706612	0.00254332	0*	7.60380E-05*	0.00532959
Octane		0*	0.0215289	12.3032	2.94648E-07	11.3147*	0.275002*	0.296109	9.56399E-10	0.000677409	15.6793	0.0215289	0*	5.39311E-10*	0.0851681
Ethylbenzene		0*	0.00122468	0.800862	3.03228E-05	0.715043*	0.0125093*	0.0173324	2.53464E-05	0.0115036	1.02117	0.00122468	0*	9.98252E-06*	0.00538229
m-Xylene		0*	0.00129754	0.911798	1.99938E-05	0.802048*	0.0169496*	0.0182801	1.53275E-05	0.0107784	1.16303	0.00129754	0*	7.18169E-06*	0.00603719
o-Xylene		0*	0.00151611	1.24233	5.52056E-05	1.06206*	0.0127873*	0.0213336	4.87744E-05	0.0148826	1.58565	0.00151611	0*	1.26460E-05*	0.00799439
Nonane		0*	0.00450935	7.91482	6.22599E-08	6.12937*	0.0525736*	0.0588062	2.06556E-10	0.000143128	10.1237	0.00450935	0*	3.44868E-11*	0.0461371
C10+		0*	0.00179663	13.5716	4.68612E-07	9.77959*	0.0144196*	0.0212273	3.01735E-08	0.00101130	17.3816	0.00179663	0*	8.04777E-10*	0.0736131
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
Water		0*	3.27803	0.00648411	161.957	0*	1.74904E-07*	0.00602276	161.955	0.00213056	0.000461350	3.27803	165.242*	0.00161008*	165.242
H2S		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Nitrogen		8.93929*	8.94044	0.00138236	0.000143110	0.00267768*	3.41701E-06*	0.00137524	3.76244E-06	0.000139348	7.11671E-06	8.94044	0*	6.01622E-08*	8.94196
Carbon Dioxide		3.81424*	3.81128	0.00523824	0.00236067	0.00464131*	0.000244509*	0.00498634	0.00124573	0.00111494	0.000251905	3.81128	0*	3.23119E-05*	3.81888
Methane		1770.15*	1770.45	0.875923	0.0551561	1.22923*	0.0115472*	0.860988	0.00290225	0.0522538	0.0149352	1770.45	0*	6.27730E-05*	1771.38
Ethane		313.230*	313.783	0.918795	0.0135353	1.48558*	0.0608601*	0.826057	0.00103579	0.0124996	0.0927380	313.783	0*	1.77143E-05*	314.715
Propane		48.6091*	49.6723	0.499440	0.00139870	1.56394*	0.0213294*	0.353549	7.73254E-05	0.00132137	0.145891	49.6723	0*	2.91731E-07*	50.1731
Isobutane		9.95029*	10.1577	0.244388	0.000191946	0.451993*	0.00656386*	0.119756	7.52034E-06	0.000184425	0.124632	10.1577	0*	1.01979E-08*	10.4023
n-Butane		17.0098*	17.6733	0.615144	0.000417359	1.27904*	0.0134090*	0.243236	2.12604E-05	0.000396099	0.371908	17.6733	0*	1.97274E-08*	18.2888
2,2-Dimethylpropane		0*	0.0201888	0.000875410	2.22794E-07	0.0210644*	1.46488E-05*	0.000294972	5.51449E-09	2.17280E-07	0.000580438	0.0201888	0*	3.58093E-12*	0.0210644
Isopentane		4.71145*	5.06547	0.406545	7.91310E-05	0.760640*	0.00423684*	0.0853820	2.89333E-06	7.62377E-05	0.321163	5.06547	0*	9.81742E-10*	5.47209
n-Pentane		4.22127*	4.71386	0.504014	2.80109E-05	0.996633*	0.00408621*	0.0835439	4.18726E-07	2.75921E-05	0.420470	4.71386	0*	1.04654E-10*	5.21790
2,2-Dimethylbutane		0*	0.0369962	0.00638206	2.03066E-07	0.0433784*	3.41550E-05*	0.000684621	2.74663E-09	2.00319E-07	0.00569743	0.0369962	0*	4.23410E-13*	0.0433784
Cyclopentane		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane		0*	0.0581211	0.0134615	7.26695E-07	0.0715833*	5.38429E-05*	0.00109418	2.18629E-08	7.04832E-07	0.0123673	0.0581211	0*	2.44752E-12*	0.0715833
2-Methylpentane		0*	0.389154	0.0997873	3.09501E-06	0.488945*	0.000359080*	0.00735153	6.32920E-08	3.03172E-06	0.0924357	0.389154	0*	6.32207E-12*	0.488945
3-Methylpentane		0*	0.262171	0.0746763	5.21323E-06	0.336852*	0.000242753*	0.00497532	2.56034E-07	4.95720E-06	0.0697010	0.262171	0*	2.29286E-11*	0.336852
n-Hexane		7.68319*	6.24542	2.28122	2.37420E-05	0.843470*	0.00594505*	0.118975	2.43637E-07	2.34984E-05	2.16225	6.24542	0*	1.72241E-11*	8.52666
Methylcyclopentane		0*	0.0981053	0.0357754	3.35065E-06	0.133884*	8.47859E-05*	0.00190136	2.65094E-07	3.08555E-06	0.0338741	0.0981053	0*	1.70608E-11*	0.133884
Benzene		0*	0.0124892	0.00478664	3.98751E-05	0.0173157*	7.69089E-06*	0.000242889	3.52090E-05	4.66615E-06	0.00454375	0.0124892	0*	1.53235E-09*	0.0173157
Cyclohexane		0*	0.103230	0.0493895	8.21635E-06	0.152628*	8.29797E-05*	0.00197636	1.37178E-06	6.84456E-06	0.0474131	0.103230	0*	6.17295E-11*	0.152628
2-Methylhexane		0*	0.305792	0.233134	1.62005E-06	0.538928*	7.48059E-05*	0.00565920	2.28272E-08	1.59723E-06	0.227475	0.305792	0*	1.93009E-13*	0.538928
3-Methylhexane		0*	0.248393	0.210382	1.59091E-06	0.458776*	0.000222714*	0.00460977	2.66876E-08	1.56422E-06	0.205772	0.248393	0*	7.42664E-13*	0.458776
2,2,4-Trimethylpentane		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Heptane		0*	0.474567	0.511711	1.24809E-06	0.986279*	0.000397535*	0.00867445	9.47321E-09	1.23861E-06	0.503037	0.474567	0*	1.92482E-13*	0.986279
Methylcyclohexane		0*	0.253374	0.283047	8.03314E-06	0.536429*	0.000224399*	0.00475954	6.32230E-07	7.40091E-06	0.278288	0.253374	0*	1.31075E-11*	0.536429
Toluene		0*	0.0558719	0.0703915	0.000123130	0.126387*	3.37508E-05*	0.00105347	0.000104701	1.84287E-05	0.0693381	0.0558719	0*	1.31033E-09*	0.126387
Octane		0*	0.472949	1.54674	4.77421E-07	2.01969*	0.000359044*	0.00816995	1.54899E-09	4.75872E-07	1.53857	0.472949	0*	9.29374E-15*	2.01969
Ethylbenzene		0*	0.0269038	0.100683	4.91324E-05	0.127636*	1.63322E-05*	0.000478217	4.10513E-05	8.08113E-06	0.100205	0.0269038	0*	1.72025E-10*	0.127636
m-Xylene		0*	0.0285045	0.114630	3.23962E-05	0.143167*	2.21294E-05*	0.000504365	2.48245E-05	7.57168E-06	0.114125	0.0285045	0*	1.23759E-10*	0.143167
o-Xylene		0*	0.0333061	0.156184	8.94502E-05	0.189580*	1.66951E-05*	0.000588615	7.89954E-05	1.04549E-05	0.155596	0.0333061	0*	2.17923E-10*	0.189580
Nonane		0*	0.0990617	0.995039	1.00880E-07	1.09410*	6.86403E-05*	0.00162252	3.34540E-10	1.00546E-07	0.993416	0.0990617	0*	5.94298E-16*	1.09410
C10+		0*	0.0394686	1.70620	7.59297E-07	1.74567*	1.88263E-05*	0.000585682	4.88692E-08	7.10427E-07	1.70561	0.0394686	0*	1.38684E-14*	1.74567
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water		0*	0.135243	0.0103063	99.9472	0*	5.76159E-05*	0.104744	99.9943	2.71294	0.000807066	0.135243	100*	90.6880*	6.23847
H2S		0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Nitrogen		0.578987*	0.573571	0.00341664	0.000137330	0.00503503*	0.00175031*	0.0371909	3.61223E-06	0.275911	1.93590E-05	0.573571	0*	0.00526929*	0.524948
Carbon Dioxide		0.388110*	0.384132	0.0203397	0.00355885	0.0137109*	0.196764*	0.211846	0.00187892	3.46818	0.00107652	0.384132	0*	4.44601*	0.352209
Methane		65.6570*	65.0455	1.23980	0.0303105	1.32368*	3.38728*	13.3340	0.00159568	59.2507	0.0232660	65.0455	0*	3.14852*	59.5525
Ethane		21.7762*	21.6078	2.43754	0.0139418	2.99842*	33.4623*	23.9785	0.00106741	26.5655	0.270779	21.6078	0*	1.66535*	19.8314
Propane		4.95579*	5.01617	1.94308	0.00211275	4.62907*	17.1979*	15.0500	0.000116858	4.11837	0.624686	5.01617	0*	0.0402199*	4.63643
Isobutane		1.33714*	1.35207	1.25324	0.000382163	1.76340*	6.97597*	6.71942	1.49802E-05	0.757646	0.703409	1.35207	0*	0.00185318*	1.26703
n-Butane		2.28582*	2.35246	3.15451	0.000830961	4.99003*	14.2508*	13.6478	4.23499E-05	1.62723	2.09901	2.35246	0*	0.00358489*	2.22764
2,2-Dimethylpropane		0*	0.00333581	0.00557254	5.50633E-07	0.102013*	0.0193257*	0.0205448	1.36356E-08	0.00110803	0.00406651	0.00333581	0*	8.07769E-07*	0.00318490

Isopentane	0.785930*	0.836972	2.58792	0.000195571	3.68371*	5.58951*	5.94685	7.15430E-06	0.388779	2.25005	0.836972	0*	0.000221457*	0.827370
n-Pentane	0.704161*	0.778876	3.20837	6.92284E-05	4.82660*	5.39079*	5.81883	1.03538E-06	0.140708	2.94579	0.778876	0*	2.36073E-05*	0.788937
2,2-Dimethylbutane	0*	0.00730134	0.0485240	5.99445E-07	0.250919*	0.0538196*	0.0569541	8.11190E-09	0.00122014	0.0476760	0.00730134	0*	1.14079E-07*	0.00783383
Cyclopentane	0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane	0*	0.0114704	0.102350	2.14518E-06	0.414068*	0.0848428*	0.0910258	6.45699E-08	0.00429312	0.103489	0.0114704	0*	6.59435E-07*	0.0129274
2-Methylpentane	0*	0.0768011	0.758702	9.13639E-06	2.82826*	0.565818*	0.611579	1.86927E-07	0.0184662	0.773501	0.0768011	0*	1.70335E-06*	0.0882999
3-Methylpentane	0*	0.0517404	0.567778	1.53893E-05	1.94850*	0.382517*	0.413901	7.56172E-07	0.0301942	0.583257	0.0517404	0*	6.17765E-06*	0.0608331
n-Hexane	1.53082*	1.23256	17.3446	7.00857E-05	4.87899*	9.36789*	9.89764	7.19557E-07	0.143128	18.0936	1.23256	0*	4.64068E-06*	1.53985
Methylcyclopentane	0*	0.0189085	0.265644	9.65963E-06	0.756326*	0.130476*	0.154475	7.64613E-07	0.0183544	0.276827	0.0189085	0*	4.48916E-06*	0.0236129
Benzene	0*	0.00223415	0.0329883	0.000106696	0.0907890*	0.0109849*	0.0183154	9.42561E-05	0.0257620	0.0344642	0.00223415	0*	0.000374228*	0.00283448
Cyclohexane	0*	0.0198963	0.366733	2.36870E-05	0.862211*	0.127696*	0.160569	3.95665E-06	0.0407148	0.387471	0.0198963	0*	1.62427E-05*	0.0269187
2-Methylhexane	0*	0.0701722	2.06108	5.56077E-06	3.62480*	0.137061*	0.547423	7.83914E-08	0.0113122	2.21333	0.0701722	0*	6.04668E-08*	0.113168
3-Methylhexane	0*	0.0570004	1.85993	5.46073E-06	3.08570*	0.408062*	0.445910	9.16484E-08	0.0110785	2.00216	0.0570004	0*	2.32665E-07*	0.0963372
2,2,4-Trimethylpentane	0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Heptane	0*	0.108902	4.52391	4.28400E-06	6.63366*	0.728373*	0.839092	3.25321E-08	0.00877235	4.89456	0.108902	0*	6.03016E-08*	0.207106
Methylcyclohexane	0*	0.0569736	2.45201	2.70187E-05	3.53540*	0.402878*	0.451135	2.12747E-06	0.0513617	2.65327	0.0569736	0*	4.02376E-06*	0.110377
Toluene	0*	0.0117895	0.572235	0.000388628	0.781661*	0.0568628*	0.0937035	0.000330623	0.120016	0.620369	0.0117895	0*	0.000377472*	0.0244039
Octane	0*	0.123723	15.5885	1.86812E-06	15.4859*	0.749937*	0.900919	6.06406E-09	0.00384210	17.0659	0.123723	0*	3.31915E-09*	0.483477
Ethylbenzene	0*	0.00654121	0.943086	0.000178681	0.909561*	0.0317051*	0.0490115	0.000149365	0.0606397	1.03302	0.00654121	0*	5.70998E-05*	0.0283970
m-Xylene	0*	0.00693038	1.07372	0.000117816	1.02024*	0.0429591*	0.0516914	9.03236E-05	0.0568169	1.17653	0.00693038	0*	4.10792E-05*	0.0318523
o-Xylene	0*	0.00809782	1.46296	0.000325306	1.35098*	0.0324097*	0.0603260	0.000287424	0.0784520	1.60404	0.00809782	0*	7.23348E-05*	0.0421785
Nonane	0*	0.0290967	11.2597	4.43211E-07	9.41909*	0.160974*	0.200889	1.47049E-09	0.000911471	12.3721	0.0290967	0*	2.38309E-10*	0.294069
C10+	0*	0.0137210	22.8515	3.94832E-06	17.7873*	0.0522565*	0.0858272	2.54242E-07	0.00762247	25.1415	0.0137210	0*	6.58204E-09*	0.555330
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**
Water	0*	59.0546	0.116813	2917.71	0*	3.15094E-06*	0.108502	2917.67	0.0383827	0.00831135	59.0546	2976.88*	0.0290060*	2976.88
H2S	0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Nitrogen	250.420*	250.452	0.0387245	0.00400900	0.0750110*	9.57221E-05*	0.0385252	0.000105399	0.00390360	0.000199363	250.452	0*	1.68535E-06*	250.495
Carbon Dioxide	167.863*	167.733	0.230532	0.103892	0.204262*	0.0107607*	0.219446	0.0548238	0.0490679	0.0110862	167.733	0*	0.00142203*	168.067
Methane	28397.6*	28402.4	14.0520	0.884839	19.7199*	0.185246*	13.8124	0.0465592	0.838280	0.239598	28402.4	0*	0.00100703*	28417.3
Ethane	9418.51*	9435.15	27.6273	0.406995	44.6699*	1.83000*	24.8388	0.0311452	0.375850	2.78854	9435.15	0*	0.000532651*	9463.18
Propane	2143.45*	2190.33	22.0231	0.0616765	68.9631*	0.940532*	15.5899	0.00340971	0.0582668	6.43315	2190.33	0*	1.28641E-05*	2212.41
Isobutane	578.333*	590.388	14.2044	0.0111563	26.2708*	0.381506*	6.96049	0.000437099	0.0107192	7.24387	590.388	0*	5.92726E-07*	604.604
n-Butane	988.648*	1027.21	35.7535	0.0242578	74.3406*	0.779358*	14.1374	0.00123570	0.0230221	21.6161	1027.21	0*	1.14660E-06*	1062.99
2,2-Dimethylpropane	0*	1.45660	0.0631597	1.60743E-05	1.51977*	0.00105689*	0.0212819	3.97864E-07	1.56765E-05	0.0418779	1.45660	0*	2.58360E-10*	1.51977
Isopentane	339.926*	365.467	29.3317	0.00570921	54.8792*	0.305683*	6.16020	0.000208751	0.00550046	23.1715	365.467	0*	7.08315E-08*	394.805
n-Pentane	304.559*	340.099	36.3640	0.00202095	71.9059*	0.294815*	6.02759	3.02106E-05	0.00199074	30.3364	340.099	0*	7.55063E-09*	376.465
2,2-Dimethylbutane	0*	3.18816	0.549976	1.74993E-05	3.73815*	0.00294332*	0.0589975	2.36692E-07	1.72626E-05	0.490978	3.18816	0*	3.64875E-11*	3.73815
Cyclopentane	0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
2,3-Dimethylbutane	0*	5.00861	1.16005	6.26232E-05	6.16872*	0.00463993*	0.0942916	1.88404E-06	6.07392E-05	1.06576	5.00861	0*	2.10916E-10*	6.16872
2-Methylpentane	0*	33.5355	8.59920	0.000266714	42.1350*	0.0309438*	0.633521	5.45421E-06	0.000261260	7.96568	33.5355	0*	5.44806E-10*	42.1350
3-Methylpentane	0*	22.5927	6.43526	0.000449252	29.0284*	0.0209193*	0.428750	2.20638E-05	0.000427188	6.00651	22.5927	0*	1.97588E-09*	29.0284
n-Hexane	662.102*	538.201	196.585	0.00204598	72.6863*	0.512317*	10.2527	2.09955E-05	0.00202498	186.332	538.201	0*	1.48429E-09*	734.788
Methylcyclopentane	0*	8.25649	3.01084	0.000281989	11.2676*	0.00713554*	0.160017	2.23101E-05	0.000259678	2.85082	8.25649	0*	1.43583E-09*	11.2676
Benzene	0*	0.975551	0.373893	0.00311472	1.35256*	0.000600749*	0.0189725	0.00275024	0.000364481	0.354920	0.975551	0*	1.19695E-07*	1.35256
Cyclohexane	0*	8.68779	4.15659	0.000691483	12.8451*	0.00698353*	0.166329	0.000115449	0.000576035	3.99026	8.68779	0*	5.19512E-09*	12.8451
2-Methylhexane	0*	30.6410	23.3605	0.000162333	54.0016*	0.00749570*	0.567063	2.28733E-06	0.000160045	22.7934	30.6410	0*	1.93399E-11*	54.0016
3-Methylhexane	0*	24.8895	21.0806	0.000159412	45.9703*	0.0223164*	0.461908	2.67415E-06	0.000156738	20.6187	24.8895	0*	7.44163E-11*	45.9703
2,2,4-Trimethylpentane	0*	0	0	0	0*	0*	0	0	0	0	0	0*	0*	0
Heptane	0*	47.5525	51.2744	0.000125061	98.8271*	0.0398337*	0.869196	9.49234E-07	0.000124111	50.4052	47.5525	0*	1.92871E-11*	98.8271
Methylcyclohexane	0*	24.8778	27.7913	0.000788743	52.6698*	0.0220329*	0.467320	6.20762E-05	0.000726667	27.3240	24.8778	0*	1.28697E-09*	52.6698
Toluene	0*	5.14795	6.48577	0.0113450	11.6451*	0.00310975*	0.0970653	0.00964703	0.00169799	6.38870	5.14795	0*	1.20732E-07*	11.6451
Octane	0*	54.0242	176.681	5.45351E-05	230.706*	0.0410130*	0.933241	1.76939E-07	5.43581E-05	175.748	54.0242	0*	1.06161E-12*	230.706
Ethylbenzene	0*	2.85624	10.6890	0.00521614	13.5505*	0.00173391*	0.0507699	0.00435821	0.000857933	10.6383	2.85624	0*	1.82630E-08*	13.5505
m-Xylene	0*	3.02618	12.1697	0.00343934	15.1993*	0.00234937*	0.0535459	0.00263549	0.000803847	12.1161	3.02618	0*	1.31389E-08*	15.1993
o-Xylene	0*	3.53594	16.5813	0.00949648	20.1267*	0.00177244*	0.0624903	0.00838654	0.00110994	16.5188	3.53594	0*	2.31358E-08*	20.1267
Nonane	0*	12.7052	127.619	1.29384E-05	140.324*	0.00880347*	0.208097	4.29065E-08	1.28955E-05	127.411	12.7052	0*	7.62217E-14*	140.324
C10+	0*	5.99134	259.001	0.000115261	264.993*	0.00285783*	0.0889065	7.41835E-06	0.000107843	258.912	5.99134	0*	2.10522E-12*	264.993

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Property	**Units**														
Temperature	°F	85*	70*	70	70	85*	75.9425*	75.94*	75.94	75.94*	75.94	70	85*	75.9425*	83.7119
Pressure	psig	1000*	246*	246	246	1000*	1.37034	0*	0	0*	0	246	1000*	-14.2208	1000
Mole Fraction Vapor	%	100	100	0	0	0	100*	100	0	100	0	100	0	100*	92.2237
Mole Fraction Light Liquid	%	0	0	100	100	100	0	0	100	0	100	0	100	0	0.866901
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0	0	0	0	0	0	6.90936
Molecular Weight	lb/lbmol	19.7647	19.8767	90.1546	18.0166	83.4606	41.8876	37.5440	18.0157	20.1399	104.947	19.8767	18.0153	18.5604	20.1222
Mass Density	lb/ft^3	4.26228	0.971046	42.7503	62.2619	41.8743	0.119037	0.0971463	62.2226	0.0516684	43.8763	0.971046	62.1852	0.00153512	4.70281
Molar Flow	lbmol/h	2188.32	2196.81	12.5718	162.031	17.8501	0.130561	2.75910	161.961	0.0702488	9.81275	2196.81	165.242	0.00172326	2371.41
Mass Flow	lb/h	43251.4	43665.4	1133.41	2919.25	1489.78	5.46886*	103.588	2917.83	1.41480	1029.82	43665.4	2976.88	0.0319844*	47718.1
Vapor Volumetric Flow	ft^3/h	10147.5	44967.4	26.5123	46.8866	35.5775	45.9425	1066.31	46.8935	27.3824	23.4710	44967.4	47.8712	20.8351	10146.7
Liquid Volumetric Flow	gpm	1265.14	5606.33	3.30543	5.84561	4.43563	5.72790	132.942	5.84646	3.41391	2.92626	5606.33	5.96836	2.59762	1265.05
Std Vapor Volumetric Flow	MMSCFD	19.9304*	20.0077	0.114500	1.47572	0.162572	0.00118909	0.0251288	1.47508	0.000639799	0.0893707	20.0077	1.50496	1.56948E-05	21.5979
Std Liquid Volumetric Flow	sgpm	261.126	262.393	3.36853	5.84163	4.52627*	0.0233596	0.451867	5.83333	0.00829951	2.91666	262.393	5.95099*	7.12279E-05	271.603
Compressibility		0.804982	0.938796	0.0967195	0.0132714	0.345997	0.983568	0.988099	0.000740267	0.996593	0.00611543	0.938796	0.0502914	0.999551	0.744536
Specific Gravity		0.682420	0.686290	0.685442	0.998282	0.671397	1.44626	1.29629	0.997652	0.695376	0.703496	0.686290	0.997052	0.640839	
API Gravity				73.3770	10.0439	75.2211			10.0025		67.4712		9.87799		
Enthalpy	Btu/h	-7.51822E+07	-7.48057E+07	-1.04547E+06	-1.99235E+07	-1.38680E+06	-5820.62	-118570	-1.99055E+07	-2640.37	-908313	-7.48057E+07	-2.02743E+07	-175.545	-9.68432E+07
Mass Enthalpy	Btu/lb	-1738.26	-1713.16	-922.415	-6824.87	-930.874	-1064.32	-1144.63	-6822.02	-1866.25	-882.010	-1713.16	-6810.58	-5488.47	-2029.49
Mass Cp	Btu/(lb*°F)	0.665291	0.519300	0.513998	0.982088	0.523021	0.410795	0.421283	0.981760	0.476854	0.505867	0.519300	0.979420	0.439987	0.684113
Ideal Gas CpCv Ratio		1.25721	1.25995	1.06113	1.32580	1.06485	1.13165	1.14464	1.32555	1.26184	1.05204	1.25995	1.32512	1.32147	1.25556

Dynamic Viscosity	cP	0.0130980	0.0109253	0.355914	0.995359	0.314071	0.00856445	0.00893183	0.924418	0.0108159	0.451790	0.0109253	0.840378	0.0103106		
Kinematic Viscosity	cSt	0.191841	0.702383	0.519739	0.998014	0.468230	4.49155	5.73975	0.927470	13.0682	0.642814	0.702383	0.843659	419.297		
Thermal Conductivity	Btu/(h*ft*°F)	0.0225572	0.0182805	0.0682820	0.346364	0.0657274	0.0111285	0.0125864	0.349775	0.0172802	0.0694508	0.0182805	0.353848	0.0122436		
Surface Tension	lbf/ft			0.00120821?	0.00502871?	0.000655356			0.00498762?		0.00141999		0.00492045			
Net Ideal Gas Heating Value	Btu/ft^3	1086.41	1090.46	4569.14	0.489554	4238.37	2198.35	1976.92	0.0364282	1045.18	5298.01	1090.46	0	50.2239	1034.43	
Net Liquid Heating Value	Btu/lb	20807.8	20764.9	19061.4	-1048.92	19089.7	19763.4	19841.8	-1058.94	19610.2	18982.9	20764.9	-1059.76	59.9106	19389.9	
Gross Ideal Gas Heating Value	Btu/ft^3	1199.39	1203.74	4920.29	50.8270	4567.31	2390.87	2153.66	50.3481	1155.10	5698.20	1203.74	50.3101	102.482	1144.67	
Gross Liquid Heating Value	Btu/lb	22977.0	22927.6	20538.3	11.3393	20583.3	21507.4	21627.9	0.831983	21681.2	20428.7	22927.6	0	1128.38	21468.9	

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water		0	0.149218				0.000133964	0.218287		3.03288		0.149218		93.4319	0.0728111
H2S		0	0				0	0		0		0		0	0
Nitrogen		0.4085	0.406974				0.00261719	0.0498439		0.198363		0.406974		0.00349118	0.408357
Carbon Dioxide		0.1743	0.173492				0.187277	0.180723		1.58713		0.173492		1.87504	0.173260
Methane		80.8909	80.5919				8.84435	31.2054		74.3840		80.5919		3.64269	80.7536
Ethane		14.3137	14.2836				46.6145	29.9394		17.7933		14.2836		1.02795	14.2333
Propane		2.2213	2.26111				16.3368	12.8139		1.88099		2.26111		0.0169290	2.23398
Isobutane		0.4547	0.462384				5.02745	4.34041		0.262531		0.462384		0.000591781	0.452961
n-Butane		0.7773	0.804498				10.2703	8.81578		0.563851		0.804498		0.00114477	0.784177
2,2-Dimethylpropane		0	0.000919006				0.0112199	0.0106909		0.000309301		0.000919006		2.07800E-07	0.000895808
Isopentane		0.2153	0.230583				3.24511	3.09456		0.108525		0.230583		5.69700E-05	0.224076
n-Pentane		0.1929	0.214578				3.12975	3.02794		0.0392777		0.214578		6.07300E-06	0.207943
2,2-Dimethylbutane		0	0.00168409				0.0261603	0.0248132		0.000285157		0.00168409		2.45703E-08	0.00163439
Cyclopentane		0	0				0	0		0		0		0	0
2,3-Dimethylbutane		0	0.00264571				0.0412398	0.0396572		0.00100334		0.00264571		1.42028E-07	0.00258386
2-Methylpentane		0	0.0177145				0.275029	0.266447		0.00431569		0.0177145		3.66866E-07	0.0174018
3-Methylpentane		0	0.0119342				0.185931	0.180324		0.00705663		0.0119342		1.33054E-06	0.0117518
n-Hexane		0.3511	0.284295				4.55348	4.31211		0.0334502		0.284295		9.99505E-07	0.285239
Methylcyclopentane		0	0.00446581				0.0649399	0.0689124		0.00439232		0.00446581		9.90030E-07	0.00439918
Benzene		0	0.000568514				0.00589067	0.00880322		0.00664232		0.000568514		8.89214E-05	0.000560642
Cyclohexane		0	0.00469909				0.0635565	0.0716306		0.00974332		0.00469909		3.58213E-06	0.00475502
2-Methylhexane		0	0.0139198				0.0572960	0.205111		0.00227367		0.0139198		1.12002E-08	0.0152826
3-Methylhexane		0	0.0113070				0.170583	0.167075		0.00222669		0.0113070		4.30964E-08	0.0125868
2,2,4-Trimethylpentane		0	0				0	0		0		0		0	0
Heptane		0	0.0216026				0.304483	0.314394		0.00176318		0.0216026		1.11696E-08	0.0253218
Methylcyclohexane		0	0.0115337				0.171874	0.172503		0.0105353		0.0115337		7.60622E-07	0.0131450
Toluene		0	0.00254332				0.0258507	0.0381818		0.0262334		0.00254332		7.60380E-05	0.00292517
Octane		0	0.0215289				0.275002	0.296109		0.000677409		0.0215289		5.39311E-10	0.0338580
Ethylbenzene		0	0.00122468				0.0125093	0.0173324		0.0115036		0.00122468		9.98252E-06	0.00188482
m-Xylene		0	0.00129754				0.0169496	0.0182801		0.0107784		0.00129754		7.18169E-06	0.00203775
o-Xylene		0	0.00151611				0.0127873	0.0213336		0.0148826		0.00151611		1.26460E-05	0.00246690
Nonane		0	0.00450935				0.0525736	0.0588062		0.000143128		0.00450935		3.44868E-11	0.0102318
C10+		0	0.00179663				0.0144196	0.0212273		0.00101130		0.00179663		8.04777E-10	0.0062097
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
Water		0	3.27803				1.74904E-07	0.00602276		0.00213056		3.27803		0.00161008	1.59238
H2S		0	0				0	0		0		0		0	0
Nitrogen		8.93929	8.94044				3.41701E-06	0.00137524		0.000139348		8.94044		6.01622E-08	8.93078
Carbon Dioxide		3.81424	3.81128				0.000244509	0.00498634		0.00111494		3.81128		3.23119E-05	3.78921
Methane		1770.15	1770.45				0.0115472	0.860988		0.0522538		1770.45		6.27730E-05	1766.08
Ethane		313.230	313.783				0.0608601	0.826057		0.0124996		313.783		1.77143E-05	311.282
Propane		48.6091	49.6723				0.0213294	0.353549		0.00132137		49.6723		2.91731E-07	48.8573
Isobutane		9.95029	10.1577				0.00656386	0.119756		0.000184425		10.1577		1.01979E-08	9.90628
n-Butane		17.0098	17.6733				0.0134090	0.243236		0.000396099		17.6733		1.97274E-08	17.1500
2,2-Dimethylpropane		0	0.0201888				1.46488E-05	0.000294972		2.17280E-07		0.0201888		3.58093E-12	0.0195914
Isopentane		4.71145	5.06547				0.00423684	0.0853820		7.62377E-05		5.06547		9.81742E-10	4.90055
n-Pentane		4.22127	4.71386				0.00408621	0.0835439		2.75921E-05		4.71386		1.04654E-10	4.54771
2,2-Dimethylbutane		0	0.0369962				3.41550E-05	0.000684621		2.00319E-07		0.0369962		4.23410E-13	0.0357443
Cyclopentane		0	0				0	0		0		0		0	0
2,3-Dimethylbutane		0	0.0581211				5.38429E-05	0.00109418		7.04832E-07		0.0581211		2.44752E-12	0.0565092
2-Methylpentane		0	0.389154				0.000359080	0.00735153		3.03172E-06		0.389154		6.32207E-12	0.380579
3-Methylpentane		0	0.262171				0.000242753	0.00497532		4.95720E-06		0.262171		2.29286E-11	0.257013
n-Hexane		7.68319	6.24542				0.00594505	0.118975		2.34984E-05		6.24542		1.72241E-11	6.23819
Methylcyclopentane		0	0.0981053				8.47859E-05	0.00190136		3.08555E-06		0.0981053		1.70608E-11	0.0962102
Benzene		0	0.0124892				7.69089E-06	0.000242889		4.66615E-06		0.0124892		1.53235E-09	0.0122613
Cyclohexane		0	0.103230				8.29797E-05	0.00197636		6.84456E-06		0.103230		6.17295E-11	0.103993
2-Methylhexane		0	0.305792				7.48059E-05	0.00565920		1.59723E-06		0.305792		1.93009E-13	0.334232
3-Methylhexane		0	0.248393				0.000222714	0.00460977		1.56422E-06		0.248393		7.42664E-13	0.275273
2,2,4-Trimethylpentane		0	0				0	0		0		0		0	0
Heptane		0	0.474567				0.000397535	0.00867445		1.23861E-06		0.474567		1.92482E-13	0.553788
Methylcyclohexane		0	0.253374				0.000224399	0.00475954		7.40091E-06		0.253374		1.31075E-11	0.287483
Toluene		0	0.0558719				3.37508E-05	0.00105347		1.84287E-05		0.0558719		1.31033E-09	0.0639736
Octane		0	0.472949				0.000359044	0.00816995		4.75872E-07		0.472949		9.29374E-15	0.740477
Ethylbenzene		0	0.0269038				1.63322E-05	0.000478217		8.08113E-06		0.0269038		1.72025E-10	0.0412210
m-Xylene		0	0.0285045				2.21294E-05	0.000504365		7.57168E-06		0.0285045		1.23759E-10	0.0445657
o-Xylene		0	0.0333061				1.66951E-05	0.000588615		1.04549E-05		0.0333061		2.17923E-10	0.0539513
Nonane		0	0.0990617				6.86403E-05	0.00162252		1.00546E-07		0.0990617		5.94298E-16	0.223769
C10+		0	0.0394686				1.88263E-05	0.000585682		7.10427E-07		0.0394686		1.38684E-14	0.144801
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water		0	0.135243				5.76159E-05	0.104744		2.71294		0.135243		90.6880	0.0659976

H2S	0	0				0	0		0		0		0	0
Nitrogen	0.578987	0.573571				0.00175031	0.0371909		0.275911		0.573571		0.00526929	0.575566
Carbon Dioxide	0.388110	0.384132				0.196764	0.211846		3.46818		0.384132		4.44601	0.383650
Methane	65.6570	65.0455				3.38728	13.3340		59.2507		65.0455		3.14852	65.1812
Ethane	21.7762	21.6078				33.4623	23.9785		26.5655		21.6078		1.66535	21.5334
Propane	4.95579	5.01617				17.1979	15.0500		4.11837		5.01617		0.0402199	4.95638
Isobutane	1.33714	1.35207				6.97597	6.71942		0.757646		1.35207		0.00185318	1.32462
n-Butane	2.28582	2.35246				14.2508	13.6478		1.62723		2.35246		0.00358489	2.29322
2,2-Dimethylpropane	0	0.00333581				0.0193257	0.0205448		0.00110803		0.00333581		8.07769E-07	0.00325187
Isopentane	0.785930	0.836972				5.58951	5.94685		0.388779		0.836972		0.000221457	0.813417
n-Pentane	0.704161	0.778876				5.39079	5.81883		0.140708		0.778876		2.36073E-05	0.754852
2,2-Dimethylbutane	0	0.00730134				0.0538196	0.0569541		0.00122014		0.00730134		1.14079E-07	0.00708646
Cyclopentane	0	0				0	0		0		0		0	0
2,3-Dimethylbutane	0	0.0114704				0.0848428	0.0910258		0.00429312		0.0114704		6.59435E-07	0.0112032
2-Methylpentane	0	0.0768011				0.565818	0.611579		0.0184662		0.0768011		1.70335E-06	0.0754514
3-Methylpentane	0	0.0517404				0.382517	0.413901		0.0301942		0.0517404		6.17765E-06	0.0509539
n-Hexane	1.53082	1.23256				9.36789	9.89764		0.143128		1.23256		4.64068E-06	1.23675
Methylcyclopentane	0	0.0189085				0.130476	0.154475		0.0183544		0.0189085		4.48916E-06	0.0186279
Benzene	0	0.00223415				0.0109849	0.0183154		0.0257620		0.00223415		0.000374228	0.00220340
Cyclohexane	0	0.0198963				0.127696	0.160569		0.0407148		0.0198963		1.62427E-05	0.0201347
2-Methylhexane	0	0.0701722				0.137061	0.547423		0.0113122		0.0701722		6.04668E-08	0.0770484
3-Methylhexane	0	0.0570004				0.408062	0.445910		0.0110785		0.0570004		2.32665E-07	0.0634570
2,2,4-Trimethylpentane	0	0				0	0		0		0		0	0
Heptane	0	0.108902				0.728373	0.839092		0.00877235		0.108902		6.03016E-08	0.127661
Methylcyclohexane	0	0.0569736				0.402878	0.451135		0.0513617		0.0569736		4.02376E-06	0.0649384
Toluene	0	0.0117895				0.0568628	0.0937035		0.120016		0.0117895		0.000377472	0.0135607
Octane	0	0.123723				0.749937	0.900919		0.00384210		0.123723		3.31915E-09	0.194592
Ethylbenzene	0	0.00654121				0.0317051	0.0490115		0.0606397		0.00654121		5.70998E-05	0.0100679
m-Xylene	0	0.00693038				0.0429591	0.0516914		0.0568169		0.00693038		4.10792E-05	0.0108848
o-Xylene	0	0.00809782				0.0324097	0.0603260		0.0784520		0.00809782		7.23348E-05	0.0131772
Nonane	0	0.0290967				0.160974	0.200889		0.000911471		0.0290967		2.38309E-10	0.0660260
C10+	0	0.0137210				0.0522565	0.0858272		0.00762247		0.0137210		6.58204E-09	0.0505688
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**
Water	0	59.0546				3.15094E-06	0.108502		0.0383827		59.0546		0.0290060	28.6872
H2S	0	0				0	0		0		0		0	0
Nitrogen	250.420	250.452				9.57221E-05	0.0385252		0.00390360		250.452		1.68535E-06	250.181
Carbon Dioxide	167.863	167.733				0.0107607	0.219446		0.0490679		167.733		0.00142203	166.761
Methane	28397.6	28402.4				0.185246	13.8124		0.838280		28402.4		0.00100703	28332.3
Ethane	9418.51	9435.15				1.83000	24.8388		0.375850		9435.15		0.000532651	9359.95
Propane	2143.45	2190.33				0.940532	15.5899		0.0582668		2190.33		1.28641E-05	2154.39
Isobutane	578.333	590.388				0.381506	6.96049		0.0107192		590.388		5.92726E-07	575.775
n-Butane	988.648	1027.21				0.779358	14.1374		0.0230221		1027.21		1.14660E-06	996.794
2,2-Dimethylpropane	0	1.45660				0.00105689	0.0212819		1.56765E-05		1.45660		2.58360E-10	1.41349
Isopentane	339.926	365.467				0.305683	6.16020		0.00550046		365.467		7.08315E-08	353.568
n-Pentane	304.559	340.099				0.294815	6.02759		0.00199074		340.099		7.55063E-09	328.112
2,2-Dimethylbutane	0	3.18816				0.00294332	0.0589975		1.72626E-05		3.18816		3.64875E-11	3.08028
Cyclopentane	0	0				0	0		0		0		0	0
2,3-Dimethylbutane	0	5.00861				0.00463993	0.0942916		6.07392E-05		5.00861		2.10916E-10	4.86970
2-Methylpentane	0	33.5355				0.0309438	0.633521		0.000261260		33.5355		5.44806E-10	32.7965
3-Methylpentane	0	22.5927				0.0209193	0.428750		0.000427188		22.5927		1.97588E-09	22.1482
n-Hexane	662.102	538.201				0.512317	10.2527		0.00202498		538.201		1.48429E-09	537.579
Methylcyclopentane	0	8.25649				0.00713554	0.160017		0.000259678		8.25649		1.43583E-09	8.09700
Benzene	0	0.975551				0.000600749	0.0189725		0.000364481		0.975551		1.19695E-07	0.957751
Cyclohexane	0	8.68779				0.00698353	0.166329		0.000576035		8.68779		5.19512E-09	8.75196
2-Methylhexane	0	30.6410				0.00749570	0.567063		0.000160045		30.6410		1.93399E-11	33.4907
3-Methylhexane	0	24.8895				0.0223164	0.461908		0.000156738		24.8895		7.44163E-11	27.5829
2,2,4-Trimethylpentane	0	0				0	0		0		0		0	0
Heptane	0	47.5525				0.0398337	0.869196		0.000124111		47.5525		1.92871E-11	55.4906
Methylcyclohexane	0	24.8778				0.0220329	0.467320		0.000726667		24.8778		1.28697E-09	28.2268
Toluene	0	5.14795				0.00310975	0.0970653		0.00169799		5.14795		1.20732E-07	5.89442
Octane	0	54.0242				0.0410130	0.933241		5.43581E-05		54.0242		1.06161E-12	84.5836
Ethylbenzene	0	2.85624				0.00173391	0.0507699		0.000857933		2.85624		1.82630E-08	4.37623
m-Xylene	0	3.02618				0.00234937	0.0535459		0.000803847		3.02618		1.31389E-08	4.73132
o-Xylene	0	3.53594				0.00177244	0.0624903		0.00110994		3.53594		2.31358E-08	5.72774
Nonane	0	12.7052				0.00880347	0.208097		1.28955E-05		12.7052		7.62217E-14	28.6995
C10+	0	5.99134				0.00285783	0.0889065		0.000107843		5.99134		2.10522E-12	21.9808

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Property	**Units**														
Temperature	°F	85	70				75.9425	75.94		75.94		70		75.9425	83.7119
Pressure	psig	1000	246				1.37034	0		0		246		-14.2208	1000
Mole Fraction Vapor	%	100	100				100	100		100		100		100	100
Mole Fraction Light Liquid	%	0	0				0	0		0		0		0	0
Mole Fraction Heavy Liquid	%	0	0				0	0		0		0		0	0
Molecular Weight	lb/lbmol	19.7647	19.8767				41.8876	37.5440		20.1399		19.8767		18.5604	19.8752
Mass Density	lb/ft^3	4.26228	0.971046				0.119037	0.0971463		0.0516684		0.971046		0.00153512	4.31867
Molar Flow	lbmol/h	2188.32	2196.81				0.130561	2.75910		0.0702488		2196.81		0.00172326	2187.00
Mass Flow	lb/h	43251.4	43665.4				5.46886	103.588		1.41480		43665.4		0.0319844	43467.0
Vapor Volumetric Flow	ft^3/h	10147.5	44967.4				45.9425	1066.31		27.3824		44967.4		20.8351	10064.9
Liquid Volumetric Flow	gpm	1265.14	5606.33				5.72790	132.942		3.41391		5606.33		2.59762	1254.85

Std Vapor Volumetric Flow	MMSCFD	19.9304	20.0077		0.00118909	0.0251288	0.000639799	20.0077	1.56948E-05	19.9184	
Std Liquid Volumetric Flow	sgpm	261.126	262.393		0.0233596	0.451867	0.00829951	262.393	7.12279E-05	261.295	
Compressibility		0.804982	0.938796		0.983568	0.988099	0.996593	0.938796	0.999551	0.800806	
Specific Gravity		0.682420	0.686290		1.44626	1.29629	0.695376	0.686290	0.640839	0.686235	
API Gravity											
Enthalpy	Btu/h	-7.51822E+07	-7.48057E+07		-5820.62	-118570	-2640.37	-7.48057E+07	-175.545	-7.54228E+07	
Mass Enthalpy	Btu/lb	-1738.26	-1713.16		-1064.32	-1144.63	-1866.25	-1713.16	-5488.47	-1735.17	
Mass Cp	Btu/(lb*°F)	0.665291	0.519300		0.410795	0.421283	0.476854	0.519300	0.439987	0.667558	
Ideal Gas CpCv Ratio		1.25721	1.25995		1.13165	1.14464	1.26184	1.25995	1.32147	1.25628	
Dynamic Viscosity	cP	0.0130980	0.0109253		0.00856445	0.00893183	0.0108159	0.0109253	0.0103106	0.0131055	
Kinematic Viscosity	cSt	0.191841	0.702383		4.49155	5.73975	13.0682	0.702383	419.297	0.189445	
Thermal Conductivity	Btu/(h*ft*°F)	0.0225572	0.0182805		0.0111285	0.0125864	0.0172802	0.0182805	0.0122436	0.0225209	
Surface Tension	lbf/ft										
Net Ideal Gas Heating Value	Btu/ft^3	1086.41	1090.46		2198.35	1976.92	1045.18	1090.46	50.2239	1091.11	
Net Liquid Heating Value	Btu/lb	20807.8	20764.9		19763.4	19841.8	19610.2	20764.9	59.9106	20779.7	
Gross Ideal Gas Heating Value	Btu/ft^3	1199.39	1203.74		2390.87	2153.66	1155.10	1203.74	102.482	1204.42	
Gross Liquid Heating Value	Btu/lb	22977.0	22927.6		21507.4	21627.9	21681.2	22927.6	1128.38	22943.1	

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water				0.0515765	99.9545	0			99.9966		0.00470154		100		0.0623581
H2S				0	0	0			0		0		0		0
Nitrogen				0.0109957	8.83227E-05	0.0150009			2.32306E-06		7.25252E-05		0		0.0518030
Carbon Dioxide				0.0416664	0.00145692	0.0260016			0.000769153		0.00256712		0		0.114672
Methane				6.96734	0.0340404	6.88641			0.00179195		0.152202		0		24.9178
Ethane				7.30836	0.00835355	8.32250			0.000639530		0.945077		0		16.5582
Propane				3.97268	0.000863229	8.76153			4.77433E-05		1.48675		0		6.38908
Isobutane				1.94393	0.000118462	2.53215			4.64331E-06		1.27010		0		2.41157
n-Butane				4.89303	0.000257580	7.16543			1.31269E-05		3.79005		0		5.53727
2,2-Dimethylpropane				0.00696325	1.37501E-07	0.118007			3.40483E-09		0.00591514		0		0.00716438
Isopentane				3.23378	4.88370E-05	4.26126			1.78644E-06		3.27292		0		2.77984
n-Pentane				4.00907	1.72873E-05	5.58334			2.58535E-07		4.28494		0		3.25988
2,2-Dimethylbutane				0.0507647	1.25325E-07	0.243015			1.69586E-09		0.0580616		0		0.0371343
Cyclopentane				0	0	0			0		0		0		0
2,3-Dimethylbutane				0.107077	4.48491E-07	0.401024			1.34989E-08		0.126033		0		0.0733230
2-Methylpentane				0.793736	1.91014E-06	2.73916			3.90786E-08		0.941996		0		0.527115
3-Methylpentane				0.593996	3.21743E-06	1.88711			1.58084E-07		0.710310		0		0.388346
n-Hexane				18.1455	1.46528E-05	4.72528			1.50429E-07		22.0351		0		11.1318
Methylcyclopentane				0.284568	2.06790E-06	0.750045			1.63678E-07		0.345205		0		0.183244
Benzene				0.0380742	2.46096E-05	0.0970058			2.17392E-05		0.0463045		0		0.0244250
Cyclohexane				0.392858	5.07085E-06	0.855051			8.46985E-07		0.483179		0		0.236547
2-Methylhexane				1.85441	9.99842E-07	3.01918			1.40943E-08		2.31816		0		0.995706
3-Methylhexane				1.67343	9.81856E-07	2.57015			1.64778E-08		2.09698		0		0.892616
2,2,4-Trimethylpentane				0	0	0			0		0		0		0
Heptane				4.07029	7.70276E-07	5.52533			5.84908E-09		5.12636		0		2.10378
Methylcyclohexane				2.25144	4.95778E-06	3.00518			3.90360E-07		2.83598		0		1.21093
Toluene				0.559914	7.59917E-05	0.708042			6.46462E-05		0.706612		0		0.303136
Octane				12.3032	2.94648E-07	11.3147			9.56399E-10		15.6793		0		6.22250
Ethylbenzene				0.800862	3.03228E-05	0.715043			2.53464E-05		1.02117		0		0.420177
m-Xylene				0.911798	1.99938E-05	0.802048			1.53275E-05		1.16303		0		0.479506
o-Xylene				1.24233	5.52056E-05	1.06206			4.87744E-05		1.58565		0		0.659411
Nonane				7.91482	6.22599E-08	6.12937			2.06556E-10		10.1237		0		4.23358
C10+				13.5716	4.68612E-07	9.77959			3.01735E-08		17.3816		0		7.78716
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
Water				0.00648411	161.957	0			161.955		0.000461350		165.242		0.0128194
H2S				0	0	0			0		0		0		0
Nitrogen				0.00138236	0.000143110	0.00267768			3.76244E-06		7.11671E-06		0		0.0106495
Carbon Dioxide				0.00523824	0.00236067	0.00464131			0.00124573		0.000251905		0		0.0235741
Methane				0.875923	0.0551561	1.22923			0.00290225		0.0149352		0		5.12254
Ethane				0.918795	0.0135353	1.48558			0.00103579		0.0927380		0		3.40400
Propane				0.499440	0.00139870	1.56394			7.73254E-05		0.145891		0		1.31345
Isobutane				0.244388	0.000191946	0.451993			7.52034E-06		0.124632		0		0.495765
n-Butane				0.615144	0.000417359	1.27904			2.12604E-05		0.371908		0		1.13834
2,2-Dimethylpropane				0.000875410	2.22794E-07	0.0210644			5.51449E-09		0.000580438		0		0.00147284
Isopentane				0.406545	7.91310E-05	0.760640			2.89333E-06		0.321163		0		0.571474
n-Pentane				0.504014	2.80109E-05	0.996633			4.18726E-07		0.420470		0		0.670159
2,2-Dimethylbutane				0.00638206	2.03066E-07	0.0433784			2.74663E-09		0.00569743		0		0.00763398
Cyclopentane				0	0	0			0		0		0		0
2,3-Dimethylbutane				0.0134615	7.26695E-07	0.0715833			2.18629E-08		0.0123673		0		0.0150736
2-Methylpentane				0.0997873	3.09501E-06	0.488945			6.32920E-08		0.0924357		0		0.108363
3-Methylpentane				0.0746763	5.21323E-06	0.336852			2.56034E-07		0.0697010		0		0.0798354
n-Hexane				2.28122	2.37420E-05	0.843470			2.43637E-07		2.16225		0		2.28845
Methylcyclopentane				0.0357754	3.35065E-06	0.133884			2.65094E-07		0.0338741		0		0.0376710
Benzene				0.00478664	3.98751E-05	0.0173157			3.52090E-05		0.00454375		0		0.00502124
Cyclohexane				0.0493895	8.21635E-06	0.152628			1.37178E-06		0.0474131		0		0.0486288
2-Methylhexane				0.233134	1.62005E-06	0.538928			2.28272E-08		0.227475		0		0.204695
3-Methylhexane				0.210382	1.59091E-06	0.458776			2.66876E-08		0.205772		0		0.183502
2,2,4-Trimethylpentane				0	0	0			0		0		0		0
Heptane				0.511711	1.24809E-06	0.986279			9.47321E-09		0.503037		0		0.432490
Methylcyclohexane				0.283047	8.03314E-06	0.536429			6.32230E-07		0.278288		0		0.248940

Toluene			0.0703915	0.000123130	0.126387			0.000104701		0.0693381		0		0.0623181	
Octane			1.54674	4.77421E-07	2.01969			1.54899E-09		1.53857		0		1.27921	
Ethylbenzene			0.100683	4.91324E-05	0.127636			4.10513E-05		0.100205		0		0.0863792	
m-Xylene			0.114630	3.23962E-05	0.143167			2.48245E-05		0.114125		0		0.0985759	
o-Xylene			0.156184	8.94502E-05	0.189580			7.89954E-05		0.155596		0		0.135560	
Nonane			0.995039	1.00880E-07	1.09410			3.34540E-10		0.993416		0		0.870331	
C10+			1.70620	7.59297E-07	1.74567			4.88692E-08		1.70561		0		1.60087	
Mass Fraction	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Water			0.0103063	99.9472	0			99.9943		0.000807066		100		0.0177798	
H2S			0	0	0			0		0		0		0	
Nitrogen			0.00341664	0.000137330	0.00503503			3.61223E-06		1.93590E-05		0		0.0229674	
Carbon Dioxide			0.0203397	0.00355885	0.0137109			0.00187892		0.00107652		0		0.0798724	
Methane			1.23980	0.0303105	1.32368			0.00159568		0.0232660		0		6.32663	
Ethane			2.43754	0.0139418	2.99842			0.00106741		0.270779		0		7.87996	
Propane			1.94308	0.00211275	4.62907			0.000116858		0.624686		0		4.45888	
Isobutane			1.25324	0.000382163	1.76340			1.49802E-05		0.703409		0		2.21837	
n-Butane			3.15451	0.000830961	4.99003			4.23499E-05		2.09901		0		5.09366	
2,2-Dimethylpropane			0.00557254	5.50633E-07	0.102013			1.36356E-08		0.00406651		0		0.00818087	
Isopentane			2.58792	0.000195571	3.68371			7.15430E-06		2.25005		0		3.17425	
n-Pentane			3.20837	6.92284E-05	4.82660			1.03538E-06		2.94579		0		3.72239	
2,2-Dimethylbutane			0.0485240	5.99445E-07	0.250919			8.11190E-09		0.0476760		0		0.0506465	
Cyclopentane			0	0	0			0		0		0		0	
2,3-Dimethylbutane			0.102350	2.14518E-06	0.414068			6.45699E-08		0.103489		0		0.100004	
2-Methylpentane			0.758702	9.13639E-06	2.82826			1.86927E-07		0.773501		0		0.718920	
3-Methylpentane			0.567778	1.53893E-05	1.94850			7.56172E-07		0.583257		0		0.529656	
n-Hexane			17.3446	7.00857E-05	4.87899			7.19557E-07		18.0936		0		15.1824	
Methylcyclopentane			0.265644	9.65963E-06	0.756326			7.64613E-07		0.276827		0		0.244076	
Benzene			0.0329883	0.000106696	0.0907890			9.42561E-05		0.0344642		0		0.0301956	
Cyclohexane			0.366733	2.36870E-05	0.862211			3.95665E-06		0.387471		0		0.315074	
2-Methylhexane			2.06108	5.56077E-06	3.62480			7.83914E-08		2.21333		0		1.57906	
3-Methylhexane			1.85993	5.46073E-06	3.08570			9.16484E-08		2.00216		0		1.41558	
2,2,4-Trimethylpentane			0	0	0			0		0		0		0	
Heptane			4.52391	4.28400E-06	6.63366			3.25321E-08		4.89456		0		3.33632	
Methylcyclohexane			2.45201	2.70187E-05	3.53540			2.12747E-06		2.65327		0		1.88174	
Toluene			0.572235	0.000388628	0.781661			0.000330623		0.620369		0		0.442049	
Octane			15.5885	1.86812E-06	15.4859			6.06406E-09		17.0659		0		11.2495	
Ethylbenzene			0.943086	0.000178681	0.909561			0.000149365		1.03302		0		0.706002	
m-Xylene			1.07372	0.000117816	1.02024			9.03236E-05		1.17653		0		0.805689	
o-Xylene			1.46296	0.000325306	1.35098			0.000287424		1.60404		0		1.10797	
Nonane			11.2597	4.43211E-07	9.41909			1.47049E-09		12.3721		0		8.59359	
C10+			22.8515	3.94832E-06	17.7873			2.54242E-07		25.1415		0		18.7087	
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**
Water			0.116813	2917.71	0			2917.67		0.00831135		2976.88		0.230946	
H2S			0	0	0			0		0		0		0	
Nitrogen			0.0387245	0.00400900	0.0750110			0.000105399		0.000199363		0		0.298330	
Carbon Dioxide			0.230532	0.103892	0.204262			0.0548238		0.0110862		0		1.03748	
Methane			14.0520	0.884839	19.7199			0.0465592		0.239598		0		82.1782	
Ethane			27.6273	0.406995	44.6699			0.0311452		2.78854		0		102.355	
Propane			22.0231	0.0616765	68.9631			0.00340971		6.43315		0		57.9176	
Isobutane			14.2044	0.0111563	26.2708			0.000437099		7.24387		0		28.8150	
n-Butane			35.7535	0.0242578	74.3406			0.00123570		21.6161		0		66.1629	
2,2-Dimethylpropane			0.0631597	1.60743E-05	1.51977			3.97864E-07		0.0418779		0		0.106263	
Isopentane			29.3317	0.00570921	54.8792			0.000208751		23.1715		0		41.2312	
n-Pentane			36.3640	0.00202095	71.9059			3.02106E-05		30.3364		0		48.3512	
2,2-Dimethylbutane			0.549976	1.74993E-05	3.73815			2.36692E-07		0.490978		0		0.657861	
Cyclopentane			0	0	0			0		0		0		0	
2,3-Dimethylbutane			1.16005	6.26232E-05	6.16872			1.88404E-06		1.06576		0		1.29897	
2-Methylpentane			8.59920	0.000266714	42.1350			5.45421E-06		7.96568		0		9.33824	
3-Methylpentane			6.43526	0.000449252	29.0284			2.20638E-05		6.00651		0		6.87985	
n-Hexane			196.585	0.00204598	72.6863			2.09955E-05		186.332		0		197.208	
Methylcyclopentane			3.01084	0.000281989	11.2676			2.23101E-05		2.85082		0		3.17037	
Benzene			0.373893	0.00311472	1.35256			0.00275024		0.354920		0		0.392218	
Cyclohexane			4.15659	0.000691483	12.8451			0.000115449		3.99026		0		4.09258	
2-Methylhexane			23.3605	0.000162333	54.0016			2.28733E-06		22.7934		0		20.5109	
3-Methylhexane			21.0806	0.000159412	45.9703			2.67415E-06		20.6187		0		18.3873	
2,2,4-Trimethylpentane			0	0	0			0		0		0		0	
Heptane			51.2744	0.000125061	98.8271			9.49234E-07		50.4052		0		43.3364	
Methylcyclohexane			27.7913	0.000788743	52.6698			6.20762E-05		27.3240		0		24.4425	
Toluene			6.48577	0.0113450	11.6451			0.00964703		6.38870		0		5.74189	
Octane			176.681	5.45351E-05	230.706			1.76939E-07		175.748		0		146.122	
Ethylbenzene			10.6890	0.00521614	13.5505			0.00435821		10.6383		0		9.17045	
m-Xylene			12.1697	0.00343934	15.1993			0.00263549		12.1161		0		10.4653	
o-Xylene			16.5813	0.00949648	20.1267			0.00838654		16.5188		0		14.3918	
Nonane			127.619	1.29384E-05	140.324			4.29065E-08		127.411		0		111.624	
C10+			259.001	0.000115261	264.993			7.41835E-06		258.912		0		243.012	

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Properties	**Status:**	**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**	**--**	**--**	**Condensate Tanks**	**PW Tanks**	**PW Tanks**	**Condensate Tanks**	**MIX-100**	**--**	**--**	**MIX-101**
	To Block:	**MIX-101**	**MIX-100**	**Condensate Tanks**	**PW Tanks**	**MIX-101**	**--**	**--**	**--**	**--**	**--**	**--**	**MIX-101**	**--**	**3 Phase Separator**
Property	**Units**														
Temperature	°F			70	70	85			75.94		75.94		85		83.7119
Pressure	psig			246	246	1000			0		0		1000		1000

Mole Fraction Vapor	%	0	0	0	0	0	0	0	0
Mole Fraction Light Liquid	%	100	100	100	100	100	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0
Molecular Weight	lb/lbmol	90.1546	18.0166	83.4606	18.0157	104.947	18.0153	63.1841	
Mass Density	lb/ft^3	42.7503	62.2619	41.8743	62.2226	43.8763	62.1852	37.8976	
Molar Flow	lbmol/h	12.5718	162.031	17.8501	161.961	9.81275	165.242	20.5578	
Mass Flow	lb/h	1133.41	2919.25	1489.78	2917.83	1029.82	2976.88	1298.93	
Vapor Volumetric Flow	ft^3/h	26.5123	46.8866	35.5775	46.8935	23.4710	47.8712	34.2746	
Liquid Volumetric Flow	gpm	3.30543	5.84561	4.43563	5.84646	2.92626	5.96836	4.27320	
Std Vapor Volumetric Flow	MMSCFD	0.114500	1.47572	0.162572	1.47508	0.0893707	1.50496	0.187232	
Std Liquid Volumetric Flow	sgpm	3.36853	5.84163	4.52627	5.83333	2.91666	5.95099	4.39050	
Compressibility		0.0967195	0.0132714	0.345997	0.000740267	0.00611543	0.0502914	0.290110	
Specific Gravity		0.685442	0.998282	0.671397	0.997652	0.703496	0.997052	0.607635	
API Gravity		73.3770	10.0439	75.2211	10.0025	67.4712	9.87799	95.6541	
Enthalpy	Btu/h	-1.04547E+06	-1.99235E+07	-1.38680E+06	-1.99055E+07	-908313	-2.02743E+07	-1.33080E+06	
Mass Enthalpy	Btu/lb	-922.415	-6824.87	-930.874	-6822.02	-882.010	-6810.58	-1024.54	
Mass Cp	Btu/(lb*°F)	0.513998	0.982088	0.523021	0.981760	0.505867	0.979420	0.564412	
Ideal Gas CpCv Ratio		1.06113	1.32580	1.06485	1.32555	1.05204	1.32512	1.08503	
Dynamic Viscosity	cP	0.355914	0.995359	0.314071	0.924418	0.451790	0.840378	0.192162	
Kinematic Viscosity	cSt	0.519739	0.998014	0.468230	0.927470	0.642814	0.843659	0.316545	
Thermal Conductivity	Btu/(h*ft*°F)	0.0682820	0.346364	0.0657274	0.349775	0.0694508	0.353848	0.0638314	
Surface Tension	lbf/ft	0.00120821	0.00502871?	0.000655356	0.00498762?	0.00141999	0.00492045	0.000527403	
Net Ideal Gas Heating Value	Btu/ft^3	4569.14	0.489554	4238.37	0.0364282	5298.01	0	3238.74	
Net Liquid Heating Value	Btu/lb	19061.4	-1048.92	19089.7	-1058.94	18982.9	-1059.76	19292.7	
Gross Ideal Gas Heating Value	Btu/ft^3	4920.29	50.8270	4567.31	50.3481	5698.20	50.3101	3499.65	
Gross Liquid Heating Value	Btu/lb	20538.3	11.3393	20583.3	0.831983	20428.7	0	20858.7	

Process Streams		**Gas**	**HP Separator Gas**	**HP Separator Oil**	**HP Separator Water**	**Oil**	**Oil W/B**	**OT Flash Gas**	**Produced Water**	**PWT Flash Gas**	**Sales Oil**	**Total gas to sale**	**Water**	**Water W/B**	**Well Stream**
Composition	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water															99.8702
H2S															0
Nitrogen															0.00327629
Carbon Dioxide															0.00372173
Methane															0.105862
Ethane															0.0178035
Propane															0.00141420
Isobutane															0.000142577
n-Butane															0.000323731
2,2-Dimethylpropane															1.41521E-07
Isopentane															4.37400E-05
n-Pentane															1.76958E-05
2,2-Dimethylbutane															1.04548E-07
Cyclopentane															0
2,3-Dimethylbutane															3.42886E-07
2-Methylpentane															1.58596E-06
3-Methylpentane															2.59039E-06
n-Hexane															1.18531E-05
Methylcyclopentane															1.72217E-06
Benzene															2.02384E-05
Cyclohexane															3.94164E-06
2-Methylhexane															6.30159E-07
3-Methylhexane															6.10692E-07
2,2,4-Trimethylpentane															0
Heptane															5.34470E-07
Methylcyclohexane															3.59917E-06
Toluene															5.79099E-05
Octane															2.30438E-07
Ethylbenzene															2.19186E-05
m-Xylene															1.53053E-05
o-Xylene															4.16046E-05
Nonane															4.38928E-08
C10+															3.89901E-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**
Water															163.637
H2S															0
Nitrogen															0.000536818
Carbon Dioxide															0.00609803
Methane															0.173454
Ethane															0.0291709
Propane															0.00231715
Isobutane															0.000233611
n-Butane															0.000530432
2,2-Dimethylpropane															2.31881E-07
Isopentane															7.16677E-05
n-Pentane															2.89945E-05
2,2-Dimethylbutane															1.71301E-07
Cyclopentane															0
2,3-Dimethylbutane															5.61816E-07
2-Methylpentane															2.59858E-06
3-Methylpentane															4.24434E-06

n-Hexane														1.94212E-05
Methylcyclopentane														2.82176E-06
Benzene														3.31605E-05
Cyclohexane														6.45835E-06
2-Methylhexane														1.03251E-06
3-Methylhexane														1.00062E-06
2,2,4-Trimethylpentane														0
Heptane														8.75725E-07
Methylcyclohexane														5.89722E-06
Toluene														9.48850E-05
Octane														3.77571E-07
Ethylbenzene														3.59134E-05
m-Xylene														2.50776E-05
o-Xylene														6.81689E-05
Nonane														7.19181E-08
C10+														6.38851E-07
Mass Fraction	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Water														99.8602
H2S														0
Nitrogen														0.000509406
Carbon Dioxide														0.00909090
Methane														0.0942600
Ethane														0.0297126
Propane														0.00346116
Isobutane														0.000459945
n-Butane														0.00104434
2,2-Dimethylpropane														5.66717E-07
Isopentane														0.000175155
n-Pentane														7.08624E-05
2,2-Dimethylbutane														5.00051E-07
Cyclopentane														0
2,3-Dimethylbutane														1.64002E-06
2-Methylpentane														7.58561E-06
3-Methylpentane														1.23898E-05
n-Hexane														5.66931E-05
Methylcyclopentane														8.04442E-06
Benzene														8.77423E-05
Cyclohexane														1.84118E-05
2-Methylhexane														3.50463E-06
3-Methylhexane														3.39637E-06
2,2,4-Trimethylpentane														0
Heptane														2.97245E-06
Methylcyclohexane														1.96141E-05
Toluene														0.000296148
Octane														1.46098E-06
Ethylbenzene														0.000129154
m-Xylene														9.01859E-05
o-Xylene														0.000245154
Nonane														3.12452E-07
C10+														3.28505E-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**
Water														2947.96
H2S														0
Nitrogen														0.0150381
Carbon Dioxide														0.268371
Methane														2.78264
Ethane														0.877141
Propane														0.102176
Isobutane														0.0135780
n-Butane														0.0308298
2,2-Dimethylpropane														1.67300E-05
Isopentane														0.00517073
n-Pentane														0.00209192
2,2-Dimethylbutane														1.47619E-05
Cyclopentane														0
2,3-Dimethylbutane														4.84147E-05
2-Methylpentane														0.000223934
3-Methylpentane														0.000365757
n-Hexane														0.00167363
Methylcyclopentane														0.000237478
Benzene														0.00259023
Cyclohexane														0.000543531
2-Methylhexane														0.000103460
3-Methylhexane														0.000100264
2,2,4-Trimethylpentane														0
Heptane														8.77494E-05
Methylcyclohexane														0.000579025
Toluene														0.00874255
Octane														4.31294E-05
Ethylbenzene														0.00381275
m-Xylene														0.00266237
o-Xylene														0.00723715
Nonane														9.22386E-06
C10+														9.69776E-05

Process Streams		Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Water	Water W/B	Well Stream
Properties	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Property	**Units**														
Temperature	°F														83.7119
Pressure	psig														1000
Mole Fraction Vapor	%														0
Mole Fraction Light Liquid	%														0
Mole Fraction Heavy Liquid	%														100
Molecular Weight	lb/lbmol														18.0171
Mass Density	lb/ft^3														62.1011
Molar Flow	lbmol/h														163.849
Mass Flow	lb/h														2952.09
Vapor Volumetric Flow	ft^3/h														47.5368
Liquid Volumetric Flow	gpm														5.92666
Std Vapor Volumetric Flow	MMSCFD														1.49228
Std Liquid Volumetric Flow	sgpm														5.91800
Compressibility															0.0504838
Specific Gravity															0.995705
API Gravity															10.0954
Enthalpy	Btu/h														-2.00897E+07
Mass Enthalpy	Btu/lb														-6805.24
Mass Cp	Btu/(lb*°F)														0.980538
Ideal Gas CpCv Ratio															1.32510
Dynamic Viscosity	cP														0.844318
Kinematic Viscosity	cSt														0.848761
Thermal Conductivity	Btu/(h*ft*°F)														0.351367
Surface Tension	lbf/ft														0.00491804?
Net Ideal Gas Heating Value	Btu/ft^3														1.30838
Net Liquid Heating Value	Btu/lb														-1030.78
Gross Ideal Gas Heating Value	Btu/ft^3														51.6911
Gross Liquid Heating Value	Btu/lb														30.4024

Process Streams		Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Water	Water W/B	Well Stream
Composition	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Water															88.7435
H2S															0
Nitrogen															0.00606612
Carbon Dioxide															0.0160905
Methane															2.87190
Ethane															1.86173
Propane															0.713514
Isobutane															0.268969
n-Butane															0.617585
2,2-Dimethylpropane															0.00798814
Isopentane															0.309937
n-Pentane															0.363428
2,2-Dimethylbutane															0.00413984
Cyclopentane															0
2,3-Dimethylbutane															0.00817439
2-Methylpentane															0.0587644
3-Methylpentane															0.0432953
n-Hexane															1.24099
Methylcyclopentane															0.0204297
Benzene															0.00274089
Cyclohexane															0.0263739
2-Methylhexane															0.111002
3-Methylhexane															0.0995098
2,2,4-Trimethylpentane															0
Heptane															0.234531
Methylcyclohexane															0.134998
Toluene															0.0338452
Octane															0.693687
Ethylbenzene															0.0468610
m-Xylene															0.0534692
o-Xylene															0.0735484
Nonane															0.471962
C10+															0.868116
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
Water															163.649
H2S															0
Nitrogen															0.0111864
Carbon Dioxide															0.0296721
Methane															5.29600
Ethane															3.43317
Propane															1.31577
Isobutane															0.495999

n-Butane														1.13887
2,2-Dimethylpropane														0.00147307
Isopentane														0.571546
n-Pentane														0.670188
2,2-Dimethylbutane														0.00763415
Cyclopentane														0
2,3-Dimethylbutane														0.0150742
2-Methylpentane														0.108366
3-Methylpentane														0.0798397
n-Hexane														2.28847
Methylcyclopentane														0.0376738
Benzene														0.00505440
Cyclohexane														0.0486353
2-Methylhexane														0.204696
3-Methylhexane														0.183503
2,2,4-Trimethylpentane														0
Heptane														0.432491
Methylcyclohexane														0.248946
Toluene														0.0624130
Octane														1.27921
Ethylbenzene														0.0864151
m-Xylene														0.0986010
o-Xylene														0.135629
Nonane														0.870331
C10+														1.60087
Mass Fraction	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Water														69.3527
H2S														0
Nitrogen														0.00737161
Carbon Dioxide														0.0307187
Methane														1.99860
Ethane														2.42841
Propane														1.36485
Isobutane														0.678157
n-Butane														1.55713
2,2-Dimethylpropane														0.00250011
Isopentane														0.970036
n-Pentane														1.13745
2,2-Dimethylbutane														0.0154757
Cyclopentane														0
2,3-Dimethylbutane														0.0305579
2-Methylpentane														0.219676
3-Methylpentane														0.161849
n-Hexane														4.63912
Methylcyclopentane														0.0745848
Benzene														0.00928739
Cyclohexane														0.0962858
2-Methylhexane														0.482496
3-Methylhexane														0.432541
2,2,4-Trimethylpentane														0
Heptane														1.01944
Methylcyclohexane														0.574993
Toluene														0.135277
Octane														3.43735
Ethylbenzene														0.215814
m-Xylene														0.246247
o-Xylene														0.338719
Nonane														2.62583
C10+														5.71656
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**
Water														2948.19
H2S														0
Nitrogen														0.313368
Carbon Dioxide														1.30585
Methane														84.9608
Ethane														103.232
Propane														58.0197
Isobutane														28.8285
n-Butane														66.1937
2,2-Dimethylpropane														0.106280
Isopentane														41.2363
n-Pentane														48.3532
2,2-Dimethylbutane														0.657876
Cyclopentane														0
2,3-Dimethylbutane														1.29902
2-Methylpentane														9.33847
3-Methylpentane														6.88021
n-Hexane														197.209
Methylcyclopentane														3.17061
Benzene														0.394808
Cyclohexane														4.09312
2-Methylhexane														20.5110
3-Methylhexane														18.3874
2,2,4-Trimethylpentane														0
Heptane														43.3365

Methylcyclohexane	24.4430
Toluene	5.75064
Octane	146.122
Ethylbenzene	9.17426
m-Xylene	10.4680
o-Xylene	14.3990
Nonane	111.624
C10+	243.012

Process Streams		Gas	HP Separator Gas	HP Separator Oil	HP Separator Water	Oil	Oil W/B	OT Flash Gas	Produced Water	PWT Flash Gas	Sales Oil	Total gas to sale	Water	Water W/B	Well Stream
Properties	**Status:**	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	--	--	Condensate Tanks	PW Tanks	PW Tanks	Condensate Tanks	MIX-100	--	--	MIX-101
	To Block:	MIX-101	MIX-100	Condensate Tanks	PW Tanks	MIX-101	--	--	--	--	--	--	MIX-101	--	3 Phase Separator
Property	**Units**														
Temperature	°F														83.7119
Pressure	psig														1000
Mole Fraction Vapor	%														0
Mole Fraction Light Liquid	%														11.1480
Mole Fraction Heavy Liquid	%														88.8520
Molecular Weight	lb/lbmol														23.0523
Mass Density	lb/ft^3														51.9611
Molar Flow	lbmol/h														184.407
Mass Flow	lb/h														4251.01
Vapor Volumetric Flow	ft^3/h														81.8114
Liquid Volumetric Flow	gpm														10.1999
Std Vapor Volumetric Flow	MMSCFD														1.67951
Std Liquid Volumetric Flow	sgpm														10.3085
Compressibility															0.0771975
Specific Gravity															0.833124
API Gravity															36.6253
Enthalpy	Btu/h														-2.14205E+07
Mass Enthalpy	Btu/lb														-5038.91
Mass Cp	Btu/(lb*°F)														0.853388
Ideal Gas CpCv Ratio															1.24728
Dynamic Viscosity	cP														0.571099
Kinematic Viscosity	cSt														0.686139
Thermal Conductivity	Btu/(h*ft*°F)														0.230905
Surface Tension	lbf/ft														0.00307860?
Net Ideal Gas Heating Value	Btu/ft^3														362.219
Net Liquid Heating Value	Btu/lb														5179.19
Gross Ideal Gas Heating Value	Btu/ft^3														436.071
Gross Liquid Heating Value	Btu/lb														6394.63

October 7, 2013

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

For: Antero Resources Appalachian Corp.
1625 17th Street
Denver, Colorado 80202

Sample: Central No. 2H (Jonathan Davis Well Pad)
Separator Hydrocarbon Liquid
Sampled @ 300 psig & 70 °F

Date Sampled: 09/20/13 Job Number: 35821.002

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.015	0.004	0.005
Carbon Dioxide	0.026	0.011	0.014
Methane	6.886	2.920	1.331
Ethane	8.322	5.569	3.014
Propane	8.761	6.040	4.653
Isobutane	2.532	2.073	1.772
n-Butane	7.165	5.652	5.015
2,2 Dimethylpropane	0.118	0.113	0.102
Isopentane	4.261	3.899	3.702
n-Pentane	5.583	5.064	4.851
2,2 Dimethylbutane	0.243	0.254	0.252
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.401	0.411	0.416
2 Methylpentane	2.739	2.845	2.843
3 Methylpentane	1.887	1.927	1.958
n-Hexane	4.725	4.862	4.904
Heptanes Plus	46.337	58.355	65.167
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity	0.7352	(Water=1)
°API Gravity	60.96	@ 60°F
Molecular Weight	116.8	
Vapor Volume	19.98	CF/Gal
Weight	6.13	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity	0.6584	(Water=1)
°API Gravity	83.42	@ 60°F
Molecular Weight	83.0	
Vapor Volume	25.17	CF/Gal
Weight	5.49	Lbs/Gal

Base Conditions: 14.850 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: XG
Processor: JCdjv
Cylinder ID: T-3044

David Dannhaus 361-661-7015

TANKS DATA INPUT REPORT

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.026	0.011	0.014
Nitrogen	0.015	0.004	0.005
Methane	6.886	2.920	1.331
Ethane	8.322	5.569	3.014
Propane	8.761	6.040	4.653
Isobutane	2.532	2.073	1.772
n-Butane	7.282	5.765	5.118
Isopentane	4.261	3.899	3.702
n-Pentane	5.583	5.064	4.851
Other C-6's	5.270	5.438	5.470
Heptanes	12.718	14.211	15.025
Octanes	14.320	17.030	18.719
Nonanes	6.129	8.438	9.360
Decanes Plus	9.786	15.535	17.888
Benzene	0.097	0.068	0.091
Toluene	0.708	0.593	0.786
E-Benzene	0.715	0.690	0.914
Xylenes	1.865	1.790	2.384
n-Hexane	4.725	4.862	4.904
2,2,4 Trimethylpentane	0.000	0.000	0.000
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity	0.6584	(Water=1)
°API Gravity	83.42	@ 60°F
Molecular Weight	83.0	
Vapor Volume	25.17	CF/Gal
Weight	5.49	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity	0.7581	(Water=1)
Molecular Weight	151.8	

Characteristics of Atmospheric Sample:

°API Gravity	68.98	@ 60°F
Reid Vapor Pressure (ASTM D-5191)	4.41	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	T-3044*	T-1105
Pressure, PSIG	300	246	238
Temperature, °F	70	70	70

* Sample used for analysis

TOTAL EXTENDED REPORT

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.015	0.004	0.005
Carbon Dioxide	0.026	0.011	0.014
Methane	6.886	2.920	1.331
Ethane	8.322	5.569	3.014
Propane	8.761	6.040	4.653
Isobutane	2.532	2.073	1.772
n-Butane	7.165	5.652	5.015
2,2 Dimethylpropane	0.118	0.113	0.102
Isopentane	4.261	3.899	3.702
n-Pentane	5.583	5.064	4.851
2,2 Dimethylbutane	0.243	0.254	0.252
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.401	0.411	0.416
2 Methylpentane	2.739	2.845	2.843
3 Methylpentane	1.887	1.927	1.958
n-Hexane	4.725	4.862	4.904
Methylcyclopentane	0.750	0.664	0.760
Benzene	0.097	0.068	0.091
Cyclohexane	0.855	0.728	0.866
2-Methylhexane	3.019	3.512	3.643
3-Methylhexane	2.570	2.952	3.101
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C-7's	1.170	1.328	1.398
n-Heptane	4.355	5.028	5.256
Methylcyclohexane	3.005	3.023	3.554
Toluene	0.708	0.593	0.786
Other C-8's	8.306	10.150	11.026
n-Octane	3.008	3.857	4.139
E-Benzene	0.715	0.690	0.914
M & P Xylenes	0.802	0.779	1.026
O-Xylene	1.062	1.011	1.358
Other C-9's	4.456	6.081	6.775
n-Nonane	1.673	2.356	2.585
Other C-10's	3.766	5.649	6.408
n-decane	0.826	1.268	1.415
Undecanes(11)	2.552	3.927	4.518
Dodecanes(12)	1.336	2.221	2.591
Tridecanes(13)	0.741	1.321	1.563
Tetradecanes(14)	0.329	0.627	0.752
Pentadecanes(15)	0.124	0.253	0.307
Hexadecanes(16)	0.056	0.123	0.151
Heptadecanes(17)	0.026	0.061	0.075
Octadecanes(18)	0.012	0.028	0.035
Nonadecanes(19)	0.006	0.015	0.019
Eicosanes(20)	0.002	0.005	0.006
Heneicosanes(21)	0.001	0.003	0.004
Docosanes(22)	0.001	0.002	0.002
Tricosanes(23)	0.000	0.001	0.002
Tetracosanes(24)	0.000	0.001	0.001
Pentacosanes(25)	0.000	0.001	0.001
Hexacosanes(26)	0.000	0.001	0.001
Heptacosanes(27)	0.000	0.001	0.001
Octacosanes(28)	0.000	0.001	0.001
Nonacosanes(29)	0.000	0.001	0.002
Triacontanes(30)	0.001	0.002	0.003
Hentriacontanes Plus(31+)	0.005	0.022	0.031
Total	100.000	100.000	100.000

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

For: Antero Resources Appalachian Corp.
1625 17th Street
Denver, Colorado 80202

Date Sampled: 09/20/13

Date Analyzed: 10/02/13

Sample: Central No. 2H (Jonathan Davis Well Pad)

Job Number: J35821

FLASH LIBERATION OF HYDROCARBON LIQUID		
	Separator HC Liquid	**Stock Tank**
Pressure, psig	300	0
Temperature, °F	70	70
Gas Oil Ratio (1)	------	365
Gas Specific Gravity (2)	------	1.408
Separator Volume Factor (3)	1.2406	1.000

STOCK TANK FLUID PROPERTIES	
Shrinkage Recovery Factor (4)	0.8060
Oil API Gravity at 60 °F	68.98
Reid Vapor Pressure, psi (5)	4.41

Quality Control Check			
	Sampling Conditions	**Test Samples**	
Cylinder No.	------	T-3044*	T-1105
Pressure, psig	300	246	238
Temperature, °F	70	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: M. G.
* Sample used for flash study
Base Conditions: 14.85 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

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

For: Antero Resources Appalachian Corp.
1625 17th Street
Denver, Colorado 80202

Sample: Central No. 2H (Jonathan Davis Well Pad)
Gas Evolved from Hydrocarbon Liquid Flashed
From 300 psig & 70 °F to 0 psig & 70 °F

Date Sampled: 09/20/13 Job Number: 35821.001

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.053	
Carbon Dioxide	0.107	
Methane	23.624	
Ethane	26.392	7.114
Propane	22.728	6.311
Isobutane	4.750	1.567
n-Butane	10.798	3.431
2-2 Dimethylpropane	0.127	0.049
Isopentane	3.304	1.218
n-Pentane	3.382	1.236
Hexanes	2.805	1.165
Heptanes Plus	1.930	0.855
Totals	100.000	22.945

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.556	(Air=1)
Molecular Weight	101.39	
Gross Heating Value	5420	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.408	(Air=1)
Compressibility (Z)	0.9845	
Molecular Weight	40.14	
Gross Heating Value		
Dry Basis	2354	BTU/CF
Saturated Basis	2314	BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)
Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: MR
Processor: ANB
Cylinder ID: CYL-1

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.053		0.037
Carbon Dioxide	0.107		0.117
Methane	23.624		9.441
Ethane	26.392	7.114	19.772
Propane	22.728	6.311	24.970
Isobutane	4.750	1.567	6.879
n-Butane	10.798	3.431	15.637
2,2 Dimethylpropane	0.127	0.049	0.228
Isopentane	3.304	1.218	5.939
n-Pentane	3.382	1.236	6.080
2,2 Dimethylbutane	0.117	0.049	0.251
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.166	0.069	0.356
2 Methylpentane	0.881	0.369	1.892
3 Methylpentane	0.543	0.223	1.166
n-Hexane	1.098	0.455	2.358
Methylcyclopentane	0.079	0.027	0.166
Benzene	0.022	0.006	0.043
Cyclohexane	0.125	0.043	0.262
2-Methylhexane	0.233	0.109	0.582
3-Methylhexane	0.233	0.107	0.582
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.228	0.100	0.564
n-Heptane	0.296	0.138	0.739
Methylcyclohexane	0.195	0.079	0.477
Toluene	0.043	0.015	0.099
Other C8's	0.271	0.127	0.744
n-Octane	0.068	0.035	0.194
Ethylbenzene	0.002	0.001	0.005
M & P Xylenes	0.022	0.009	0.058
O-Xylene	0.003	0.001	0.008
Other C9's	0.076	0.039	0.239
n-Nonane	0.014	0.008	0.045
Other C10's	0.018	0.011	0.063
n-Decane	0.002	0.001	0.007
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	22.945	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.408	(Air=1)
Compressibility (Z)	0.9845	
Molecular Weight	40.14	

Gross Heating Value

Dry Basis	2354	BTU/CF
Saturated Basis	2314	BTU/CF

GAS ANALYTICAL SERVICES

C6+ Gas Analysis Report

Gas Analytical

Report Date: May 9, 2016 8:11a

Client:	Antero Resources	Date Sampled:	Apr 29, 2016
Site:	Hiley Unit 2H	Analysis Date:	May 5, 2016 3:20p
Field No:	9998	Collected By:	Doug Lipscomb
Meter:		Date Effective:	Apr 29, 2016 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	223.0
Lab File No:	**X_CH1-11491.CHR**	Sample Temp (°F):	78
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test
Analysis Status:	good		

Component	Mol %	Gal/MSCF
Methane	80.3799	
Ethane	14.4783	3.8488
Propane	2.3850	0.6556
I-Butane	0.4736	0.1547
N-Butane	0.8388	0.2640
I-Pentane	0.2265	0.0827
N-Pentane	0.2114	0.0765
Nitrogen	0.4146	
Oxygen	<MDL	
Carbon Dioxide	0.1574	
Hexanes+	0.4345	0.1784
TOTAL	100.0000	5.2607

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,216.9949 BTU/ft³
BTU/SCF (Saturated):	1,196.6916 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99676
Z Factor (Saturated):	0.99636

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,216.9949 BTU/ft³
BTU/SCF (Saturated):	1,196.6916 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99676
Z Factor (Saturated):	0.99636

Calculated Specific Gravities			
Ideal Gravity:	0.6895	Real Gravity:	0.6914
Molecular Wt:	19.9692 lb/lbmol		

Gross Heating Values are Based on:
GPA 2145-09, 2172
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 (CO2e)	
	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									4.2283	0.5837						
EP-PCV					0.0465	0.2038							0.2633	1.1531	6.5834	28.8352
F001					2.3520	10.3018							2.4958	10.9314	62.3940	273.2859
EP-L001					11.4656	0.8719							0.6169	0.0469	15.4592	1.1755
EP-L002					0.0006	0.0001							0.0375	0.0057	0.9901	0.1506
EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007 (emissions per EPN)	0.1243	0.5444	0.1044	0.4573	0.0068	0.0299	0.0007	0.0033	0.0094	0.0414	0.0094	0.0414	0.0029	0.0125	149.1430	653.2465
EP-EC001 (emissions per EPN)	0.8177	3.5815	3.7214	16.2999	1.3625	5.9679	1.02E-05	4.47E-05	0.0079	0.0344	0.0059	0.0258	0.2698	1.1816	298.8106	1308.7906
TOTAL	1.6877	7.3921	4.4522	19.5008	12.8766	7.0494	0.0052	0.0229	0.0740	0.3240	0.0720	0.3154	0.9442	1.3219	1359.2612	5882.8422

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	0.0061	0.0269	0.0061	0.0269
F001			0.0018	0.0079	0.0156	0.0684	0.0182	0.0796	0.0474	0.2074	0.1550	0.6790	0.2380	1.0422
EP-L001			0.0020	0.0002	0.0104	0.0008	0.0058	0.0004	0.0137	0.0010	1.7062	0.1297	1.7381	0.1322
EP-L002			4.46E-06	6.78E-07	4.49E-06	6.83E-07	6.80E-07	1.03E-07	1.35E-06	2.05E-07	5.53E-08	8.40E-09	1.10E-05	1.68E-06
EP-GPU001, EP-GPU002, EP-GPU003, EP-GPU004, EP-GPU005, EP-GPU006, EP-GPU007 (emissions per EPN)	9.32E-05	4.08E-04	2.61E-06	1.14E-05	4.23E-06	1.85E-05			0.00E+00	0.00E+00	0.0022	0.0098	0.0023	0.0102
EP-EC001 (emissions per EPN)	1.28E-06	5.58E-06	3.99E-04	1.75E-03	2.04E-03	0.0089	1.07E-03	0.0047	0.0024	0.0107	0.2154	0.9433	0.2213	0.9694
TOTAL	0.0007	0.0029	0.0024	0.0020	0.0124	0.0098	0.0068	0.0051	0.0162	0.0117	1.9372	1.1417	1.9758	1.1733

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
Diane Davis 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 2899 Sam Cavins Road, West Union, in Doddridge County, West Virginia.

The latitude and longitude coordinates are: 39.3041 and -80.822705

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

Pollutants	TOTALS (tpy):
NO_X	7.3921
CO	19.5008
$PM_{2.5}$	0.3154
PM_{10}	0.3240
VOC	7.0494
SO_2	0.0229
CO_{2e}	5,882.84
Formaldehyde	0.0029
Benzene	0.0020
Toluene	0.0098
Ethylbenzene	0.0051
Xylenes	0.0117
Hexane	1.1417
Total HAPs	1.1733

Proposed new equipment will be installed upon the issuance of the permit and the facility is expected to begin the operations upon the issuance of the permit. 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 _____, 2018

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

www.ghd.com