Texas Commission on Environmental Quality

OGS SP for New Registration

113502

Site Information (Regulated Entity)

What is the name of the site to be authorized?	UNIVERSITY LANDS 39-11-1H FACILITY
Does the site have a physical address?	
County	CROCKETT
Latitude (N) (##.######)	31.9556
Longitude (W) (-###.######)	-101.0945
Primary SIC Code	1311
Secondary SIC Code	
Primary NAICS Code	211111
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	RN106118060
What is the name of the Regulated Entity (RE)?	UNIVERSITY LANDS 39 11 1H FACILITY
Does the RE site have a physical address?	No
Because there is no physical address, describe how to locate this site:	FROM BARNHART S ON HWY163 FOR 8.2 MI L FOR 5.9 MI ON LEASE ROAD, R HEADING S 2.8 MI TO FACILITY ON W SIDE OF ROAD
City	BARNHART
State	TX
ZIP	76930
County	CROCKETT
Latitude (N) (##.######)	31.9556
Longitude (W) (-###.######)	-101.0945
What is the primary business of this entity?	OIL AND GAS PRODUCTION

EP Ener-Customer (Applicant) Information

How is this applicant associated with this site?	OWNER OPERATOR
What is the applicant's Customer Number (CN)?	CN604089854
Type of Customer	Partnership
Full legal name of the applicant:	
Legal Name	EP Energy E&P Company, L.P.
Texas SOS Filing Number	8567711
Federal Tax ID	
State Franchise Tax ID	17604870927
DUNS Number	
Number of Employees	501+
Independently Owned and Operated?	No
I certify that the full legal name of the entity applying for this permit has been provided and is legally	Yes

authorized to do business in Texas.	
Responsible Authority Contact	
Organization Name	EP Energy E&P Company, L.P.
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Responsible Authority Mailing Address	
Enter new address or copy one from list:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002
Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

Responsible Official Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	EP Energy E&P Company, L.P.
Organization Name	EP Energy E&P Company LP
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Enter new address or copy one from list:	EP Energy E&P Company, L.P.
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002

Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

Technical Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	
Organization Name	EP ENERGY E&P COMPANY LP
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002
Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

OGS General Information- Standard Permit New Sites

1) Is this a new or existing site?	New
2) Select the Oil and Gas rule being applied for	6002 - NON RULE 2012-NOV-08
3) In what county is the site located?	CROCKETT
4) Is this site a petroleum storage and transfer unit with a total storage capacity exceeding 300,000 barrels according to the PSD source categories?	No
4.1. Are emissions of any criteria pollutant increasing by 250 tpy?	No
5) Does this business qualify as a small business, non-profit organization, or small government entity?	No

Scope Standard Permits New Sites

1) Are all emissions from operationally dependent facilities located within a 1/4 mile included in this registration?	Yes
2) Has the TCEQ Oil and Gas Spreadsheet been used to calculate emissions for this registration and will it be attached?	Yes
3) When relying on control or recovery devices in emission calculations, are you going to monitor and keep records, per Table 8?	NA

MSS Standard Permit New Sites

1) Will planned MSS emissions be registered with this authorization?	No

Standard Permit New

1) Whichever occurred first, is this registration being submitted within 90 days from either the start of operation or implemented changes?	Yes
2) What are the annual VOC emissions in tons per year (tpy) for this registration?	97.82
3) What are the total steady-state emissions from crude oil or condensate in lb/hr for this registration?	103.59
4) What are the total periodic emissions from crude oil or condensate in lb/hr if less than 30 psig?	22.36
5) What are the total periodic emissions from crude oil or condensate in lb/hr if greater than 30 psig?	0
6) What are the total VOC steady-state emissions from natural gas in lb/hr for this registration?	0
7) What are the total periodic emissions from natural gas VOC in lb/hr if less than 30 psig?	0
8) What are the total periodic emissions from natural gas VOC in lb/hr if more than 30 psig?	0
9) What are the total annual benzene emissions in tpy?	0.16
10) What are the total steady-state benzene emissions in lb/hr for this registration?	0.16
11) What are the total periodic emissions from benzene in lb/hr if less than 30 psig?	0
12) What are the total periodic emissions from benzene in lb/hr if more than 30 psig?	0
13) What are the total annual hydrogen sulfide (H2S) emissions in tpy for this registration?	0.01
14) What are the total steady-state H2S emissions in lb/hr for this registration?	0.01
15) What are the total periodic emissions from H2S in lb/hr if less than 30 psig?	0
16) What are the total periodic emissions from H2S in	0

lb/hr if greater than 30 psig?	
17) What are the total annual SO2 emissions in tpy for this registration?	0.01
18) What are the total steady-state SO2 emissions in lb/hr for this registration?	0.01
19) What are the total periodic SO2 emissions in lb/hr if less than 30 psig for this registration?	0
20) What are the total annual NOx emissions in tpy for this registration?	0.36
21) What are the total steady-state NOx emissions in lb/hr for this registration?	0.08
22) What are the total annual CO emissions in tpy for this registration?	0.3
23) What are the total steady-state CO emissions in lb/hr for this registration?	0.07
24) What are the total annual PM10/PM2.5 emissions in tpy for this registration?	0.05
25) What are the total steady-state PM10/PM2.5 emissions in lb/hr for this registration?	0.01
26) What is the distance in feet to the nearest property line?	5500
27) What is the distance in feet to the nearest receptor?	5500

Best Management Practice Standard Permit New Sites

1) Has a program been developed and will it be followed to replace, repair, and/or maintain facilities in good working order?	Yes
2) Are there any engines or turbines located at this site?	No
3) Are there any open-topped tanks or ponds located at this site?	No
4) Will all fugitive components found to be leaking be repaired in a timely manner consistent with the rule?	Yes
5) Will tank hatches remain closed (but not completely sealed in order to maintain safe design functionality) except during sampling, gauging, loading, unloading, or planned maintenance activities?	Yes
6) Will new and reworked valves and piping connections be located in a place that is reasonably accessible for leak checking?	Yes
7) When a Leak Detection and Repair (LDAR) program has been used to reduce emissions, have the requirements of Table 9 been met?	NA
8) Are there any tanks or vessels located at this site?	Yes
8.1. List the color of the tanks or vessels.	Tan
8.2. Are any tanks applicable to Chapter 115, 40 CFR part 60, or any other state or federal standards?	No
9) Are any of the following units needed to meet the limitations of this rule?	None

10) If there are any other state or federal standards applicable to this site, be prepared to attach an explanation showing how the requirements have been met.	Yes
11) Will the site be in compliance with all other recordkeeping, sampling and monitoring requirements?	Yes

OGS Attachments Standard Permits New Sites

Please attach all required documents to complete the project.

[File Properties]

File Name	UL 39-11-1H NR Standard Permit 9-24-2013.pdf
Hash	302CB492F21E75A532C4891EEE7D0BB0E3C56B6AA011EC37C91D0DF2EBE0C829
MIME-Type	application/pdf

Please attach additional information needed to complete the registration.

[File Properties]

File Name	University Lands 39-11-1H 09-24-2013.xlsm
Hash	3FE8EAC35406A3B7577642949EEB728016F01E5E5B21F818BC87A8CBC9B6FCB4
MIME-Type	application/vnd.ms-excel.sheet.macroenabled.12

Please attach any other information needed to complete the registration.

Certification

The electronic signature below indicates that the Responsible Official has knowledge of the facts herein set forth and that the same are true, accurate, and complete to the best of my knowledge and belief. By this signature, the maximum emission rates listed on this certification reflect the maximum anticipated emissions due to the operation of this facility and all representations in this certification of emissions are conditions upon which the facilities and sources will operate. It is understood that it is unlawful to vary from these representations unless the certification is first revised. The signature certifies that to the best of the Responsible Officials knowledge and belief, the project will satisfy the conditions and limitations of the indicated exemption or permit by rule and the facility will operated in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. The signature below certifies that, based on information and belief formed after reasonable inquiry, the statements and information above and contained in the attached document(s) are true, accurate, and complete.

1. I am Bernard J Kadlubar, the owner of the STEERS account ER031441.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.

8. I am knowingly and intentionally signing OGS SP for New Registration.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER OPERATOR Signature: Bernard J Kadlubar OWNER OPERATOR

Account Number:	ER031441
Signature IP Address:	136.143.128.40
Signature Date:	2013-09-26
Signature Hash:	051ECE7A58C94EA32F05C98E1CFB1CF9E680F3AC2EE24201B2277B0AA388E262
Form Hash Code at time of Signature:	7D238DF172ED7ED3DC4C24ED4056FEF9A22EAB7484F319A9BFA1ECADECF5C65A

Fee Payment

Transaction by:	The application fee payment transaction was made by ER028035/Paul E Deciutiis
Paid by:	The application fee was paid by PAUL DECIUTIIS
Fee Amount:	$850.00
Paid Date:	The application fee was paid on 2013-09-26
Transaction/Voucher number:	The transaction number is 582EA000150026 and the voucher number is 188776

Submission

Reference Number:	The application reference number is 74639
Submitted by:	The application was submitted by ER028035/Paul E Deciutiis
Submitted Timestamp:	The application was submitted on 2013-09-26 at 08:19:56 CDT
Submitted From:	The application was submitted from IP address 72.183.111.162
Confirmation Number:	The confirmation number is 75972
Steers Version:	The STEERS version is 5.90
Permit Number:	The permit number is 113502

Additional Information

Application Creator: This account was created by Paul E Deciutiis

Non-Rule Standard Permit Registration

University Lands 39-11-1H Facility
~~Crockett, Barnhart Count~~
SP Registration No. 113502
Regulated Entity No. RN106118060

Prepared for:

EP Energy E&P Company, L.P.
1001 Louisiana Street
Houston, Texas 77002
TCEQ Customer Reference No. CN604089854

Prepared by:

Kane Environmental Engineering, Inc.
11400 W. Parmer Lane, #98
Cedar Park, Texas 78613
Project No. 13-620

September 2013

TABLE OF CONTENTS

1.0 INTRODUCTION

EP Energy E&P Company L.P. (EP Energy) currently operates the University Lands 39-7-1H Facility located near Barnhart in Crockett County under PBR No. 95700. EP Energy plans to update the facility equipment and operations that will result in potential emissions of VOC greater than 25 tpy and will no longer meet the requirements of a Permit-by-Rule. Although the site is located in Crockett County, EP Energy is voluntarily submitting a Non-Rule Oil and Gas Standard Permit.

The site will consist of:

- (1) Process vent for produced gas, EPN V1;
- (2) 500 bbl Crude oil storage tanks, EPNs T1, T2;
- (2) 500 bbl Produced water storage tanks, EPNs WT1, WT2;
- (1) 1.0 MMBtu/hr Heater treater, EPN H1;
- Crude oil and Produced water loading areas, EPNs L1, L2;
- Process equipment fugitives, EPN F1;
- Separation and metering equipment

All sources are located on property that is leased with the nearest property line to any emission source of greater than 5,500 feet. The emissions generated at this facility include carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC) and are summarized in **Attachment C**. The information in this registration includes a description of the process, emissions calculations, gas analyses, and the appropriate TCEQ tables and forms to support this standard permit claim.

2.0 PROCESS DESCRIPTION

The design basis of the facility is to process up to 5.0 MMscfd of sweet gas, 100 bpd of crude oil and 200 bpd of produced water.

Wellstreams containing oil, gas and water enter the facility. The oil, water and gas from the wells are separated in a 3-phase separator and the products each join the single-phase lines respectively. Part of the gas is taken from the gas line and sent through a small scrubber to remove any liquid hydrocarbons and used for fuel for the heater treater. The remainder of the gas flows to the sales gas pipeline or is vented to atmosphere with produced gas.

The water is sent to the produced water storage tanks. The oil flows to the heater treater for additional treatment. The treated oil flows to the oil storage tanks. The tank and flash emissions are vented to atmosphere. Produced water and crude oil are trucked out of the facility.

3.0 EMISSION CALCULATIONS

Emission sources from the facility will include crude oil and produced water storage tanks, separation and metering equipment, truck loading, and equipment fugitive components. The supporting documentation and TCEQ Oil and Gas emission calculation spreadsheet used to complete these calculations are included in **Attachments B and C**.

GAS-FIRED HEATERS

EPN H1 - Emissions from the heater treater will consist of products of sweet field gas combustion. Combustion emissions are estimated using current emission factors from AP-42, Fifth Edition, Tables 1.4-1 (NO_x & CO) and 1.4-2 (VOC, SO_2, & PM_{10}).

PROCESS VENTS

EPN V1 – As needed, a small amount of produced gas, not to exceed 400 Mcfd, is vented to atmosphere for up to 1,400 hours per year.

TANK LOSSES AND SEPARATOR FLASH

EPNs: T1, T2 and WT1, WT2 - Tank flash emissions and tank working/breathing losses are calculated for the 500-bbl vertical fixed roof atmospheric crude oil storage tanks. Flash is calculated with a maximum crude oil production rate using the measured flash analysis provided by FESCO Ltd from a representative facility producing for the same formation with similar processes. Tank working and breathing losses are calculated using EPA Tanks 4.09d and composition is determined by a representative liquid analysis. The tanks are vented to atmosphere.

TRUCK LOADING LOSSES

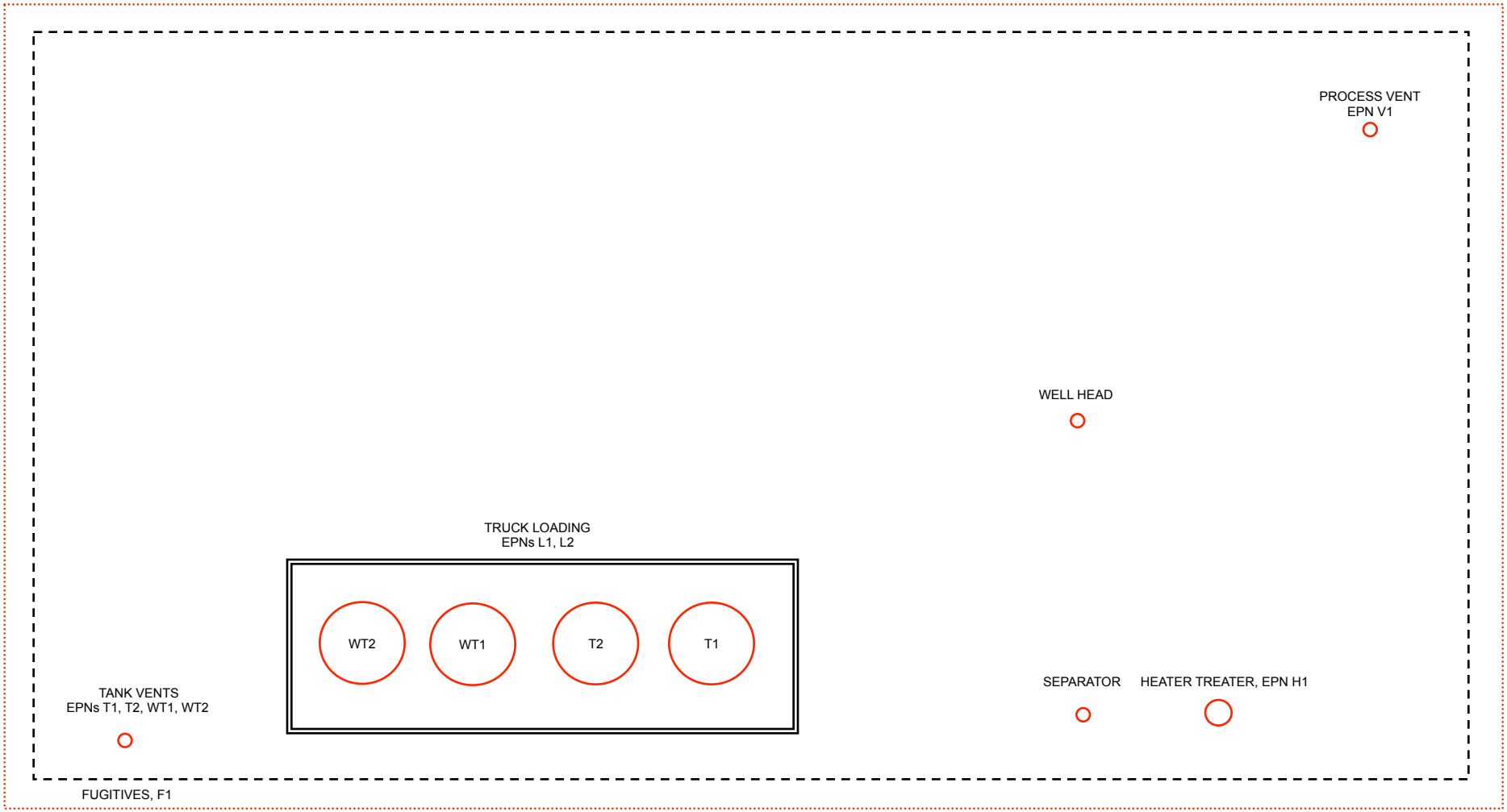
EPN L1, L2 – Truck loading emissions are calculated using current factors in AP-42, Fifth Edition, Chapter 5, Section 5.2.2.1.1, Loading Losses, and site-specific data. Loading will be unassisted using a submerged fill pipe for crude oil and produced water loading operations. For conservatism, produced water loading assuming a 1% cut of crude oil. Crude oil and produced water are sent to atmospheric storage tanks prior to transport offsite by tanker truck and is uncontrolled.

EQUIPMENT FUGITIVES

EPN F1 – Equipment fugitive emissions are estimated using facility component counts and the emissions factors in the TCEQ Technical Guidance on Equipment Leak Fugitives dated October 2000. Emissions from fugitives are conservatively estimated using a laboratory analysis of representative gas and liquid compositions.

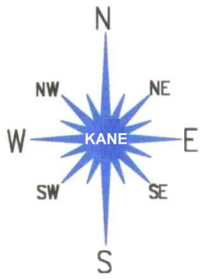
ATTACHMENT A

- *Facility Diagrams*



LEGEND

- FENCE
- REGULATED EQUIPMENT
- EARTHEN BERM



UNIVERSITY LANDS 39-11-1H FACILITY

Barnhart, Crockett County

N 31° 57’ 18.46” W 101° 5’ 41.61”

KANE

Environmental Engineering Inc.
Spring, Texas

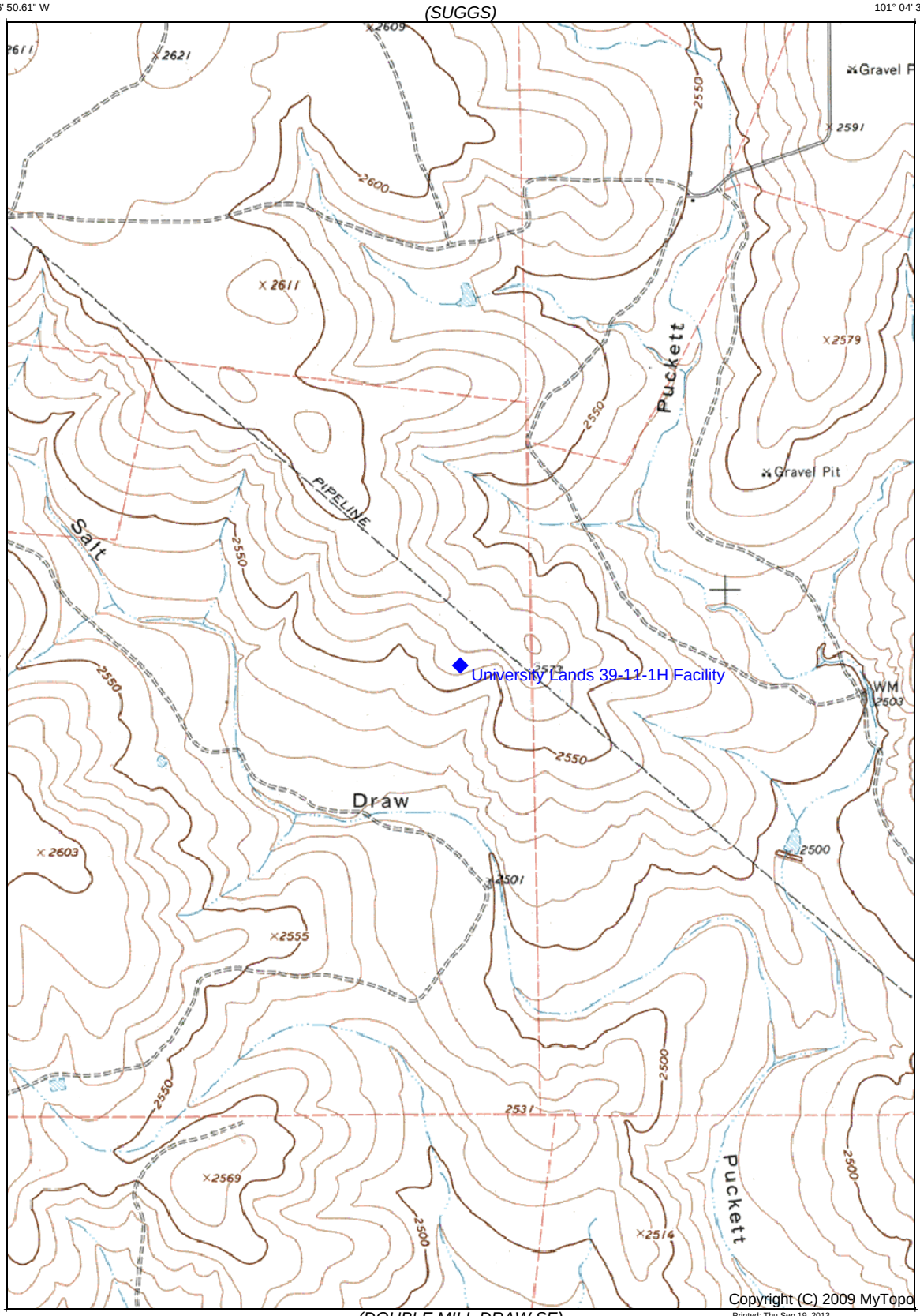
DRAWN BY: PED	PROJECT: 13-620
DATE: 12/2011	APPROVED BY: PED
REVISED: 9/2013	NOT TO SCALE

DOUBLE MILL DRAW NE QUADRANGLE
TEXAS, CENTRAL
TOPOGRAPHIC SERIES

(BARNHART SW) (SUGGS) (NOELKE SW)

101° 06' 50.61" W
030° 58' 44.62" N

101° 04' 32.68" W
030° 58' 44.62" N



(DOUBLE MILL DRAW NW)

(OGLESBY RANCH)

030° 55' 57.05" N
101° 06' 50.61" W

(DOUBLE MILL DRAW SE)

030° 55' 57.05" N
101° 04' 32.68" W

Printed: Thu Sep 19, 2013

(INDIO HILL)

(BAILEY DRAW)

SCALE 1:24000

Declination
GN
GN 1.07° W
MN 6.51° E

0 1
MILE

0 1000
YARDS

0 1
KILOMETER

CONTOUR INTERVAL 10 FEET
MEAN SEA LEVEL

Produced by MyTopo Terrain Navigator
Topography based on USGS 1:24,000 Maps

North American 1983 Datum (NAD83)
Polyconic Projection

To place on the predicted North American 1927 move the projection lines 19M N and 37M W

DOUBLE MILL DRAW NE, TX
1967

ATTACHMENT B

- *Supporting Documentation*

TABLE 1-C

COMPOSITIONAL ANALYSIS OF THE SEPARATOR GAS, OIL AND MATHEMATICALLY RECOMBINED WELLSTREAM THROUGH C_{31+}

SEPARATOR GOR.....: 320 Scf/Sep Bbl
SEPARATOR PRESSURE.....: 63 psig
SEPARATOR TEMPERATURE.....: 109 °F

	SEPARATOR GAS		SEPARATOR OIL		WELLSTREAM	
Component	Mole%	* GPM	Mole %	Liquid Volume %	Mole %	Liquid Volume %
Hydrogen Sulfide	0.000	0.000	0.000	0.000	0.000	0.000
Nitrogen	2.542	0.000	0.062	0.010	0.926	0.197
Carbon Dioxide	0.846	0.000	0.040	0.010	0.321	0.106
Methane	62.693	0.000	2.013	0.501	23.149	7.608
Ethane	14.381	3.825	2.148	0.844	6.409	3.324
Propane	13.195	3.611	6.916	2.795	9.103	4.857
Iso-butane	0.977	0.318	1.115	0.536	1.067	0.677
N-butane	3.444	1.079	6.053	2.801	5.144	3.143
2-2 Dimethylpropane	0.000	0.000	0.018	0.010	0.012	0.009
Iso-pentane	0.597	0.217	2.353	1.265	1.741	1.235
N-pentane	0.577	0.208	3.018	1.606	2.168	1.523
2-2 Dimethylbutane	0.049	0.020	0.011	0.007	0.025	0.020
Cyclopentanes	0.009	0.003	0.000	0.000	0.003	0.002
2-3 Dimethylbutane	0.098	0.040	0.540	0.325	0.386	0.307
2 Methylpentane	0.072	0.030	1.114	0.679	0.751	0.605
3 Methylpentane	0.000	0.000	0.981	0.588	0.639	0.506
Other Hexanes	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.107	0.044	1.752	1.058	1.179	0.940
Methylcyclopentane	0.003	0.001	2.589	1.346	1.688	1.158
Benzene	0.009	0.003	0.235	0.097	0.156	0.085
Cyclohexane	0.035	0.012	1.150	0.575	0.762	0.503
2-Methylhexane	0.012	0.006	0.689	0.471	0.453	0.409
3-Methylhexane	0.018	0.008	0.819	0.552	0.540	0.481
2,2,4 Trimethylpentane	0.022	0.011	0.000	0.000	0.008	0.008
Other Heptanes	0.193	0.084	4.071	2.603	2.720	2.296
n-Heptane	0.032	0.015	1.534	1.040	1.011	0.904
Methylcyclohexane	0.005	0.002	2.347	1.386	1.531	1.193
Toluene	0.006	0.002	0.591	0.290	0.387	0.251
Other C8's	0.046	0.021	6.295	4.334	4.118	3.743
n-Octane	0.007	0.004	1.360	1.022	0.888	0.882
Ethylbenzene	0.002	0.001	0.100	0.057	0.066	0.049
M&P-Xylene	0.002	0.001	0.385	0.219	0.251	0.189
O-Xylene	0.001	0.000	0.386	0.216	0.252	0.186
Other C-9's	0.012	0.006	4.508	3.466	2.942	2.986
n-Nonane	0.001	0.001	0.973	0.804	0.634	0.692
Other C10's	0.005	0.003	4.144	3.502	2.702	3.015
n-Decane	0.001	0.001	0.701	0.632	0.457	0.544
Undecanes	0.001	0.001	4.206	3.646	2.741	3.138
Dodecanes	0.000	0.000	3.750	3.512	2.444	3.021
Tridecanes	0.000	0.000	3.446	3.460	2.245	2.977

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

For: El Paso Production Oil & Gas Company
P. O.Box 2511
Houston, Texas 77252

Sample: University 38-29 No. 1-H
Separator Gas
Spot Sample @ 105 psig & 53 °F

Date Sampled: 01/12/2011 Job Number: 10290.001

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT

COMPONENT	MOL%	GPM
Nitrogen	3.200	
Carbon Dioxide	0.482	
Methane	78.426	
Ethane	8.607	2.289
Propane	6.045	1.656
Isobutane	0.444	0.144
n-Butane	1.694	0.531
2-2 Dimethylpropane	0.012	0.005
Isopentane	0.318	0.116
n-Pentane	0.339	0.122
Hexanes	0.184	0.076
Heptanes Plus	0.249	0.101
Totals	100.000	5.039

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.360	(Air=1)
Molecular Weight	96.99	
Gross Heating Value	5052	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	0.730	(Air=1)
Compressibility (Z)	0.9966	
Molecular Weight	21.06	
Gross Heating Value		
Dry Basis	1215	BTU/CF
Saturated Basis	1194	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: JF
Processor: DJV
Cylinder ID: X-410

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	3.200		4.256
Carbon Dioxide	0.482		1.007
Methane	78.426		59.730
Ethane	8.607	2.289	12.287
Propane	6.045	1.656	12.655
Isobutane	0.444	0.144	1.225
n-Butane	1.694	0.531	4.674
2,2 Dimethylpropane	0.012	0.005	0.041
Isopentane	0.318	0.116	1.089
n-Pentane	0.339	0.122	1.161
2,2 Dimethylbutane	0.001	0.000	0.004
Cyclopentane	0.032	0.013	0.107
2,3 Dimethylbutane	0.003	0.001	0.012
2 Methylpentane	0.051	0.021	0.209
3 Methylpentane	0.036	0.015	0.147
n-Hexane	0.061	0.025	0.250
Methylcyclopentane	0.056	0.019	0.224
Benzene	0.009	0.003	0.033
Cyclohexane	0.027	0.009	0.108
2-Methylhexane	0.007	0.003	0.033
3-Methylhexane	0.010	0.005	0.048
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.046	0.020	0.217
n-Heptane	0.016	0.007	0.076
Methylcyclohexane	0.023	0.009	0.107
Toluene	0.006	0.002	0.026
Other C8's	0.029	0.013	0.152
n-Octane	0.003	0.002	0.016
Ethylbenzene	0.001	0.000	0.005
M & P Xylenes	0.001	0.000	0.005
O-Xylene	0.000	0.000	0.000
Other C9's	0.009	0.005	0.054
n-Nonane	0.001	0.001	0.006
Other C10's	0.002	0.001	0.013
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.003	0.002	0.023
Totals	100.000	5.039	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	0.730	(Air=1)
Compressibility (Z)	0.9966	
Molecular Weight	21.06	

Gross Heating Value

Dry Basis	1215	BTU/CF
Saturated Basis	1194	BTU/CF

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

Sample: University 38-29 No. 1-H
Separator Gas
Spot Sample @ 105 psig & 53 °F

Date Sampled: 01/12/2011 Job Number: 10290.001

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.482		1.007
Hydrogen Sulfide	----		----
Nitrogen	3.200		4.256
Methane	78.426		59.730
Ethane	8.607	2.289	12.287
Propane	6.045	1.656	12.655
Isobutane	0.444	0.144	1.225
n-Butane	1.706	0.536	4.715
Isopentane	0.318	0.116	1.089
n-Pentane	0.339	0.122	1.161
Cyclopentane	0.032	0.013	0.107
n-Hexane	0.061	0.025	0.250
Cyclohexane	0.027	0.009	0.108
Other C6's	0.091	0.037	0.372
Heptanes	0.135	0.054	0.598
Methylcyclohexane	0.023	0.009	0.107
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.009	0.003	0.033
Toluene	0.006	0.002	0.026
Ethylbenzene	0.001	0.000	0.005
Xylenes	0.001	0.000	0.005
Octanes Plus	0.047	0.023	0.264
Totals	100.000	5.039	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	4.105	(Air=1)
Molecular Weight	118.49	
Gross Heating Value	6015	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	0.730	(Air=1)
Compressibility (Z)	0.9966	
Molecular Weight	21.06	
Gross Heating Value		
Dry Basis	1215	BTU/CF
Saturated Basis	1194	BTU/CF

February 25, 2011

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

For: El Paso Production Oil & Gas Company
P. O.Box 2511
Houston, Texas 77252

Date Sampled: 02/22/2011

Date Analyzed: 02/24/2011

Sample: University 38-29 No. 1-H

Job Number: J11076

FLASH LIBERATION OF HYDROCARBON LIQUID		
	Separator HC Liquid	**Stock Tank**
Pressure, psig	54	0
Temperature, °F	81	70
Gas Oil Ratio (1)	------	19.1
Gas Specific Gravity (2)	------	1.211
Separator Volume Factor (3)	1.0184	1.000

STOCK TANK FLUID PROPERTIES	
Shrinkage Recovery Factor (4)	0.9819
Oil API Gravity at 60 °F	38.55
Reid Vapor Pressure, psi (5)	4.76

Quality Control Check			
	Sampling Conditions	**Test Samples**	
Cylinder No.	------	W-778*	W-1282
Pressure, psig	54	42	41
Temperature, °F	81	69	69

(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: J. G.

* Sample used for flash study

Base Conditions: 14.65 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

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

For: El Paso E & P Company L.P.
P. O. Box 2511
Houston, Texas 77252

Sample: University 38-29 No. 1-H
Gas Evolved from Hydrocarbon Liquid Flashed
From 54 psig & 81 °F to 0 psig & 75 °F

Date Sampled: 02/24/2011 Job Number: 11076.001

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.797	
Carbon Dioxide	0.752	
Methane	37.880	
Ethane	18.830	5.007
Propane	23.504	6.439
Isobutane	2.179	0.709
n-Butane	9.027	2.830
2-2 Dimethylpropane	0.035	0.013
Isopentane	1.952	0.710
n-Pentane	2.232	0.804
Hexanes	1.346	0.552
Heptanes Plus	1.466	0.573
Totals	100.000	17.637

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.249	(Air=1)
Molecular Weight	93.06	
Gross Heating Value	4864	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.211	(Air=1)
Compressibility (Z)	0.9890	
Molecular Weight	34.70	
Gross Heating Value		
Dry Basis	1993	BTU/CF
Saturated Basis	1959	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: 14.650 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: JF
Processor: JF
Cylinder ID: FL- 6S

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.797		0.643
Carbon Dioxide	0.752		0.954
Methane	37.880		17.511
Ethane	18.830	5.007	16.316
Propane	23.504	6.439	29.866
Isobutane	2.179	0.709	3.650
n-Butane	9.027	2.830	15.119
2,2 Dimethylpropane	0.035	0.013	0.073
Isopentane	1.952	0.710	4.058
n-Pentane	2.232	0.804	4.640
2,2 Dimethylbutane	0.006	0.002	0.015
Cyclopentane	0.226	0.094	0.457
2,3 Dimethylbutane	0.022	0.009	0.055
2 Methylpentane	0.374	0.154	0.929
3 Methylpentane	0.264	0.107	0.656
n-Hexane	0.454	0.186	1.127
Methylcyclopentane	0.411	0.141	0.997
Benzene	0.058	0.016	0.131
Cyclohexane	0.194	0.066	0.470
2-Methylhexane	0.050	0.023	0.144
3-Methylhexane	0.072	0.033	0.208
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.307	0.133	0.878
n-Heptane	0.101	0.046	0.292
Methylcyclohexane	0.134	0.054	0.379
Toluene	0.022	0.007	0.058
Other C8's	0.104	0.048	0.330
n-Octane	0.005	0.003	0.016
Ethylbenzene	0.001	0.000	0.003
M & P Xylenes	0.001	0.000	0.003
O-Xylene	0.000	0.000	0.000
Other C9's	0.006	0.003	0.022
n-Nonane	0.000	0.000	0.000
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	17.637	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.211	(Air=1)
Compressibility (Z)	0.9890	
Molecular Weight	34.70	
Gross Heating Value		
Dry Basis	1993	BTU/CF
Saturated Basis	1959	BTU/CF

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	500-bbl Tank
City:	Barnhart
State:	Texas
Company:	EP Energy
Type of Tank:	Vertical Fixed Roof Tank
Description:	100 bpd

Tank Dimensions

Shell Height (ft):	25.00
Diameter (ft):	12.00
Liquid Height (ft) :	24.00
Avg. Liquid Height (ft):	13.00
Volume (gallons):	20,304.71
Turnovers:	75.50
Net Throughput(gal/yr):	1,533,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

500-bbl Tank - Vertical Fixed Roof Tank
Barnhart, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight
Crude Oil - RVP 4.76	Jan	55.54	49.26	61.82	63.30	2.4600	2.1636	2.7885	34.7700			207.00
Crude Oil - RVP 4.76	Feb	57.96	51.15	64.77	63.30	2.5829	2.2496	2.9549	34.7700			207.00
Crude Oil - RVP 4.76	Mar	62.28	54.64	69.93	63.30	2.8141	2.4155	3.2640	34.7700			207.00
Crude Oil - RVP 4.76	Apr	66.63	58.71	74.55	63.30	3.0634	2.6218	3.5629	34.7700			207.00
Crude Oil - RVP 4.76	May	70.44	62.52	78.35	63.30	3.2960	2.8273	3.8251	34.7700			207.00
Crude Oil - RVP 4.76	Jun	73.56	65.82	81.30	63.30	3.4972	3.0154	4.0389	34.7700			207.00
Crude Oil - RVP 4.76	Jul	74.50	67.00	82.00	63.30	3.5597	3.0856	4.0906	34.7700			207.00
Crude Oil - RVP 4.76	Aug	73.75	66.52	80.98	63.30	3.5098	3.0570	4.0148	34.7700			207.00
Crude Oil - RVP 4.76	Sep	69.97	63.56	76.38	63.30	3.2669	2.8857	3.6875	34.7700			207.00
Crude Oil - RVP 4.76	Oct	65.56	59.00	72.12	63.30	3.0004	2.6370	3.4031	34.7700			207.00
Crude Oil - RVP 4.76	Nov	60.09	53.83	66.36	63.30	2.6949	2.3760	3.0474	34.7700			207.00
Crude Oil - RVP 4.76	Dec	56.37	50.25	62.49	63.30	2.5014	2.2081	2.8254	34.7700			207.00

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

500-bbl Tank - Vertical Fixed Roof Tank
Barnhart, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude Oil - RVP 4.76	1,621.59	410.14	2,031.73

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	500-bbl Tank
City:	Barnhart
State:	Texas
Company:	EP Energy
Type of Tank:	Vertical Fixed Roof Tank
Description:	50 bpd

Tank Dimensions

Shell Height (ft):		25.00
Diameter (ft):		12.00
Liquid Height (ft) :		24.00
Avg. Liquid Height (ft):		13.00
Volume (gallons):		20,304.71
Turnovers:		37.75
Net Throughput(gal/yr):		766,500.00
Is Tank Heated (y/n):	N	

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone	
Height (ft)		0.00
Slope (ft/ft) (Cone Roof)		0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

500-bbl Tank - Vertical Fixed Roof Tank
Barnhart, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight
Crude Oil - RVP 4.76	Jan	55.54	49.26	61.82	63.30	2.4600	2.1636	2.7885	34.7700			207.00
Crude Oil - RVP 4.76	Feb	57.96	51.15	64.77	63.30	2.5829	2.2496	2.9549	34.7700			207.00
Crude Oil - RVP 4.76	Mar	62.28	54.64	69.93	63.30	2.8141	2.4155	3.2640	34.7700			207.00
Crude Oil - RVP 4.76	Apr	66.63	58.71	74.55	63.30	3.0634	2.6218	3.5629	34.7700			207.00
Crude Oil - RVP 4.76	May	70.44	62.52	78.35	63.30	3.2960	2.8273	3.8251	34.7700			207.00
Crude Oil - RVP 4.76	Jun	73.56	65.82	81.30	63.30	3.4972	3.0154	4.0389	34.7700			207.00
Crude Oil - RVP 4.76	Jul	74.50	67.00	82.00	63.30	3.5597	3.0856	4.0906	34.7700			207.00
Crude Oil - RVP 4.76	Aug	73.75	66.52	80.98	63.30	3.5098	3.0570	4.0148	34.7700			207.00
Crude Oil - RVP 4.76	Sep	69.97	63.56	76.38	63.30	3.2669	2.8857	3.6875	34.7700			207.00
Crude Oil - RVP 4.76	Oct	65.56	59.00	72.12	63.30	3.0004	2.6370	3.4031	34.7700			207.00
Crude Oil - RVP 4.76	Nov	60.09	53.83	66.36	63.30	2.6949	2.3760	3.0474	34.7700			207.00
Crude Oil - RVP 4.76	Dec	56.37	50.25	62.49	63.30	2.5014	2.2081	2.8254	34.7700			207.00

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

500-bbl Tank - Vertical Fixed Roof Tank
Barnhart, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude Oil - RVP 4.76	1,382.00	410.14	1,792.15

ATTACHMENT C

- *Facility Emission Calculations*

Oil and Gas Emissions Spreadsheet with Impacts Analysis

Revised 05/06/2013

General Notes

***** Before beginning, make sure to enable macros, so that this spreadsheet will run properly. *** See the links below for more information on creating a trusted location and enabling macros for this spreadsheet.**

Enable Macro Link

Trusted Location Link

See comments in individual cells and other written notes. Cells with red corners contain comments; place cursor anywhere in a cell which has a red corner, to view comment. These were added to guide you through using this spreadsheet and make it as easy as possible to use.

This spreadsheet should be used as follows: (1) Enter information into this Facility Information spreadsheet tab, (2) after running the macro (which is explained below), fill out the emission calculation tabs, (3) populate the Emissions Summary table (you press a button on the Emissions Summary tab and the macro will populate the table with the values from the emission calculation tabs), and (4) go through the impacts review tabs (if applicable). This basically means estimate what each of the individual source emissions are, then summarize them in a table, then evaluate the impact of the emissions (if impacts review is applicable).

If you want to use any of the impacts review tabs, you will need to have answered "Yes" to the initial question of "Are you using this to meet the new Barnett Shale area rule requirements?". You can press the "Reset" button at the bottom of this tab to have the question pop up again.

Yellow cells require information to be entered. Red cells contain calculated values.

Worst case emissions must be estimated on both an hourly and annual basis for air permitting purposes.

Hourly emissions must be based on worst case maximum parameters realistically expected to occur over the course of any one hour. As an example, where ambient temperature is used as a parameter to estimate hourly emissions, the maximum temperature from the hottest day of the year must be used.

Annual emissions can be based on average parameters. As an example, where ambient temperature is used as a parameter to estimate annual emissions, the average ambient temperature may be used.

This difference between hourly and annual emissions could potentially mean that separate calculations or program runs will have to be done to estimate hourly and annual emission rates.

Planned Maintenance, Start-up, and Shutdown (MSS) versus Alternate Operating Scenarios: Planned MSS emissions do not need to be claimed for oil and gas sites until January 5, 2014. Before this date, it is voluntary to factor in planned MSS emissions. Alternate operating scenario emissions should be factored in now. Although historically alternate operating scenarios have sometimes been treated as planned MSS, it is actually different and should be addressed now to ensure that during these periods and continuously, the applicable emission limits are not exceeded.

What is Different About Estimating Emissions for the Barnett Shale Area Rule Requirements?

There are level limits (or caps) for the different levels of authorization, which are: PBR Level 1, PBR Level 2, and Standard Permit. The level limits are emission limits of the following air pollutants: Total VOC, Total crude oil or condensate VOC, Total natural gas VOC, benzene, hydrogen sulfide (H_2S), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter (PM_{10} and $PM_{2.5}$). There are different level limits for hourly and annual emissions and within hourly emissions there are different level limits for steady state emissions versus periodic emissions.

There is an impacts review for both the Permit by Rule (PBR) and Standard Permit for the following air pollutants: benzene, H_2S, SO_2, and NOx.

VOC emissions need to be separated into (1) Crude Oil or Condensate VOC and (2) Natural Gas VOC.

Hourly and annual emissions need to be estimated. There are potentially three hourly emission types that need to be estimated (1) steady state hourly, (2) low pressure periodic, and (3) high pressure periodic. These are described in detail on the Emissions Summary tab.

Benzene emissions need to be speciated for all sources.

Oil and Gas Site General Information	
Administrative Information	
Company Name	EP Energy E&P Company LP
Facility/Well Name	University Lands 39-11-1H Facility
Field Name	Wolfcamp
Nearest City/Town	Barnhart
API Number/SIC Code	211111/1311
Latitude/Longitude	30d 57' 20.24" / 101d 5' 40.26"
County	Crockett
Are you using a Form PI-7, PI-7-CERT, APD-CERT, PI-7 and APD-CERT, or are you using ePermits?	ePermits
Customer Number, CNxxxxxxxxx (if known)	CN604089854
Regulated Entity Number, RNxxxxxxxxx (if known)	RN106118060
Technical Information	
Natural Gas Site Throughput (MMSCF/day):	5
Oil/Condensate Site Throughput (bbl/day):	100
Produced Water Site Throughput (bbl/day):	200
Are there any sour gas streams at this site?	No
Is this site currently operational/producing?	Yes
What is the date of the site start of construction or the date that the project changes were implemented (whichever is applicable to this project, anticipated date if in the future)?	2013
Has this site been registered before?	Yes

Equipment/Processes at Site		
Before entering any numbers into the Equipment/Processes section of the table below, please make sure to review all of the comments in the cells of the table. These should make it clear what numbers need to be entered and where they need to be entered.		
Equipment/Process Types	**How many for this project?**	**How many for this site?**
Fugitives	1	1
IC Engines	1	1
Turbines	0	0
Diesel Engines	0	0
Heaters-Boilers	1	1
Oil / Condensate Tanks	2	2
Produced Water Tanks	2	2
Miscellaneous Tanks	0	0
Loading Jobs	2	2
Glycol Units	0	0
Amine Units	0	0
Vapor Recovery Units	0	0
Flares-Vapor Combustors	1	1
Thermal Oxidizers	0	0
MSS Blowdowns	0	0
MSS FLR Tank Landing Loss	0	0
MSS Tank Non Forced Vent	0	0
MSS Tank Forced Vent Degas	0	0
MSS Other	0	0
Other	0	0

When you are finished entering information on this tab, press the "Run" button below. When it is pressed, the spreadsheet tabs needed will be added and the "Emissions Summary" tab will also be added with the number of rows corresponding to the number of emission points in this registration.

Before pressing "Run", please make sure to review all of the comments in the cells of the table above. These should make it clear what numbers need to be entered and where they need to be entered.

The spreadsheet can be reset if needed by pressing the "Reset" button below. If the "Reset" button is pressed, everything will be cleared and you can start over (the added sheets will disappear along with any data entered into the sheets). When the "Reset" button is pressed and there is anything to clear, a question will pop up asking "Delete all macro created worksheets?". Then if you click "Yes", the question will pop back up asking "Are you using this to meet the new Barnett Shale area requirements?".

If the "Run" button is pressed a second time, everything will be cleared and you can start over (the added sheets will disappear along with any data entered into the sheets). When the "Run" button is pressed a second time, a question will pop up asking "Delete all macro created worksheets?". The question will not pop back up asking "Are you using this to meet the new Barnett Shale area requirements?".

Do not press "Run" again or "Reset", unless you intend to clear all of the added sheets (and any data entered into the sheets). This means that it is important to make sure the right numbers of each equipment/process type are entered. If it is possible that an extra piece of equipment could be included, include it because it is better to have too many entered than not enough.

Run

Reset

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Gas and Liquid Analyses

A) Enter information into the yellow boxes.

B) The purpose of this tab is to extract information from a lab analysis that will be used in emission calculations. Unlike the other other tabs which calculate emissions, nothing from this tab gets pulled to the Emissions Summary table. The big pieces of information needed for emissions estimates are the VOC, benzene, and H_2S weight percents. Sampling of gas and liquid streams from appropriate process sampling points is required in order to determine composition or other properties needed to estimate emissions such as heat content, specific gravity, and vapor pressure. It is essential that stream lab analyses/reports include a measurement of H_2S, individual HAPs, and at least all those hydrocarbons up to at least 10 carbon atoms per molecule (C10+).

C) There are two boxes on the left, for gas and liquid analyses, which take component weight percent inputs and there are two boxes on the right, for gas and liquid analyses, which take component mole percent inputs. You can either fill out the weight percent box OR the mole percent box, depending on what informaton you have available to you.

The boxes are set up in the following arrangement:

Gas Analysis Wt% Inputs	**Gas Analysis Mol% Inputs**
Liquid Analysis Wt% Inputs	**Liquid Analysis Mol% Inputs**

D) If weight percents are provided on the lab report, use the boxes on the left. If only mole percents are provided on the lab report, use the boxes on the right.

E) Make sure to select whether you are inputting weight percents or mole percents from the pull down menus below.

F) If you are using the weight percent boxes (left two), in addition to the component weight percents, you need to enter the gas molecular weight (molecular weight of the total sample) and the gas and liquid H_2S content in parts per million by volume (H_2S ppmv). This will allow for the calcultion of the gas specific gravity and the long tons of sulfur per day in the gas, and the determination of sweet versus sour gas.

G) If you are using the mole percent boxes (right two), in addition to the component mole percents, you need to enter a real value, specific to this sample, for the molecular weight of the deacnes plus (C10+) fraction. You may use the default values listed below for the moleclar weights of the other hexanes (C6), other heptanes (C7), other ocatnes (C8), and nonanes (C9) fractions, unless you have a more accurate number. If you enter number other than the default, you need to explain where the number came from and why it is appropriate to use.

H) What is expected to be inlcuded on these tables is the the inlet gas and liquid streams (the liquid would most likely be sampled from a separator if there is separation at the site). These tables can also be used for any sampled gas and liquid streams as needed. If needed, make a copy of this tab.

I) Use the box provided below for entering any notes necessary.

For the gas sample, I am inputting (pick from list):	mole percents	**Select whether weight percents or mole percents are being entered for this gas sample.**

Then fill out this table **OR** fill out this table.

Gas Analysis - Use if the Inputs are Weight Percents	
Analysis Identifier/Name	
What site is the sample from?	
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	
Where in the process was the sample taken?	
What is the temperature and pressure of the sample (include units)?	
Who analyzed the sample?	
Date of sample:	

Component	weight %
hydrogen	
helium	
nitrogen	
CO2	
H2S	
methane (C1)	
ethane (C2)	
propane (C3)	
butanes (C4)	
pentanes (C5)	
benzene	
other hexanes (C6)	
toluene	
other heptanes (C7)	
ethylbenzene	
xylenes (o, m, p)	
other octanes (C8)	
nonanes (C9)	
decanes plus (C10+)	
Totals:	0.0000

Gas Analysis - Use if the Inputs are Mole Percents	
Analysis Identifier/Name	Inlet Gas
Where was the sample taken?	Separator
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	Data taken from similar facility producing in the same formation, the University 38-29-1H Facility.
Where in the process was the sample taken?	Inlet
What is the temperature and pressure of the sample (include units)?	105 psi at 53 F
Who analyzed the sample?	FESCO, Ltd.
Date of sample:	Jan 15, 2011 (Job No. 10290.001)

Component	mole %	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	weight %
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	3.2000	28.01340	90	4.2555
CO2	0.4820	44.00950	21	1.0070
H2S	0.0004	34.08188	0	0.0006
methane (C1)	78.4260	16.04246	1258	59.7260
ethane (C2)	8.6070	30.06904	259	12.2858
propane (C3)	6.0450	44.09562	267	12.6539
butanes (C4)	2.1380	58.12220	124	5.8990
pentanes (C5)	0.6570	72.14878	47	2.2502
benzene	0.0090	78.110000	1	0.0334
other hexanes (C6)	0.3196	86.18000	28	1.3075
toluene	0.0060	92.140000	1	0.0262
other heptanes (C7)	0.0620	100.20000	6	0.2949
ethylbenzene	0.0010	106.170000	0	0.0050
xylenes (o, m, p)	0.0000	106.170000	0	0.0000
other octanes (C8)	0.0470	114.23000	5	0.2549
nonanes (C9)		128.26000	0	0.0000
decanes plus (C10+)			0	0.0000
Totals:	100.0000	21.07	2107	100.00

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	0.0000
VOC weight fraction =	0.0000

VOC content of hydrocarbon fraction only

VOC weight% =	#DIV/0!
VOC weight fraction =	#DIV/0!

Hydrogen Sulfide

		Constants:	
H2S weight% =	0.0000	453.59237	mol/lb-mol
H2S weight fraction =	0.00E+00	0.06479891	grams/grain
H2S ppm_V =		385.48	scf/lb-mol
H2S ppm_{WT} =	0.00	34.08188	g/mol, lb/lb-mol
H_2S grains/100 SCF =	0.0000		H2S mw

SWEET GAS

Benzene

Benzene content of total sample

Benzene weight% =	0.0000
Benzene weight fraction =	0.0000

Benzene content of hydrocarbon fraction only

Benzene weight% =	#DIV/0!
Benzene weight fraction =	#DIV/0!

		Constants:	
Gas Molecular Weight =		28.97	air mw
Gas Specific Gravity =	0.00	385.48	scf/lb-mol
Gas Throughput (MMscf/day)=	5		
Long Tons Sulfur Compounds per Day =	0		

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	22.7251
VOC weight fraction =	0.2273

VOC content of hydrocarbon fraction only

VOC weight% =	23.9876
VOC weight fraction =	0.2399

Hydrogen Sulfide

		Constants:	
H2S weight% =	0.0006	453.59237	mol/lb-mol
H2S weight fraction =	6.47E-06	0.06479891	grams/grain
H2S ppm_V =	4	385.48	scf/lb-mol
H2S ppm_{WT} =	6.47		
H_2S grains/100 SCF =	0.2476		

SWEET GAS

Benzene

Benzene content of total sample

Benzene weight% =	0.0334
Benzene weight fraction =	0.0003

Benzene content of hydrocarbon fraction only

Benzene weight% =	0.0352
Benzene weight fraction =	0.0004

		Constants:	
Gas Molecular Weight =	21.07	28.97	air mw
Gas Specific Gravity =	0.73	385.48	scf/lb-mol
Gas Throughput (MMscf/day)=	5		
Long Tons Sulfur Compounds per Day =	0.0007894		

For the liquid sample, I am inputting (pick from list):		Select whether weight percents or mole percents are being entered for this liquid sample.

Then fill out this table **OR** fill out this table.

Liquid Analysis - Use if the Inputs are Weight Percents	
Analysis Identifier/Name	
What site is the sample from?	
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	
Where in the process was the sample taken?	
What is the temperature and pressure of the sample (include units)?	
Who analyzed the sample?	
Date of sample:	

Component	weight %
hydrogen	
helium	
nitrogen	
CO2	
H2S	
methane (C1)	
ethane (C2)	
propane (C3)	
butanes (C4)	
pentanes (C5)	
benzene	
other hexanes (C6)	
toluene	
other heptanes (C7)	
ethylbenzene	
xylenes (o, m, p)	
other octanes (C8)	
nonanes (C9)	
decanes plus (C10+)	
Totals:	0.0000

Liquid Analysis - Use if the Inputs are Mole Percents	
Analysis Identifier/Name	Pressurized Liquid Analysis
What site is the sample from?	Separator
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	Data taken from similar facility producing in the same formation, the University 8-12-1H Facility.
Where in the process was the sample taken?	Separator
What is the temperature and pressure of the sample (include units)?	63 psi @ 109 F
Who analyzed the sample?	FESCO, Ltd. (PVT Study)
Date of sample:	2-Jun-11

Component	mole %	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	weight %
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	0.0620	28.01340	2	0.0169
CO2	0.0400	44.00950	2	0.0171
H2S	0.0004	34.08188	0	0.0001
methane (C1)	2.0130	16.04246	32	0.3143
ethane (C2)	2.1480	30.06904	65	0.6286
propane (C3)	6.9160	44.09562	305	2.9682
butanes (C4)	7.1680	58.12220	417	4.0549
pentanes (C5)	7.4660	72.14878	539	5.2427
benzene	0.2350	78.110000	18	0.1787
other hexanes (C6)	6.7570	86.18000	582	5.6676
toluene	0.5910	92.140000	54	0.5300
other heptanes (C7)	5.6050	100.20000	562	5.4662
ethylbenzene	0.1000	106.170000	11	0.1033
xylenes (o, m, p)	0.7710	106.170000	82	0.7967
other octanes (C8)	7.6550	114.23000	874	8.5107
nonanes (C9)	5.4810	128.26000	703	6.8421
decanes plus (C10+)	46.9920	128.26000	6027	58.6618
Totals:	100.0004	102.74	10274.4822	100.00

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	0.0000
VOC weight fraction =	0.0000

VOC content of hydrocarbon fraction only

VOC weight% =	#DIV/0!
VOC weight fraction =	#DIV/0!

Hydrogen Sulfide

H2S weight% =	0.0000
H2S weight fraction =	0.00E+00
H2S ppm_V =	
H2S ppm_{WT} =	0.00

Benzene

Benzene content of total sample

Benzene weight% =	0.0000
Benzene weight fraction =	0.0000

Benzene content of hydrocarbon fraction only

Benzene weight% =	#DIV/0!
Benzene weight fraction =	#DIV/0!

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	99.0229
VOC weight fraction =	0.9902

VOC content of hydrocarbon fraction only

VOC weight% =	99.0567
VOC weight fraction =	0.9906

Hydrogen Sulfide

H2S weight% =	0.0001
H2S weight fraction =	1.33E-06
H2S ppm_V =	4.00
H2S ppm_{WT} =	1.33

Benzene

Benzene content of total sample

Benzene weight% =	0.1787
Benzene weight fraction =	0.0018

Benzene content of hydrocarbon fraction only

Benzene weight% =	0.1787
Benzene weight fraction =	0.0018

Enter any notes here:	

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Fugitives Emissions

EPN	F1
Name	Fugitives

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (as applicable for reductions from leak detection and repair programs).

C) The vapor VOC, benzene, and H_2S weight percents may be entered. The weight percents from the Analyses tab are displayed below.

D) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

E) This sheet has five parts to it. Part (1) is for Gas Service, (2) is for Heavy Oil Service, (3) is for Light Oil Service, (4) is for Water/Oil Service, and (5) is for a combination of all the results. Fill out all applicable yellow cells in parts (1)-(4) and the final results will be in part (5).

The five parts are set up in this arrangement:

(1)	(2)
(3)	(4)
(5)	

F) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below in part (5).

Gas Weight Percents From Analyses Tab:	
VOC wt %	23.9876
Benzene wt %	0.0352
H_2S wt %	0.0006

(1)

Gas

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
10	Valve	0.009920	0.0992	0.434496
0	Pump Seal	0.005290	0	0
25	Connector	0.000440	0.011	0.04818
25	Flange	0.000860	0.0215	0.09417
0	Open-ended Line	0.004410	0	0
1	Other	0.019400	0.0194	0.084972
		Total:	0.1511	0.661818

	VOC content (wt %)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves	22.7251	0.0334	0.0334	0.0000
Pump Seal	22.7251	0.0334	0.0334	0.0000
Connector	22.7251	0.0334	0.0334	0.0000
Flange	22.7251	0.0334	0.0334	0.0000
Open-ended Line	22.7251	0.0334	0.0334	0.0000
Other	22.7251	0.0334	0.0334	0.0000

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.02	0.10	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.01	0.00	0.00	0.00	0.00
Flange	0.00	0.02	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.02	0.00	0.00	0.00	0.00
Total:	0.03	0.15	0.00	0.00	0.00	0.00

Liquid Weight Percents From Analyses Tab:	
VOC wt %	99.0567
Benzene wt %	0.1787
H_2S wt %	0.0001

(2)

Heavy Oil

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
	Valve	0.0000185	0	0
	Pumps	0.0011300	0	0
	Connector	0.0000165	0	0
	Flange	0.00000086	0	0
	Open-ended Line	0.0003090	0	0
	Other	0.0000683	0	0
		Total:	0	0

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves				
Pump Seal				
Connector				
Flange				
Open-ended Line				
Other				

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.00	0.00	0.00	0.00	0.00
Flange	0.00	0.00	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00

Liquid Weight Percents From Analyses Tab:	
VOC wt %	99.0567
Benzene wt %	0.1787
H_2S wt %	0.0001

(3) **Light Oil**

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
10	Valve	0.005500	0.055	0.2409
0	Pump Seal	0.028660	0	0
25	Connector	0.000463	0.011575	0.0506985
25	Flange	0.000243	0.006075	0.0266085
0	Open-ended Line	0.003090	0	0
1	Other	0.016500	0.0165	0.07227
		Total:	0.08915	0.390477

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves	99.0229	0.1787	0.0001	0.0000
Pump Seal	99.0229	0.1787	0.0001	0.0000
Connector	99.0229	0.1787	0.0001	0.0000
Flange	99.0229	0.1787	0.0001	0.0000
Open-ended Line	99.0229	0.1787	0.0001	0.0000
Other	99.0229	0.1787	0.0001	0.0000

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.05	0.24	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.01	0.05	0.00	0.00	0.00	0.00
Flange	0.01	0.03	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.02	0.07	0.00	0.00	0.00	0.00
Total:	0.09	0.39	0.00	0.00	0.00	0.00

(4) **Water/Oil**

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
	Valve	0.000216	0	0
	Pump Seal	0.000052	0	0
	Connector	0.000243	0	0
	Flange	0.000006	0	0
	Open-ended Line	0.000550	0	0
	Other	0.030900	0	0
	Total:		0	0

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves				
Pump Seal				
Connector				
Flange				
Open-ended Line				
Other				

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.00	0.00	0.00	0.00	0.00
Flange	0.00	0.00	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00

(5)

Fugitive Total Emissions		
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	0.12	0.54
benzene	0.00	0.00
H_2S	0.00	0.00

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Notes:

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. Emission factors that are not based on the EPA document are from the TCEQ "Air Permit Technical Guidance for Chemical Source Equipment Leak Fugitives (Draft October 2000)

3. For fugitive calculations, VOC content should be VOC content of total hydrocarbons, not of total sample.

Enter any notes here:	

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Internal Combustion Engine Emissions

A) Enter information into the yellow boxes.

B) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

C) Make sure to select the correct *Emission Type* from the pull down menus below. A *VOC type* does not need to be selected here; see the note in the comment for more explanation.

Engine Emission Calculations

Note: The TCEQ prefers the following basis for calculating emissions (in order of preference):
1. Stack test data from the engine
2. Manufacturer's specification sheet and control specification sheet (if control used)
3. AP-42 emission factors

Site Location

County	
Region	
Existing or new source:	pick from list
Installation date:	

Discharge Parameters

Stack height (feet)	
Stack diameter (feet)	
Stage Temperature (°F)	
Exit Velocity (fps)	

Fuel Data

Fuel Type	pick from list
Fuel Consumption (BTU/bhp-hr)	
Heat Value (HHV)	
Heat Value (LHV)	
Sulfur Content (grains/100scf)	

Engine Data

EPN	
Name	
Manufacturer	
Model Number	
Serial Number	
Manufacture Date	
Last Rebuild Date	
Application	
Ignition/Injection Timing	pick from list
Horsepower:	0
Fuel consumption (Btu/hp-hr):	0
Hours of operation per year:	0
Engine Type:	pick from list

Method of Emission Control

	Yes/No
NSCR Catalyst	
SCR Catalyst	
JLCC Catalyst	
Parameter Adjustment	
Stratified Charge	
Other (Specify)	

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	
MACT Subpart ZZZZ	
30 TAC, Chapter 117	

Additional Required Information

1. Submit a copy of the engine manufacturer's site rating or general rating specification data.
2. Submit a typical fuel analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents.
3. Submit a description of the air/fuel ratio control system (manufactuer's information is acceptable).

SO_2 Mass Balance calculation for sour gas fuel:

Fuel Heat Value (Btu/SCF)	0.00	MW SO_2 =	64.06	grams/mole
Fuel H_2S content (mol%)	0.00	Ideal Gas Law	378.61	SCF/lb-mole
SO_2 produced (lb/hr) =	**0.00**			
SO_2 produced (tpy) =	**0.00**			

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
For emission factors in terms of lb/MMBtu
(Emission factor) * (Fuel Consumption) * (Horsepower) * (Conversion factor)
(lb/MMBtu) * (Btu/hp-hr) * (hp) * (1 MMBtu/1,000,000 Btu)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	**No**

To Determine Emissions for Air Permitting

		from AP-42:												
	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	**Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)**	**Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)**	**Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)**	**appropriate AP-42 factor**	**emission factor used**	**units**	**Uncontrolled lb/hr**	**Uncontrolled tpy**	**If present, enter the efficiency of any control device (as a %)**	**If present, enter the controlled emission factor (as g/hp-hr)**	**control factor used**	**lb/hr**	**tpy**
VOC	0	0.12	0.118	0.0296	0.0296	0.0296	lb/MMBtu	0.000	0.000			0	0.00	0.00
NOx	0	3.17	4.08	2.21	2.21	2.21	lb/MMBtu	0.000	0.000			0	0.00	0.00
CO	0	0.386	0.317	3.72	3.72	3.72	lb/MMBtu	0.000	0.000			0	0.00	0.00
PM_{10}	0	0.04831	0.0099871	0.01941	0.01941	0.01941	lb/MMBtu	0.000	0.000			0	0.00	0.00
$PM_{2.5}$	0	0.04831	0.0099871	0.01941	0.01941	0.01941	lb/MMBtu	0.000	0.000			0	0.00	0.00
SO_2	0	0.000588	0.000588	0.000588	0.000588	0.000588	lb/MMBtu	0.000	0.000			0	0.00	0.00
Formaldehyde	0	0.0552	0.0528	0.0205	0.0205	0.0205	lb/MMBtu	0.000	0.000			0	0.00	0.00
Benzene	0	0.00194	0.000404	0.00158	0.00158	0.00158	lb/MMBtu	0.000	0.000			0	0.00	0.00

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:	

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Heaters-Boilers Emissions

A) Enter information into the yellow boxes.

B) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

C) Make sure to select the correct *Emission Type* from the pull down menus below. A *VOC type* does not need to be selected here; see the note in the comment for more explanation.

Heater and Boiler Emission Calculations (fueled by natural gas)

EPN	H1	
Name	Heater Treater	
Heater/Boiler rating (MMBtu/hr):	1	
Rating above is **(select from list)**:	below 100 MMBtu/hr, uncontrolled	(assume uncontrolled, unless specifically stated otherwise)
Operating hours/year:	8760	
Fuel Heat Value (Btu/SCF):	1211	

Pollutant	Emission Factor (lb/MMCF)	lb/hr	tpy
VOC	5.5	0.005	0.020
NOx	100	0.083	0.362
CO	84	0.069	0.304
PM_{10}	7.6	0.006	0.027
$PM_{2.5}$	5.7	0.005	0.021
SO_2	0.6	0.001	0.002

If the heater/boiler is fueled by Sour Gas, cannot use emission factors above to calculate SO_2 emissions, must use SO_2 mass balance:

SO_2 Mass Balance calculation:	
Fuel H_2S content (mol %) =	**0.0004**
SO_2 produced (lb/hr) =	**0.0006**
SO_2 produced (tpy) =	**0.0024**

assumptions:

SO2 MW	64.06	lb/lb-mole
Ideal Gas Law	378.61	SCF/lb-mole

Emission Type: (pick from list)

Steady State (continuous)

Enter any notes here:	

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Lab Gas Oil Ratio (GOR) Method

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) The table below can be used to calculate the flash gas molecular weight and the component weight percents if needed.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

GOR [FOR ESTIMATING FLASH LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Flash Initial Press. (psig)	Flash Initial Temp. (°F)	Flash Final Press. (psig)	Flash Final Temp. (°F)	GOR (scf of flash gas/bbl of oil/cond. produced)	Barrels of Oil or Condensate per day (bbl/day)	Flash Gas Molecular Weight	Flash Gas VOC wt%	Flash Gas Benzene wt%	Flash Gas H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
T1	Crude Oil Tank	54	81	0	70	19.1	50	34.7716661	64.6458	0.1303	0.0004	0	(A) uncontrolled			2.36	10.32	0.00	0.02	0.00	0.00
T2	Crude Oil Tank	54	81	0	70	19.1	50	34.7716661	64.6458	0.1303	0.0004	0	(A) uncontrolled			2.36	10.32	0.00	0.02	0.00	0.00
															Totals:	**4.71**	**20.65**	**0.01**	**0.04**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

GOR Calculator

This table can be used to calculate the flash gas molecular weight and the component weight percents if needed, if the flash gas mole percents are entered. It can also calculate the overall VOC, benzene, and H2S flash emissions if the GOR and the oil/condensate throughput are entered.

Gas Oil Ratio:	19.1	in standard cubic feet of flash gas per barrel (SCF/bbl) of oil/condensate produced
Barrels of Oil or Condensate per day:	100	

Flash Gas Speciation:

Flash Gas MW = 34.7716661

Component	mole %	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	weight %
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	0.7970	28.01340	22	0.6421
CO2	0.7520	44.00950	33	0.9518
H2S	0.0004	34.08188	0	0.0004
methane (C1)	37.8800	16.04246	608	17.4765
ethane (C2)	18.8300	30.06904	566	16.2834
propane (C3)	23.5040	44.09562	1036	29.8066
butanes (C4)	11.2060	58.12220	651	18.7313
pentanes (C5)	4.1960	72.14878	303	8.7064
benzene	0.0580	78.110000	5	0.1303
other hexanes (C6)	1.9240	86.18000	166	4.7685
toluene	0.0220	92.140000	2	0.0583
other heptanes (C7)	0.7140	100.20000	72	2.0575
ethylbenzene	0.0010	106.170000	0	0.0031
xylenes (o, m, p)	0.0000	106.170000	0	0.0000
other octanes (C8)	0.1090	114.23000	12	0.3581
nonanes (C9)	0.0070	128.26000	1	0.0258
decanes plus (C10+)	0.0000		0	0.0000
Totals:	100.0004	34.77	3477	100.00

Total gas emitted:	
lb/hr:	7.29214125
tpy:	31.9395787
VOC wt% =	64.6458
VOC, lb/hr:	4.71406425
VOC, tpy:	20.6476014
Benzene wt% =	0.1303
Benzene, lb/hr:	0.00950089
Benzene, tpy:	0.04161389
H_2S wt% =	0.0004
H_2S, lb/hr:	2.859E-05
H_2S, tpy:	0.00012522

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Tanks 4.0

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) Make sure to answer the control device question.

G) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Tanks 4.0 Software TANKS 4.0 SOFTWARE [FOR ESTIMATING WORKING AND BREATHING LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Throughput (gal/year)	Turnovers per year	Mixture/Component	Basis for VP Calculations	Vapor MW	Total Uncontrolled Emissions (lb/hr)	Total Uncontrolled Emissions (ton/yr)	Tank Vapor VOC wt%	Tank Vapor Benzene wt%	Tank Vapor H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
T1	Crude Oil Tank	766,500	37.75	Crude Oil - RVP 4.76	Lab Analysis	50	0.2046	0.8961	99.02289	0.1786547	0.00013	0	(A) uncontrolled			0.20	0.89	0.00	0.00	0.00	0.00
T2	Crude Oil Tank	766,500	37.75	Crude Oil - RVP 4.76	Lab Analysis	50	0.2046	0.8961	99.02289	0.1786547	0.00013	0	(A) uncontrolled			0.20	0.89	0.00	0.00	0.00	0.00
															Totals:	**0.41**	**1.77**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:	

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Lab Gas Oil Ratio (GOR) Method

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) The table below can be used to calculate the flash gas molecular weight and the component weight percents if needed.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

GOR [FOR ESTIMATING FLASH LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Flash Initial Press. (psig)	Flash Initial Temp. (°F)	Flash Final Press. (psig)	Flash Final Temp. (°F)	GOR (scf of flash gas/bbl of oil/cond. produced)	Barrels of Oil or Condensate per day (bbl/day)	Flash Gas Molecular Weight	Flash Gas VOC wt%	Flash Gas Benzene wt%	Flash Gas H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
WT1	Produced Water Tank	54	81	0	70	19.1	100	34.7716661	64.6458	0.1303	0.0004	99	(A) uncontrolled			0.05	0.21	0.00	0.00	0.00	0.00
WT2	Produced Water Tank	54	81	0	70	19.1	100	34.7716661	64.6458	0.1303	0.0004	99	(A) uncontrolled			0.05	0.21	0.00	0.00	0.00	0.00
															Totals:	**0.09**	**0.41**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

GOR Calculator

This table can be used to calculate the flash gas molecular weight and the component weight percents if needed, if the flash gas mole percents are entered. It can also calculate the overall VOC, benzene, and H2S flash emissions if the GOR and the oil/condensate throughput are entered.

Gas Oil Ratio:	19.1	in standard cubic feet of flash gas per barrel (SCF/bbl) of oil/condensate produced
Barrels of Oil or Condensate per day:	200	

Flash Gas Speciation:

Flash Gas MW = 34.7716661

Component	mole %	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	weight %
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	0.7970	28.01340	22	0.6421
CO2	0.7520	44.00950	33	0.9518
H2S	0.0004	34.08188	0	0.0004
methane (C1)	37.8800	16.04246	608	17.4765
ethane (C2)	18.8300	30.06904	566	16.2834
propane (C3)	23.5040	44.09562	1036	29.8066
butanes (C4)	11.2060	58.12220	651	18.7313
pentanes (C5)	4.1960	72.14878	303	8.7064
benzene	0.0580	78.110000	5	0.1303
other hexanes (C6)	1.9240	86.18000	166	4.7685
toluene	0.0220	92.140000	2	0.0583
other heptanes (C7)	0.7140	100.20000	72	2.0575
ethylbenzene	0.0010	106.170000	0	0.0031
xylenes (o, m, p)	0.0000	106.170000	0	0.0000
other octanes (C8)	0.1090	114.23000	12	0.3581
nonanes (C9)	0.0070	128.26000	1	0.0258
decanes plus (C10+)			0	0.0000
Totals:	100.0004	34.77	3477	100.00

Total gas emitted:	
lb/hr:	14.5842825
tpy:	63.8791573
VOC wt% =	64.6458
VOC, lb/hr:	9.4281285
VOC, tpy:	41.2952028
Benzene wt% =	0.1303
Benzene, lb/hr:	0.01900178
Benzene, tpy:	0.08322778
H_2S wt% =	0.0004
H_2S, lb/hr:	5.718E-05
H_2S, tpy:	0.00025045

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Tanks 4.0

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) Make sure to answer the control device question.

G) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Tanks 4.0 Software TANKS 4.0 SOFTWARE [FOR ESTIMATING WORKING AND BREATHING LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Throughput (gal/year)	Turnovers per year	Mixture/Component	Basis for VP Calculations	Vapor MW	Total Uncontrolled Emissions (lb/hr)	Total Uncontrolled Emissions (ton/yr)	Tank Vapor VOC wt%	Tank Vapor Benzene wt%	Tank Vapor H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
WT1	Produced Water Tank	1,533,000	75.5	Crude Oil RVP 4.76	Lab Analysis	50	0.232	1.016	99.02289	0.1786547	0.00013	99	(A) uncontrolled			0.00	0.01	0.00	0.00	0.00	0.00
WT2	Produced Water Tank	1,533,000	75.5	Crude Oil RVP 4.76	Lab Analysis	50	0.232	1.016	99.02289	0.1786547	0.00013	99	(A) uncontrolled			0.00	0.01	0.00	0.00	0.00	0.00
															Totals:	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Loading Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control and collection efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered.

D) There are two separate areas below to calculate hourly and annual loading emissions. Then underneath, there is a table summarizing the hourly and annual loading emissions.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) If vapor balancing is being performed and the tank is not being controlled, contact TCEQ about the appropriate tank working loss calculation.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

EPN	L1
Identifier	Crude Oil Loading

Truck Hourly Loading Emission Calculations

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

S =	0.60	Saturation Factor
P =	4.09	True vapor pressure of liquid loaded (psia)
M =	50.00	Molecular Weight of Vapors (lb/lb-mole)
T =	541.67	Temperature of bulk liquid loaded (in degrees Rankine)
Hourly Loading Rate	8000	Gallons Loaded per Hour
L_L =	2.82	Loading Loss (lb VOC released/1000 gal liquid loaded)
	22.58	VOC Uncontrolled Emissions (lb/hr)

Are loading vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	0.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	22.36	Emissions Uncontrolled VOC (lb/hr)
benzene	0.04	Emissions Uncontrolled Benzene (lb/hr)
H_2S	0.00	Emissions Uncontrolled H_2S (lb/hr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (lb/hr)
benzene	0.00	Benzene Results (lb/hr)
H_2S	0.00	H_2S Results (lb/hr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
82	541.67

Enter Barrels of Liquid	Gallons of liquid:
100	4200

Enter gallons per year	Barrels per day:
1533000	100

Enter any notes here:

Truck Annual Loading Emission Calculations

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

S =	0.60	= Saturation Factor
P =	3.56	= True vapor pressure of liquid loaded (psia)
M =	50.00	= Molecular Weight of Vapors (lb/lb-mole)
T =	534.17	= Temperature of bulk liquid loaded (in degrees Rankine)
Annual Loading Rate	1533000	= Gallons Loaded per Year
L_L =	2.49	Loading Loss (lb VOC released/1000 gal liquid loaded)
	1.91	VOC Uncontrolled Emissions (ton/yr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
74.5	534.17

Enter Barrels of Liquid	Gallons of liquid:
100	4200

Enter gallons per year	Barrels per day:
1533000	100

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	0.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	1.89	Emissions Uncontrolled VOC (ton/yr)
benzene	0.00	Emissions Uncontrolled Benzene (ton/yr)
H_2S	0.00	Emissions Uncontrolled H_2S (ton/yr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (ton/yr)
benzene	0.00	Benzene Results (ton/yr)
H_2S	0.00	H_2S Results (ton/yr)

Enter any notes here:

Loading Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	22.36	1.89
benzene	0.04	0.00
H_2S	0.00	0.00

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Low Pressure Periodic

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Loading Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control and collection efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered.

D) There are two separate areas below to calculate hourly and annual loading emissions. Then underneath, there is a table summarizing the hourly and annual loading emissions.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) If vapor balancing is being performed and the tank is not being controlled, contact TCEQ about the appropriate tank working loss calculation.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

EPN	L2
Identifier	Produced Water Loading

Truck Hourly Loading Emission Calculations

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

S =	0.60	Saturation Factor
P =	4.09	True vapor pressure of liquid loaded (psia)
M =	50.00	Molecular Weight of Vapors (lb/lb-mole)
T =	541.67	Temperature of bulk liquid loaded (in degrees Rankine)
Hourly Loading Rate	8000	Gallons Loaded per Hour
L_L =	2.82	Loading Loss (lb VOC released/1000 gal liquid loaded)
	22.58	VOC Uncontrolled Emissions (lb/hr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
82	541.67

Enter Barrels of Liquid	Gallons of liquid:
200	8400

Enter gallons per year	Barrels per day:
3066000	200

Are loading vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?

Enter any notes here:

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	99.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	0.22	Emissions Uncontrolled VOC (lb/hr)
benzene	0.00	Emissions Uncontrolled Benzene (lb/hr)
H_2S	0.00	Emissions Uncontrolled H_2S (lb/hr)

Collection Efficiency

	0.00	Collection Efficiency (%)

Vapors Uncaptured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Vapors Captured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (lb/hr)
benzene	0.00	Benzene Results (lb/hr)
H_2S	0.00	H_2S Results (lb/hr)

Truck Annual Loading Emission Calculations

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

S =	0.60	= Saturation Factor
P =	3.56	= True vapor pressure of liquid loaded (psia)
M =	50.00	= Molecular Weight of Vapors (lb/lb-mole)
T =	534.17	= Temperature of bulk liquid loaded (in degrees Rankine)
Annual Loading Rate	3066000	= Gallons Loaded per Year
L_L =	2.49	Loading Loss (lb VOC released/1000 gal liquid loaded)
	3.82	VOC Uncontrolled Emissions (ton/yr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
74.5	534.17

Enter Barrels of Liquid	Gallons of liquid:
200	8400

Enter gallons per year	Barrels per day:
3066000	200

Enter any notes here:

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	99.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	0.04	Emissions Uncontrolled VOC (ton/yr)
benzene	0.00	Emissions Uncontrolled Benzene (ton/yr)
H_2S	0.00	Emissions Uncontrolled H_2S (ton/yr)

Collection Efficiency

	0.00	Collection Efficiency (%)

Vapors Uncaptured by Control Device

VOC	0.00	VOC Uncaptured Vapors (ton/yr)
benzene	0.00	benzene Uncaptured Vapors (ton/yr)
H_2S	0.00	H_2S Uncaptured Vapors (ton/yr)

Vapors Captured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (ton/yr)
benzene	0.00	Benzene Results (ton/yr)
H_2S	0.00	H_2S Results (ton/yr)

Loading Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC		
benzene		
H_2S		

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Low Pressure Periodic

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Flare / Vapor Combustor

A) Enter information into the yellow boxes.

B) See notes/instructions incuded below.

C) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

D) Make sure to select the correct *Emission Type* from the pull down menu below.

General Information	
Unit Name:	Process Vent
Unit EPN:	V1
Which is utilized for this device?	automatic ignition system

NOx and CO Emission Factors		
For Waste Gas:		
What kind of device is this? Pick from list.	non-steam assisted flare with high Btu stream flared	
NOx	0.138	lb/MMBtu
CO	0.2755	lb/MMBtu
For Pilot Stream(s):		
If there is one or more pilot streams, are they made up of pipeline quality natural gas, propane, or field gas? Pick from drop down list to the right and follow instructions below.		
NOx	0	
CO	0	
Since there is no pilot, you do not need to enter anything in the column for Stream No. 1 below.		
For Added Fuel Stream(s):		
If there is one or more added fuel streams, are they made up of pipeline quality natural gas, propane, or field gas? Pick from drop down list to the right and follow instructions below.		
NOx	0	
CO	0	
Since there is no added fuel stream, you do not need to enter anything in the column for Stream No. 2 below.		

Destruction Efficiency	
VOC percent destruction efficiency (%)	0
propane percent destruction efficiency (%) *OPTIONAL*	0
H_2S percent destruction efficiency (%)	0

Emission Factors

Emission Factors from AP-42 Table 1.4-1 and 1.4-2 (lb/MMscf)

NOx	100	
CO	84	
PM10, PM2.5	7.6	5.7

Emission Factors from TCEQ Guidance (lb/MMBtu)

Non-steam assisted, high Btu		Steam assisted, high Btu	
NOx	0.138	NOx	0.0485
CO	0.2755	CO	0.3503
Non-steam assisted, low Btu		Steam assisted, low Btu	
NOx	0.0641	NOx	0.068
CO	0.5496	CO	0.3465

Emission Factors from AP-42 Table 1.4-2 and 1.4-3 (lb/MMscf)

SO_2	0.6
VOC	5.5
benzene	2.10E-03

Constants

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

Stream Information

Each numbered column represents a stream. The first two columns are always for pilot and added fuel streams. The next ten columns, Columns 3-12, are for any streams sent to the control device, such as "tank 1", "amine regenerator vent", etc. Under the column numbers, these columns should be labeled with the stream name. Information only needs to be entered for the number of streams sent to the flare. If for example, there are only two process/waste streams routed to the flare, only colums 3 and 4 need to be filled out, and potentially 1 and 2 if there are also any pilot or added fuel streams.

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name (Enter Names of Each Stream Here)	pilot(s)	added fuel stream(s)	Produced Gas										-
Maximum Expected Hourly Volumtric Flow Rate of Stream (scf/hr)	0	0	200000										200000
Amount of Time Stream Routed to Flare/Vapor Combustor (hrs/yr)	0	0	1400										-
Maximum Expected Annual Volumtric Flow Rate of Stream (scf/yr)	0	0	280000000										280000000
Heat Value of Stream - from program results or gas analysis (Btu/scf)	0	0	0										-
propane weight percent of total stream (%) *OPTIONAL*	0	0	0										-
VOC weight percent of total stream (%) *OPTIONAL*	0	0	22.7251083										-

It is suggested that you link these cells below to the cells in the other tabs of this spreadsheet which contain the calculated uncontrolled emissions for the stream.

Mass Flow Rates of the Vapors Sent to this Control Device, Hourly Basis (lb/hr)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
H2S	-	-	2.95E-03										0.00295
Crude or Condensate VOC	-	-	103.588618										103.588618
Natural Gas VOC	-	-	0										0
Total VOC	-	-	103.588618										103.588618
benzene	-	-	0.15212039										0.15212039

Mass Flow Rates of the Vapors Sent to this Control Device, Annual Basis (tpy)

H2S	-	-	2.06E-03										0.002065
Crude or Condensate VOC	-	-	72.5120329										72.5120329
Natural Gas VOC	-	-	0										0
Total VOC	-	-	72.5120329										72.5120329
benzene	-	-	0.10648428										0.10648428

Controlled Emissions

Hourly (lb/hr)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
NOx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
CO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
PM2.5	0.000	0.000	1.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.14**
PM10	0.000	0.000	1.520	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.52**
H2S	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
SO2	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.01**
Crude or Condensate VOC	-	-	103.589	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**103.59**
Natural Gas VOC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Total VOC	0.000	0.000	103.589	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**103.59**
benzene	0.000	0.000	0.152	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.15**

Annual (tpy)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
NOx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
CO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
PM2.5	0.000	0.000	0.798	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.80**
PM10	0.000	0.000	1.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.06**
H2S	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
SO2	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Crude or Condensate VOC	-	-	72.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**72.51**
Natural Gas VOC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Total VOC	0.000	0.000	72.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**72.51**
benzene	0.000	0.000	0.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.11**

Flare/Vapor Combustor Total Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Total Crude Oil or Condensate VOC	103.59	72.51
Total Natural Gas VOC	0.00	0.00
Total VOC	103.59	72.51
NOx	0.00	0.00
CO	0.00	0.00
PM2.5	1.14	0.80
PM10	1.52	1.06
H2S	0.00	0.00
SO2	0.01	0.00
benzene	0.15	0.11

Emission Type: (pick from list)
Steady State (continuous)

Calculations

Scf/hr = (Uncontrolled (lb/hr) / Molecular Weight (lb/lb-mole)) * 379 (ft3/lb-mole)

VOC = Uncontrooled (lb/hr) * ((100-DRE%)/100)
NOx = (Flow rate = scf/hr) * (Heat content = Btu/scf) * (Emission factor = lb/MM Btu)*(1MM Btu / 1,000,000 Btu)
CO = (Flow rate = scf/hr)*(Heat content = Btu/scf) * (Emission factor = lb/MM Btu) * (1MM Btu/1,000,000 Btu)

PBR/Standard Permit Compliance	
Minimum Heat Value Requirement	
Total Stream Heat Value (weighted with hourly volumetric flow rates, Btu/scf)	0
Total Stream Heat Value (weighted with annual volumetric flow rates, Btu/scf)	0
Maximum Flare/Burner Tip Velocity Requirement	
How many flare/burner tips does the unit have?	
What is the diameter of the flare/burner tip(s) (in)?	
Total Flare/Burner Tip Surface Area (ft^2)?	0
What is the flare/burner tip surface area that the hourly worst case (highest flow) stream passes through (ft^2)?	
Stream Velocity Through Burner Tip (based on hourly worst case, ft/sec)	0.00

Enter any notes here as needed. You must address the following: (1) How is this control efficiency justified? Please be specific. (2) Explain what happens when this unit is down. Include how long the unit could be down for.

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Emissions Summary

The table below is a summary of all emission points for this registration. It is separated into *Project Emissions* and *Other Site Wide Emissions* .

The table has separate totals for *Project Total Emission Rates* and *Site Wide Total Emission Rates* .

On the table, for each emission source, there is a space for three emission rates on a pound per hour (lb//hr) basis and one emission rate on a ton per year (tpy) basis. Periodic emissions are authorized to exceed the steady state limits of the rule (150, 300, and 600 hours per year for PBR Level 1, PBR Level 2, and the Standard Permit, respectively), in which case the periodic emission limits must be met. Note that periodically emitting activities, such as loading and MSS activities, are not limited to occurring less than these time limits. It is only for that amount of time that the emissions can exceed the normal steady state limits.

Any formaldehyde emissions must be included as part of VOC emissions.

Update

Before pressing the *Update* button, make sure you have selected the correct VOC Type and Emission Type from the pull down menus in each emission calculation tab.

Emissions Summary

Project Emissions (This needs to include all emission points being added for the first time to the registration or emission points with emissions that are changing from previously registered emissions. It does NOT include emission points for which the emissions have not changed and have previously been registered (unless the emission point emissions are chosen to be re-calculated as part of this project); those emissions will be entered below in the Other Registration Emissions section of this table.)

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates			
			steady state lbs/hr	< 30 psig periodic lbs/hr	≥ 30 psig periodic lbs/hr	TPY (4)
F1	Fugitives	Total VOC	0.1226			0.5371
		Total Crude Oil or Condensate VOC	0.1226			0.5371
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0002			0.0009
		Formaldehyde	0.0000			0.0000
		H_2S	0.0001			0.0002
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.0000			0.0000
		Total Crude Oil or Condensate VOC	0.0000			0.0000
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000

		$PM_{2.5}$	0.0000			0.0000
H1	Heater Treater	**Total VOC**	0.0045			0.0199
		Total Crude Oil or Condensate VOC	0.0000			0.0000
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0006			0.0024
		NO_X	0.0826			0.3617
		CO	0.0694			0.3038
		PM_{10}	0.0063			0.0275
		$PM_{2.5}$	0.0047			0.0206
T1	Crude Oil Tank	**Total VOC**	2.3570			10.3238
		Total Crude Oil or Condensate VOC	2.3570			10.3238
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0048			0.0208
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
T2	Crude Oil Tank	**Total VOC**	2.3570			10.3238
		Total Crude Oil or Condensate VOC	2.3570			10.3238
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0048			0.0208
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
T1	Crude Oil Tank	**Total VOC**	0.2026			0.8873
		Total Crude Oil or Condensate VOC	0.2026			0.8873
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0004			0.0016
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.2026			0.8873

T2	Crude Oil Tank	**Total Crude Oil or Condensate VOC**	0.2026			0.8873
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0004			0.0016
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT1	Produced Water Tank	**Total VOC**	0.0471			0.2065
		Total Crude Oil or Condensate VOC	0.0471			0.2065
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0001			0.0004
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT2	Produced Water Tank	**Total VOC**	0.0471			0.2065
		Total Crude Oil or Condensate VOC	0.0471			0.2065
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0001			0.0004
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT1	Produced Water Tank	**Total VOC**	0.0023			0.0101
		Total Crude Oil or Condensate VOC	0.0023			0.0101
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.0023			0.0101

WT2	Produced Water Tank	**Total Crude Oil or Condensate VOC**	0.0023			0.0101
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
L1	Crude Oil Loading	**Total VOC**		22.3591		1.8909
		Total Crude Oil or Condensate VOC		22.3591		1.8909
		Total Natural Gas VOC		0.0000		0.0000
		Benzene		0.0403		0.0034
		Formaldehyde		0.0000		0.0000
		H_2S		0.0000		0.0000
		SO_2		0.0000		0.0000
		NO_X		0.0000		0.0000
		CO		0.0000		0.0000
		PM_{10}		0.0000		0.0000
		$PM_{2.5}$		0.0000		0.0000
L2	Produced Water Loading	**Total VOC**		0.0000		0.0000
		Total Crude Oil or Condensate VOC		0.0000		0.0000
		Total Natural Gas VOC		0.0000		0.0000
		Benzene		0.0000		0.0000
		Formaldehyde		0.0000		0.0000
		H_2S		0.0000		0.0000
		SO_2		0.0000		0.0000
		NO_X		0.0000		0.0000
		CO		0.0000		0.0000
		PM_{10}		0.0000		0.0000
		$PM_{2.5}$		0.0000		0.0000
V1	Process Vent	**Total VOC**	103.5886			72.5120
		Total Crude Oil or Condensate VOC	103.5886			72.5120
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.1521			0.1065
		Formaldehyde	0.0000			0.0000
		H_2S	0.0029			0.0021
		SO_2	0.0055			0.0039
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000

Project Total Emission Rates (Note that these periodic totals are NOT simply the sum of the periodic emission rates from each emission point. The periodic emission limits in the rule need to be compared to the sum of steady state and periodic emissions, that is the worst case combination of continuously and periodically emitting sources that could occur in any one hour. The periodic emission rates shown here are the sum of all steady state and periodic emissions in the project. If the worst case combination of continuously and periodically emitting sources is less than this, then please input the values in this table to the right. **Please explain below which emission points are included in this worst case combination.**)	**Air Contaminant Name (3)**	**Emission Rates**			
		steady state lbs/hr	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY (4)**
	Total VOC	108.93	131.29	131.29	97.82
	Total Crude Oil or Condensate VOC	108.93	131.29	131.29	97.80
	Total Natural Gas VOC	0.00	0.00	0.00	0.00
	Benzene	0.16	0.20	0.20	0.16
	Formaldehyde	0.00	0.00	0.00	0.00
	H_2S	0.00	0.00	0.00	0.00
	SO_2	0.01	0.01	0.01	0.01
	NO_X	0.08	0.08	0.08	0.36
	CO	0.07	0.07	0.07	0.30
	PM_{10}	0.01	0.01	0.01	0.03
	$PM_{2.5}$	0.00	0.00	0.00	0.02
If the automated formulas for the project emission totals (which assume that it is possible for all steady state and periodic emissions in the project to occur in the same hour) have been overwritten, explain any changes made and list the project emission points that occur in the realistic worst case hour. (Leave this blank or put NA if none of the formulas have been overwritten.)					

Other Site Wide Emissions (This needs to include any other emission points not included in the Project Emissions Summary but are associated with the site. This should be all the operationally dependent units that are within 1/4 mile of each other and are also owned/operated by the same company and located on contiguous or adjacent property. It is possible that nothing needs to be entered here.)

There are no other site wide emission points other than project emission points.

Site Wide Total Emission Rates (Note that these periodic totals are NOT simply the sum of the periodic emission rates from each emission point. The periodic emission limits in the rule need to be compared to the sum of steady state and periodic emissions, that is the worst case combination of continuously and periodically emitting sources that could occur in any one hour. The periodic emission rates shown here are the sum of all steady state and periodic emissions in the registration. If the worst case combination of continuously and periodically emitting sources is less than this, then please input the values in this table to the right. **Please explain below which emission points are included in this worst case combination.**)	**Air Contaminant Name (3)**	**steady state lbs/hr**	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY (4)**
	Total VOC	108.93	131.29	131.29	97.82
	Total Crude Oil or Condensate VOC	108.93	131.29	131.29	97.80
	Total Natural Gas VOC	0.00	0.00	0.00	0.00
	Benzene	0.16	0.20	0.20	0.16
	Formaldehyde	0.00	0.00	0.00	0.00
	H_2S	0.00	0.00	0.00	0.00
	SO_2	0.01	0.01	0.01	0.01
	NO_X	0.08	0.08	0.08	0.36
	CO	0.07	0.07	0.07	0.30
	PM_{10}	0.01	0.01	0.01	0.03
	$PM_{2.5}$	0.00	0.00	0.00	0.02
If the automated formulas for the registration emission totals (which assume that it is possible for all steady state and periodic emissions in the registration to occur in the same hour) have been overwritten, explain any changes made and list the registration emission points that occur in the realistic worst case hour. (Leave this blank or put NA if none of the formulas have been overwritten.)					
Based on the Site Wide Total Emission Rates, this authorization falls under:				**Standard Permit**	

Enter any notes here:	*** No PM emissions included for process vent emissions. ** Note that facility is located > 1.0 mile from the any receptors or property line so no impacts evaluation is required.**

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.

(2) Specific point source name. For fugitive sources, use area name or fugitive source name.

(3)
- VOC — volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
- H_2S — hydrogen sulfide
- SO_2 — sulfur dioxide
- NO_X — total oxides of nitrogen
- CO — carbon monoxide
- PM_{10} — total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$
- $PM_{2.5}$ — particulate matter equal to or less than 2.5 microns in diameter

(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.

(5) If emissions from a source are:

(A) uncontrolled, then the uncontrolled emissions are reported in this table as being emitted from the source.

(B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU), then the controlled emissions are reported on this table as being emitted from the control device.

(C) controlled by another type of control device, then the controlled emissions are reported on this table for the source (even though emissions are actually being emitted at the control device).

(6) For controlled tank, glycol/amine flash tank and regenerator, and MSS emissions, it is assumed that all vapors make it to the control device (100% collection efficiency). For controlled loading emissions, a 100% collection efficiency is <u>not</u> assumed.

(7) A VRU itself is not actually considered an emission point; however, this table associates unrecovered (uncontrolled) emissions from sources controlled by a VRU at the VRU.

Major Source determination

Major Source determination: A site is required to obtain an operating permit if it is considered to be a major source (per 30 TAC Section 122.10). A site's potential to emit is an important factor to determine if the site is a major source and is thus required to apply and obtain an FOP.

Company Name	EP Energy E&P Company LP
Site Name	University Lands 39-11-1H Facility
County	Other

Annual Site Wide Emission Rates

Air Contaminant Name (3)	TPY (4)
Total VOC	97.82
Benzene	0.16
Formaldehyde	0.00
SO_2	0.01
NO_X	0.36
CO	0.30
PM_{10}	0.03
$PM_{2.5}$	0.02

Major Source Determination

Air Contaminant Name (3)	Major Source determination
Total VOC	**NA**
Benzene	**NA**
Formaldehyde	**NA**
SO_2	**NA**
NO_X	**NA**
CO	**NA**
PM_{10}	**NA**
$PM_{2.5}$	**NA**

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Authorization Level Determination

The level of authorization is determined by comparing the Registration Total Emission Rates (as shown on the previous tab) to the emission limits of the different authorization levels.

This table is an expanded explanation of how the authorization level shown on the Emissions Summary tab was determined. The table shows which authorization level each compound's emissions fall into, and then at the bottom of the chart it shows which authorization level the entire authorization falls under.

The possible authorization levels are:

PBR Level 1
PBR Level 2
Standard Permit
NSR Case-by-case Permit

	Based on the Registration Total Emission Rates (on the previous tab), what Level of Authorization Does Each Emission Rate Fall Into?			
Air Contaminant Name	**Emission Rates**			
	steady state lbs/hr	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY**
Total VOC	NA, no limit	NA, no limit	NA, no limit	Standard Permit
Total Crude Oil or Condensate VOC	Standard Permit	PBR Level 1	PBR Level 1	Standard Permit
Total Natural Gas VOC	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
Benzene	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
Formaldehyde	NA, no limit	NA, no limit	NA, no limit	PBR Level 1
H_2S	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
SO_2	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
NO_X	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
CO	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
PM_{10}	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
$PM_{2.5}$	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
	What Level of Authorization Applies to this Registration? (If any of the registration emissions are equal to or greater than the limits of a level, then the whole registration falls into that level above.)			
	Standard Permit			

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Is a Full Impacts Review Required?

and NO_2. A full impacts review involves showing protection of public health and welfare and compliance with applicable ambient air standards (state and federal) on a short term and long term basis.

A full impacts review is not required for a certain compound under these certain circumstances:

> **if there is no receptor (to be affected by benzene emissions) or property line (where compliance with NO_2, SO_2, and H_2S ambient air quality standards is required) within a certain distance of a registration (that is if there is no receptor or property line within a certain distance of any emitting source in the registration), or**
>
> **if the net project emission increases of that compound are very small.**

Based on these circumstances, the worksheet below determines whether or not a full impacts review is required for any of the four compounds (benzene, H_2S, SO_2, and NO_2).

If any of (1)-(3) below shows that a full impacts review is not required for a compound, then under (4) it will show that no further impacts review needs to be done and it will explain that "you are done" for that compound. If all of (1)-(3) show that a full impacts review is required, then (4) will explain that one of the three methods for doing a full impacts review (screening modeling, dispersion modeling, or the modeling tables from the rule) must be used.

If the modeling tables from the rule are used, then the spreadsheet tabs labeled for benzene, H_2S, SO_2, and NO_2 should be used. These tabs provide a way to use the modeling tables and perform the necessary calculations to show whether the impacts review is passed.

(1) **Based on receptor and property line distances, is a full impacts review required for any air contaminant? (Is there a receptor or property line within the specified distance of the registration? The distances are 1/4 mile for PBR Level 1, 1/2 mile for PBR Level 2, and 1 mile for Standard Permit.) First the level of authorization must be known.**

Based on the Registration Total Emission Rates, this authorization falls under:

Standard Permit

What is the shortest distance in feet to any receptor from any facility/unit included in this registration?	5500	ft
What is the shortest distance in feet to any property line from any facility/unit included in this registration?	5500	ft

Based on the nearest receptor distance:

A full impacts review is NOT required for benzene.

Based on the nearest property line distance:

A full impacts review is NOT required for H2S, SO2, and NO2.

(2) **Based on the net project emission increases, is a full impacts review required for any air contaminent? (Are the net project emission increases less than any of the de-minimis rates?)**

Net Project Emission Increases

Air Contaminant Name	Emission Rates			
	steady state lbs/hr	< 30 psig periodic lbs/hr	≥ 30 psig periodic lbs/hr	TPY
Benzene	0.16	0.20	0.20	0.16
H_2S	0.00	0.00	0.00	0.00
SO_2	0.01	0.01	0.01	0.01
NO_X	0.08	0.08	0.08	0.36

Please explain the logic behind the values here if any values are different than the Project Total Emission Rates from the Emissions Summary tab.

De-minimis Rates

Air contaminant	lb/hr
Benzene	0.039
H_2S	0.025
SO_2	2
NO_X	4

Based on the net project emission increases:

A full impacts review is required for benzene.
A full impacts review is NOT required for H2S.
A full impacts review is NOT required for SO2.
A full impacts review is NOT required for NO2.

(3) **Based on the project maximum predicted concentrations, is a full impacts review required for any air contaminant? (Are the project maximum predicted benzene concentrations ≤ 10% of the applicable effects screening level (ESL) or ≤ 25% of the applicable ESL when combined with project increases over 60-month period after rule effective date? Are project maximum predicted H_2S, SO_2, and NO_X concentrations ≤ the significant impact level, SIL, also known as a de-minimis impact in Chapter 101 of 30 TAC, where the SIL = 4% of the applicable ambient air standard (AAQS)?)**

ESLs and AAQS needed for impacts review:	
ESLs and AAQSs	**(µg/m^3)**
Benzene Short Term ESL	170
Benzene Long Term ESL	4.5
H_2S Hourly SAAQS	108
SO_2 Hourly NAAQS	196
NO_2 Hourly NAAQS	188

What is the project maximum predicted 1-hr concentration of benzene in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an hourly basis.		

What is the maximum predicted 1-hr concentration of benzene in micrograms per cubic meter for the project combined with previous project increases over a 60-month period after the effective date of the this rule?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an hourly basis.		

What is the project maximum predicted annual concentration of benzene in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an annual basis.		

What is the maximum predicted annual concentration of benzene in micrograms per cubic meter for the project combined with previous project increases over a 60-month period after the effective date of the this rule?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an annual basis.		

What is the project maximum predicted 1-hr concentration of H_2S in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for H2S on an hourly basis.		

What is the project maximum predicted 1-hr concentration of SO_2 in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for SO2 on an hourly basis.		

What is the project maximum predicted 1-hr concentration of NO_2 in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		

A full impacts review is required for NO2 on an hourly basis.

(4)

Based on the above assessment from (1) - (3):
A full impacts review is NOT required for benzene.
A full impacts review is NOT required for H2S.
A full impacts review is NOT required for SO2.
A full impacts review is NOT required for NO2.

Press this button to make the impacts review tabs visible if needed, that is if you want to use the modeling tables from the rule for any of the four compounds.

ATTACHMENT D

- *TCEQ Forms*

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Attachments **Describe Any Attachments:** *(ex. Title V Application, Waste Transporter Application, etc.)*

☒Yes ☐No — 116.620 Standard Permit Conversion

3. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number *(if issued)*
CN 604089854		RN 106118060

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy) 9/1/2013

6. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check only one of the following:*

☐Owner ☐ Operator ☒ Owner & Operator
☐Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐Other: _____

7. General Customer Information

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐Change in Legal Name (Verifiable with the Texas Secretary of State) ☐ No Change**

If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.

8. Type of Customer:			
☐ Corporation	☐ Individual	☐ Sole Proprietorship- D.B.A	
☐ City Government	☐ County Government	☐ Federal Government	☐ State Government
☐ Other Government	☐ General Partnership	☒ Limited Partnership	☐ Other:

9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)* — *If new Customer, enter previous Customer below* — *End Date:*

EP Energy E&P Company, L.P.

10. Mailing Address: 1001 Louisiana Street

City	State	ZIP	ZIP + 4
Houston	TX	77002	

11. Country Mailing Information *(if outside USA)*

12. E-Mail Address *(if applicable)*

13. Telephone Number	14. Extension or Code	15. Fax Number *(if applicable)*
(713) 997-5464		(713) 455-8380

16. Federal Tax ID *(9 digits)*	17. TX State Franchise Tax ID *(11 digits)*	18. DUNS Number *(if applicable)*	19. TX SOS Filing Number *(if applicable)*

20. Number of Employees

☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

21. Independently Owned and Operated?

☒ Yes ☐ No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☒ No Change** *(See below)*

If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name *(name of the site where the regulated action is taking place)*

University Lands 39-11-1H Facility

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*	1001 Louisiana Street							
	City	Houston	**State**	TX	**ZIP**	77002	**ZIP + 4**	
25. Mailing Address:	1001 Louisiana Street							
	City	Houston	**State**	TX	**ZIP**	77002	**ZIP + 4**	

26. E-Mail Address:	

27. Telephone Number	**28. Extension or Code**	**29. Fax Number** *(if applicable)*
(713) 997-5464		(713) 455-8380

30. Primary SIC Code (4 digits)	**31. Secondary SIC Code** (4 digits)	**32. Primary NAICS Code** (5 or 6 digits)	**33. Secondary NAICS Code** (5 or 6 digits)
1311		21111	

34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*

Oil and Gas Production

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	From Barnhart, travel S on Hwy 163 for 8.2 mi, L heading E for 5.9 mi on lease road, R heading S fo 2.8 mi to facility on W side of the road.

36. Nearest City	**County**	**State**	**Nearest ZIP Code**
Barnhart	Crockett	TX	76930

37. Latitude (N) In Decimal:			**38. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	57	20.24	101	5	40.26

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Industrial Hazardous Waste	☐ Municipal Solid Waste
☒ New Source Review – Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☐ Title V – Air	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Paul E. DeCiutiis, P.E., BCEE	**41. Title:**	Consultant

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 699-2444		(512) 351-3081	paul.deciutiis@gmail.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	EP Energy E&P Company, L.P.	**Job Title:**	Sr. EHS Specialist
Name *(In Print)* :	Bernard Kadlubar	**Phone:**	(713) 997-5464
Signature:		**Date:**	

TABLE 7(a)

02-95

VERTICAL FIXED ROOF STORAGE TANK SUMMARY

I. ***Tank Identification*** *(Use a separate form for each tank)*.

1. Applicant's Name: EP Energy E&P Company L.P. – University Lands
2. Location (*indicate on plot plan and provide coordinates*): See plot
3. Tank No. WT1-WT2 4. Emission Point No. V2
5. FIN WT1-WT2 CIN
6. Status: New tanks [ ] Altered tank [X] Relocation [ ] Change of Service [ ]

Previous permit or exemption number(s) _____

II. ***Tank Physical Characteristics (each tank)***

1. Dimensions
   a. Shell Height: 25.0 ft.
   b. Diameter: 12.0 ft.
   c. Maximum Liquid Height: 25.0 ft.
   d. Nominal Capacity or Working Volume: 21,000 gallons.
   e. Turnovers per year: 75.50
   f. Net Throughput: 1,533,000.00 gallons/year (100 bpd)
   g. Maximum Filling Rate: 175.00 gallons/hour.
2. Paint Characteristics
   a. Shell Color/Shade: White/White [X] Aluminum/Specular [ ] Aluminum/Diffuse [ ] Gray/Light [ ] Gray/Medium [ ] Red/Primer [ ] Other [ ] (Describe _____)
   b. Shell Condition: Good [X] Poor [ ]
   c. Roof Color/Shade: White/White [X] Aluminum/Specular [ ] Aluminum/Diffuse [ ] Gray/Light [ ] Gray/Medium [ ] Red/Primer [ ] Other [ ] (Describe _____)
   d. Roof Condition : Good [X] Poor [ ]
3. Roof Characteristics
   a. Roof Type: Dome [ ] Cone [X]
   b. Roof Height: 1.0 ft. (*not including shell height)*
   c. Radius (*Dome Roof Only*): _____ ft.
   d. Slope (*Cone Roof Only*): 0.167 ft/ft.

4. Breather Vent Settings				SPECIFY "Atmosphere" or Discharging to: (name of abatement device)
Valve Type	Number	Pressure Setting (psig)	Vacuum Setting (psig)	
Combination Vent Valve				
Pressure Vent Valve		0.3		Discharge to Atmosph.
Vacuum Vent Valve			-0.3	
Open Vent Valve				

Permit No. _____ Tank No. WT1-WT2

III. ***Liquid Properties of Stored Material***

1. Chemical Category: Organic Liquids [ ] Petroleum Distillates [ ] Crude Oils [X]
2. Single or Multi-Component Liquid

   Single [ ] *Complete Section III.3*

   Multiple [X] *Complete Section III.4*
3. Single Component Information
   a. Chemical Name: Crude Oil – RVP 4.76
   b. CAS Number: _____
   c. Average Liquid Surface Temperature: 74.5 F.
   d. True Vapor Pressure at Average Liquid Surface Temperature: 3.56 psia.
   e. Liquid Molecular Weight: 207.0
4. Multiple Component Information
   a. Mixture Name: _____
   b. Average Liquid Surface Temperature: F.
   c. Minimum Liquid Surface Temperature: F.
   d. Maximum Liquid Surface Temperature: F.
   e. True Vapor Pressure at Average Liquid Surface Temperature: psia.
   f. True Vapor Pressure at Minimum Liquid Surface Temperature: psia.
   g. True Vapor Pressure at Maximum Liquid Surface Temperature: psia.
   h. Liquid Molecular Weight:
   i. Vapor Molecular Weight:

j. Chemical Components Information

Chemical Name	CAS Number	Percent of Total Liquid Weight (typical)	Percent of Total Vapor Weight (typical)	Molecular Weight
Crude Oil – RVP 4.76				

TABLE 7(a)

02-95

VERTICAL FIXED ROOF STORAGE TANK SUMMARY

I. ***Tank Identification*** *(Use a separate form for each tank*).

1. Applicant's Name: EP Energy E&P Company L.P. – University Lands
2. Location (*indicate on plot plan and provide coordinates*): See plot
3. Tank No. T1-T2 4. Emission Point No. V2
5. FIN T1-T2 CIN
6. Status: New tanks [ ] Altered tank [X] Relocation [ ] Change of Service [ ]

Previous permit or exemption number(s) _____

II. ***Tank Physical Characteristics (each tank)***

1. Dimensions
   a. Shell Height: 25.0 ft.
   b. Diameter: 12.0 ft.
   c. Maximum Liquid Height: 25.0 ft.
   d. Nominal Capacity or Working Volume: 21,000 gallons.
   e. Turnovers per year: 37.75
   f. Net Throughput: 766,500.00 gallons/year (50 bpd)
   g. Maximum Filling Rate: 37.50 gallons/hour.
2. Paint Characteristics
   a. Shell Color/Shade: White/White [X] Aluminum/Specular [ ] Aluminum/Diffuse [ ] Gray/Light [ ] Gray/Medium [ ] Red/Primer [ ] Other [ ] (Describe _____)
   b. Shell Condition: Good [X] Poor [ ]
   c. Roof Color/Shade: White/White [X] Aluminum/Specular [ ] Aluminum/Diffuse [ ] Gray/Light [ ] Gray/Medium [ ] Red/Primer [ ] Other [ ] (Describe _____)
   d. Roof Condition : Good [X] Poor [ ]
3. Roof Characteristics
   a. Roof Type: Dome [ ] Cone [X]
   b. Roof Height: 1.0 ft. (*not including shell height)*
   c. Radius (*Dome Roof Only*): _____ ft.
   d. Slope (*Cone Roof Only*): 0.167 ft/ft.

4. Breather Vent Settings				SPECIFY "Atmosphere" or Discharging to: (name of abatement device)
Valve Type	Number	Pressure Setting (psig)	Vacuum Setting (psig)	
Combination Vent Valve				
Pressure Vent Valve		0.3		Discharge to Atmosph.
Vacuum Vent Valve			-0.3	
Open Vent Valve				

Permit No. _____ Tank No. T1-T2

III. ***Liquid Properties of Stored Material***

1. Chemical Category: Organic Liquids [ ] Petroleum Distillates [ ] Crude Oils [X]
2. Single or Multi-Component Liquid

   Single [ ] *Complete Section III.3*

   Multiple [X] *Complete Section III.4*
3. Single Component Information
   a. Chemical Name: Crude Oil – RVP 4.76
   b. CAS Number: _____
   c. Average Liquid Surface Temperature: 74.5 F.
   d. True Vapor Pressure at Average Liquid Surface Temperature: 3.56 psia.
   e. Liquid Molecular Weight: 207.0
4. Multiple Component Information
   a. Mixture Name: _____
   b. Average Liquid Surface Temperature: F.
   c. Minimum Liquid Surface Temperature: F.
   d. Maximum Liquid Surface Temperature: F.
   e. True Vapor Pressure at Average Liquid Surface Temperature: psia.
   f. True Vapor Pressure at Minimum Liquid Surface Temperature: psia.
   g. True Vapor Pressure at Maximum Liquid Surface Temperature: psia.
   h. Liquid Molecular Weight:
   i. Vapor Molecular Weight:

j. Chemical Components Information

Chemical Name	CAS Number	Percent of Total Liquid Weight (typical)	Percent of Total Vapor Weight (typical)	Molecular Weight
Crude Oil – RVP 4.76				

Oil and Gas Emissions Spreadsheet with Impacts Analysis

Revised 05/06/2013

General Notes

***** Before beginning, make sure to enable macros, so that this spreadsheet will run properly. *** See the links below for more information on creating a trusted location and enabling macros for this spreadsheet.**

Enable Macro Link

Trusted Location Link

See comments in individual cells and other written notes. Cells with red corners contain comments; place cursor anywhere in a cell which has a red corner, to view comment. These were added to guide you through using this spreadsheet and make it as easy as possible to use.

This spreadsheet should be used as follows: (1) Enter information into this Facility Information spreadsheet tab, (2) after running the macro (which is explained below), fill out the emission calculation tabs, (3) populate the Emissions Summary table (you press a button on the Emissions Summary tab and the macro will populate the table with the values from the emission calculation tabs), and (4) go through the impacts review tabs (if applicable). This basically means estimate what each of the individual source emissions are, then summarize them in a table, then evaluate the impact of the emissions (if impacts review is applicable).

If you want to use any of the impacts review tabs, you will need to have answered "Yes" to the initial question of "Are you using this to meet the new Barnett Shale area rule requirements?". You can press the "Reset" button at the bottom of this tab to have the question pop up again.

Yellow cells require information to be entered. Red cells contain calculated values.

Worst case emissions must be estimated on both an hourly and annual basis for air permitting purposes.

> **Hourly emissions must be based on worst case maximum parameters realistically expected to occur over the course of any one hour. As an example, where ambient temperature is used as a parameter to estimate hourly emissions, the maximum temperature from the hottest day of the year must be used.**
>
> **Annual emissions can be based on average parameters. As an example, where ambient temperature is used as a parameter to estimate annual emissions, the average ambient temperature may be used.**
>
> **This difference between hourly and annual emissions could potentially mean that separate calculations or program runs will have to be done to estimate hourly and annual emission rates.**

Planned Maintenance, Start-up, and Shutdown (MSS) versus Alternate Operating Scenarios: Planned MSS emissions do not need to be claimed for oil and gas sites until January 5, 2014. Before this date, it is voluntary to factor in planned MSS emissions. Alternate operating scenario emissions should be factored in now. Although historically alternate operating scenarios have sometimes been treated as planned MSS, it is actually different and should be addressed now to ensure that during these periods and continuously, the applicable emission limits are not exceeded.

What is Different About Estimating Emissions for the Barnett Shale Area Rule Requirements?

There are level limits (or caps) for the different levels of authorization, which are: PBR Level 1, PBR Level 2, and Standard Permit. The level limits are emission limits of the following air pollutants: Total VOC, Total crude oil or condensate VOC, Total natural gas VOC, benzene, hydrogen sulfide (H_2S), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter (PM_{10} and $PM_{2.5}$). There are different level limits for hourly and annual emissions and within hourly emissions there are different level limits for steady state emissions versus periodic emissions.

There is an impacts review for both the Permit by Rule (PBR) and Standard Permit for the following air pollutants: benzene, H_2S, SO_2, and NOx.

VOC emissions need to be separated into (1) Crude Oil or Condensate VOC and (2) Natural Gas VOC.

Hourly and annual emissions need to be estimated. There are potentially three hourly emission types that need to be estimated (1) steady state hourly, (2) low pressure periodic, and (3) high pressure periodic. These are described in detail on the Emissions Summary tab.

Benzene emissions need to be speciated for all sources.

Oil and Gas Site General Information	
Administrative Information	
Company Name	EP Energy E&P Company LP
Facility/Well Name	University Lands 39-11-1H Facility
Field Name	Wolfcamp
Nearest City/Town	Barnhart
API Number/SIC Code	211111/1311
Latitude/Longitude	30d 57' 20.24" / 101d 5' 40.26"
County	Crockett
Are you using a Form PI-7, PI-7-CERT, APD-CERT, PI-7 and APD-CERT, or are you using ePermits?	ePermits
Customer Number, CNxxxxxxxxx (if known)	CN604089854
Regulated Entity Number, RNxxxxxxxxx (if known)	RN106118060
Technical Information	
Natural Gas Site Throughput (MMSCF/day):	5
Oil/Condensate Site Throughput (bbl/day):	100
Produced Water Site Throughput (bbl/day):	200
Are there any sour gas streams at this site?	No
Is this site currently operational/producing?	Yes
What is the date of the site start of construction or the date that the project changes were implemented (whichever is applicable to this project, anticipated date if in the future)?	2013
Has this site been registered before?	Yes

Equipment/Processes at Site		
Before entering any numbers into the Equipment/Processes section of the table below, please make sure to review all of the comments in the cells of the table. These should make it clear what numbers need to be entered and where they need to be entered.		
Equipment/Process Types	**How many for this project?**	**How many for this site?**
Fugitives	1	1
IC Engines	1	1
Turbines	0	0
Diesel Engines	0	0
Heaters-Boilers	1	1
Oil / Condensate Tanks	2	2
Produced Water Tanks	2	2
Miscellaneous Tanks	0	0
Loading Jobs	2	2
Glycol Units	0	0
Amine Units	0	0
Vapor Recovery Units	0	0
Flares-Vapor Combustors	1	1
Thermal Oxidizers	0	0
MSS Blowdowns	0	0
MSS FLR Tank Landing Loss	0	0
MSS Tank Non Forced Vent	0	0
MSS Tank Forced Vent Degas	0	0
MSS Other	0	0
Other	0	0

When you are finished entering information on this tab, press the "Run" button below. When it is pressed, the spreadsheet tabs needed will be added and the "Emissions Summary" tab will also be added with the number of rows corresponding to the number of emission points in this registration.

Before pressing "Run", please make sure to review all of the comments in the cells of the table above. These should make it clear what numbers need to be entered and where they need to be entered.

The spreadsheet can be reset if needed by pressing the "Reset" button below. If the "Reset" button is pressed, everything will be cleared and you can start over (the added sheets will disappear along with any data entered into the sheets). When the "Reset" button is pressed and there is anything to clear, a question will pop up asking "Delete all macro created worksheets?". Then if you click "Yes", the question will pop back up asking "Are you using this to meet the new Barnett Shale area requirements?".

If the "Run" button is pressed a second time, everything will be cleared and you can start over (the added sheets will disappear along with any data entered into the sheets). When the "Run" button is pressed a second time, a question will pop up asking "Delete all macro created worksheets?". The question will not pop back up asking "Are you using this to meet the new Barnett Shale area requirements?".

Do not press "Run" again or "Reset", unless you intend to clear all of the added sheets (and any data entered into the sheets). This means that it is important to make sure the right numbers of each equipment/process type are entered. If it is possible that an extra piece of equipment could be included, include it because it is better to have too many entered than not enough.

Run

Reset

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Gas and Liquid Analyses

A) Enter information into the yellow boxes.

B) The purpose of this tab is to extract information from a lab analysis that will be used in emission calculations. Unlike the other other tabs which calculate emissions, nothing from this tab gets pulled to the Emissions Summary table. The big pieces of information needed for emissions estimates are the VOC, benzene, and H_2S weight percents. Sampling of gas and liquid streams from appropriate process sampling points is required in order to determine composition or other properties needed to estimate emissions such as heat content, specific gravity, and vapor pressure. It is essential that stream lab analyses/reports include a measurement of H_2S, individual HAPs, and at least all those hydrocarbons up to at least 10 carbon atoms per molecule (C10+).

C) There are two boxes on the left, for gas and liquid analyses, which take component weight percent inputs and there are two boxes on the right, for gas and liquid analyses, which take component mole percent inputs. You can either fill out the weight percent box OR the mole percent box, depending on what informaton you have available to you.

The boxes are set up in the following arrangement:

Gas Analysis Wt% Inputs	**Gas Analysis Mol% Inputs**
Liquid Analysis Wt% Inputs	**Liquid Analysis Mol% Inputs**

D) If weight percents are provided on the lab report, use the boxes on the left. If only mole percents are provided on the lab report, use the boxes on the right.

E) Make sure to select whether you are inputting weight percents or mole percents from the pull down menus below.

F) If you are using the weight percent boxes (left two), in addition to the component weight percents, you need to enter the gas molecular weight (molecular weight of the total sample) and the gas and liquid H_2S content in parts per million by volume (H_2S ppmv). This will allow for the calcultion of the gas specific gravity and the long tons of sulfur per day in the gas, and the determination of sweet versus sour gas.

G) If you are using the mole percent boxes (right two), in addition to the component mole percents, you need to enter a real value, specific to this sample, for the molecular weight of the deacnes plus (C10+) fraction. You may use the default values listed below for the moleclar weights of the other hexanes (C6), other heptanes (C7), other ocatnes (C8), and nonanes (C9) fractions, unless you have a more accurate number. If you enter number other than the default, you need to explain where the number came from and why it is appropriate to use.

H) What is expected to be inlcuded on these tables is the the inlet gas and liquid streams (the liquid would most likely be sampled from a separator if there is separation at the site). These tables can also be used for any sampled gas and liquid streams as needed. If needed, make a copy of this tab.

I) Use the box provided below for entering any notes necessary.

For the gas sample, I am inputting (pick from list):	mole percents	**Select whether weight percents or mole percents are being entered for this gas sample.**

Then fill out this table **OR** fill out this table.

Gas Analysis - Use if the Inputs are Weight Percents	
Analysis Identifier/Name	
What site is the sample from?	
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	
Where in the process was the sample taken?	
What is the temperature and pressure of the sample (include units)?	
Who analyzed the sample?	
Date of sample:	

Component	**weight %**
hydrogen	
helium	
nitrogen	
CO2	
H2S	
methane (C1)	
ethane (C2)	
propane (C3)	
butanes (C4)	
pentanes (C5)	
benzene	
other hexanes (C6)	
toluene	
other heptanes (C7)	
ethylbenzene	
xylenes (o, m, p)	
other octanes (C8)	
nonanes (C9)	
decanes plus (C10+)	
Totals:	0.0000

Gas Analysis - Use if the Inputs are Mole Percents	
Analysis Identifier/Name	Inlet Gas
Where was the sample taken?	Separator
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	Data taken from similar facility producing in the same formation, the University 38-29-1H Facility.
Where in the process was the sample taken?	Inlet
What is the temperature and pressure of the sample (include units)?	105 psi at 53 F
Who analyzed the sample?	FESCO, Ltd.
Date of sample:	Jan 15, 2011 (Job No. 10290.001)

Component	**mole %**	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	**weight %**
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	3.2000	28.01340	90	4.2555
CO2	0.4820	44.00950	21	1.0070
H2S	0.0004	34.08188	0	0.0006
methane (C1)	78.4260	16.04246	1258	59.7260
ethane (C2)	8.6070	30.06904	259	12.2858
propane (C3)	6.0450	44.09562	267	12.6539
butanes (C4)	2.1380	58.12220	124	5.8990
pentanes (C5)	0.6570	72.14878	47	2.2502
benzene	0.0090	78.110000	1	0.0334
other hexanes (C6)	0.3196	86.18000	28	1.3075
toluene	0.0060	92.140000	1	0.0262
other heptanes (C7)	0.0620	100.20000	6	0.2949
ethylbenzene	0.0010	106.170000	0	0.0050
xylenes (o, m, p)	0.0000	106.170000	0	0.0000
other octanes (C8)	0.0470	114.23000	5	0.2549
nonanes (C9)		128.26000	0	0.0000
decanes plus (C10+)			0	0.0000
Totals:	100.0000	21.07	2107	100.00

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	0.0000
VOC weight fraction =	0.0000

VOC content of hydrocarbon fraction only

VOC weight% =	#DIV/0!
VOC weight fraction =	#DIV/0!

Hydrogen Sulfide

H2S weight% =	0.0000
H2S weight fraction =	0.00E+00
H2S ppm_V =	
H2S ppm_{WT}=	0.00
H_2S grains/100 SCF =	0.0000

SWEET GAS

Constants:

453.59237	mol/lb-mol
0.06479891	grams/grain
385.48	scf/lb-mol
34.08188	g/mol, lb/lb-mol
	H2S mw

Benzene

Benzene content of total sample

Benzene weight% =	0.0000
Benzene weight fraction =	0.0000

Benzene content of hydrocarbon fraction only

Benzene weight% =	#DIV/0!
Benzene weight fraction =	#DIV/0!

Gas Molecular Weight =	
Gas Specific Gravity =	0.00
Gas Throughput (MMscf/day)=	5
Long Tons Sulfur Compounds per Day =	0

Constants:

28.97	air mw
385.48	scf/lb-mol

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	22.7251
VOC weight fraction =	0.2273

VOC content of hydrocarbon fraction only

VOC weight% =	23.9876
VOC weight fraction =	0.2399

Hydrogen Sulfide

H2S weight% =	0.0006
H2S weight fraction =	6.47E-06
H2S ppm_V =	4
H2S ppm_{WT}=	6.47
H_2S grains/100 SCF =	0.2476

SWEET GAS

Constants:

453.59237	mol/lb-mol
0.06479891	grams/grain
385.48	scf/lb-mol

Benzene

Benzene content of total sample

Benzene weight% =	0.0334
Benzene weight fraction =	0.0003

Benzene content of hydrocarbon fraction only

Benzene weight% =	0.0352
Benzene weight fraction =	0.0004

Gas Molecular Weight =	21.07
Gas Specific Gravity =	0.73
Gas Throughput (MMscf/day)=	5
Long Tons Sulfur Compounds per Day =	0.0007894

Constants:

28.97	air mw
385.48	scf/lb-mol

For the liquid sample, I am inputting (pick from list):	

Select whether weight percents or mole percents are being entered for this liquid sample.

Then fill out this table **OR** fill out this table.

Liquid Analysis - Use if the Inputs are Weight Percents	
Analysis Identifier/Name	
What site is the sample from?	
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	
Where in the process was the sample taken?	
What is the temperature and pressure of the sample (include units)?	
Who analyzed the sample?	
Date of sample:	

Component	weight %
hydrogen	
helium	
nitrogen	
CO2	
H2S	
methane (C1)	
ethane (C2)	
propane (C3)	
butanes (C4)	
pentanes (C5)	
benzene	
other hexanes (C6)	
toluene	
other heptanes (C7)	
ethylbenzene	
xylenes (o, m, p)	
other octanes (C8)	
nonanes (C9)	
decanes plus (C10+)	
Totals:	0.0000

Liquid Analysis - Use if the Inputs are Mole Percents	
Analysis Identifier/Name	Pressurized Liquid Analysis
What site is the sample from?	Separator
If the sample is from a representaive site, explain how this sampled stream is representative of the similar stream at this site (use the notes box provided below if more space is needed).	Data taken from similar facility producing in the same formation, the University 8-12-1H Facility.
Where in the process was the sample taken?	Separator
What is the temperature and pressure of the sample (include units)?	63 psi @ 109 F
Who analyzed the sample?	FESCO, Ltd. (PVT Study)
Date of sample:	2-Jun-11

Component	mole %	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	weight %
hydrogen	0.0000	2.01588	0	0.0000
helium	0.0000	4.0026	0	0.0000
nitrogen	0.0620	28.01340	2	0.0169
CO2	0.0400	44.00950	2	0.0171
H2S	0.0004	34.08188	0	0.0001
methane (C1)	2.0130	16.04246	32	0.3143
ethane (C2)	2.1480	30.06904	65	0.6286
propane (C3)	6.9160	44.09562	305	2.9682
butanes (C4)	7.1680	58.12220	417	4.0549
pentanes (C5)	7.4660	72.14878	539	5.2427
benzene	0.2350	78.110000	18	0.1787
other hexanes (C6)	6.7570	86.18000	582	5.6676
toluene	0.5910	92.140000	54	0.5300
other heptanes (C7)	5.6050	100.20000	562	5.4662
ethylbenzene	0.1000	106.170000	11	0.1033
xylenes (o, m, p)	0.7710	106.170000	82	0.7967
other octanes (C8)	7.6550	114.23000	874	8.5107
nonanes (C9)	5.4810	128.26000	703	6.8421
decanes plus (C10+)	46.9920	128.26000	6027	58.6618
Totals:	100.0004	102.74	10274.4822	100.00

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	0.0000
VOC weight fraction =	0.0000

VOC content of hydrocarbon fraction only

VOC weight% =	#DIV/0!
VOC weight fraction =	#DIV/0!

Hydrogen Sulfide

H2S weight% =	0.0000
H2S weight fraction =	0.00E+00
H2S ppm_V =	
H2S ppm_{WT}=	0.00

Benzene

Benzene content of total sample

Benzene weight% =	0.0000
Benzene weight fraction =	0.0000

Benzene content of hydrocarbon fraction only

Benzene weight% =	#DIV/0!
Benzene weight fraction =	#DIV/0!

VOC (Non-methane, Non-ethane hydrocarbons)

VOC content of total sample

VOC weight% =	99.0229
VOC weight fraction =	0.9902

VOC content of hydrocarbon fraction only

VOC weight% =	99.0567
VOC weight fraction =	0.9906

Hydrogen Sulfide

H2S weight% =	0.0001
H2S weight fraction =	1.33E-06
H2S ppm_V =	4.00
H2S ppm_{WT}=	1.33

Benzene

Benzene content of total sample

Benzene weight% =	0.1787
Benzene weight fraction =	0.0018

Benzene content of hydrocarbon fraction only

Benzene weight% =	0.1787
Benzene weight fraction =	0.0018

Enter any notes here:

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Fugitives Emissions

EPN	F1
Name	Fugitives

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (as applicable for reductions from leak detection and repair programs).

C) The vapor VOC, benzene, and H_2S weight percents may be entered. The weight percents from the Analyses tab are displayed below.

D) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

E) This sheet has five parts to it. Part (1) is for Gas Service, (2) is for Heavy Oil Service, (3) is for Light Oil Service, (4) is for Water/Oil Service, and (5) is for a combination of all the results. Fill out all applicable yellow cells in parts (1)-(4) and the final results will be in part (5).

The five parts are set up in this arrangement:

(1)	(2)
(3)	(4)
(5)	

F) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below in part (5).

Gas Weight Percents From Analyses Tab:	
VOC wt %	23.9876
Benzene wt %	0.0352
H_2S wt %	0.0006

(1)

Gas

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
10	Valve	0.009920	0.0992	0.434496
0	Pump Seal	0.005290	0	0
25	Connector	0.000440	0.011	0.04818
25	Flange	0.000860	0.0215	0.09417
0	Open-ended Line	0.004410	0	0
1	Other	0.019400	0.0194	0.084972
		Total:	0.1511	0.661818

	VOC content (wt %)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves	22.7251	0.0334	0.0334	0.0000
Pump Seal	22.7251	0.0334	0.0334	0.0000
Connector	22.7251	0.0334	0.0334	0.0000
Flange	22.7251	0.0334	0.0334	0.0000
Open-ended Line	22.7251	0.0334	0.0334	0.0000
Other	22.7251	0.0334	0.0334	0.0000

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.02	0.10	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.01	0.00	0.00	0.00	0.00
Flange	0.00	0.02	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.02	0.00	0.00	0.00	0.00
Total:	0.03	0.15	0.00	0.00	0.00	0.00

Liquid Weight Percents From Analyses Tab:	
VOC wt %	99.0567
Benzene wt %	0.1787
H_2S wt %	0.0001

(2)

Heavy Oil

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
	Valve	0.0000185	0	0
	Pumps	0.0011300	0	0
	Connector	0.0000165	0	0
	Flange	0.00000086	0	0
	Open-ended Line	0.0003090	0	0
	Other	0.0000683	0	0
	Total:		0	0

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves				
Pump Seal				
Connector				
Flange				
Open-ended Line				
Other				

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.00	0.00	0.00	0.00	0.00
Flange	0.00	0.00	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00

Liquid Weight Percents From Analyses Tab:	
VOC wt %	99.0567
Benzene wt %	0.1787
H_2S wt %	0.0001

(3) **Light Oil**

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
10	Valve	0.005500	0.055	0.2409
0	Pump Seal	0.028660	0	0
25	Connector	0.000463	0.011575	0.0506985
25	Flange	0.000243	0.006075	0.0266085
0	Open-ended Line	0.003090	0	0
1	Other	0.016500	0.0165	0.07227
		Total:	0.08915	0.390477

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves	99.0229	0.1787	0.0001	0.0000
Pump Seal	99.0229	0.1787	0.0001	0.0000
Connector	99.0229	0.1787	0.0001	0.0000
Flange	99.0229	0.1787	0.0001	0.0000
Open-ended Line	99.0229	0.1787	0.0001	0.0000
Other	99.0229	0.1787	0.0001	0.0000

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.05	0.24	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.01	0.05	0.00	0.00	0.00	0.00
Flange	0.01	0.03	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.02	0.07	0.00	0.00	0.00	0.00
Total:	0.09	0.39	0.00	0.00	0.00	0.00

(4) **Water/Oil**

number	component	emission factor (lb/hr of TOC per component)	lb/hr	tpy
	Valve	0.000216	0	0
	Pump Seal	0.000052	0	0
	Connector	0.000243	0	0
	Flange	0.000006	0	0
	Open-ended Line	0.000550	0	0
	Other	0.030900	0	0
		Total:	0	0

	VOC content (wt%)	Benzene content (wt%)	H_2S content (wt%)	Control Efficiency (%)
Valves				
Pump Seal				
Connector				
Flange				
Open-ended Line				
Other				

	VOC Emissions		H_2S Emissions		Benzene Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seal	0.00	0.00	0.00	0.00	0.00	0.00
Connector	0.00	0.00	0.00	0.00	0.00	0.00
Flange	0.00	0.00	0.00	0.00	0.00	0.00
Open-ended Line	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00

(5)

Fugitive Total Emissions		
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	0.12	0.54
benzene	0.00	0.00
H_2S	0.00	0.00

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Notes:

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. Emission factors that are not based on the EPA document are from the TCEQ "Air Permit Technical Guidance for Chemical Source Equipment Leak Fugitives (Draft October 2000)

3. For fugitive calculations, VOC content should be VOC content of total hydrocarbons, not of total sample.

Enter any notes here:	

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Internal Combustion Engine Emissions

A) Enter information into the yellow boxes.

B) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

C) Make sure to select the correct *Emission Type* from the pull down menus below. A *VOC type* does not need to be selected here; see the note in the comment for more explanation.

Engine Emission Calculations

Note: The TCEQ prefers the following basis for calculating emissions (in order of preference):
1. Stack test data from the engine
2. Manufacturer's specification sheet and control specification sheet (if control used)
3. AP-42 emission factors

Site Location

County	
Region	
Existing or new source:	pick from list
Installation date:	

Discharge Parameters

Stack height (feet)	
Stack diameter (feet)	
Stage Temperature (°F)	
Exit Velocity (fps)	

Fuel Data

Fuel Type	pick from list
Fuel Consumption (BTU/bhp-hr)	
Heat Value (HHV)	
Heat Value (LHV)	
Sulfur Content (grains/100scf)	

Engine Data

EPN	
Name	
Manufacturer	
Model Number	
Serial Number	
Manufacture Date	
Last Rebuild Date	
Application	
Ignition/Injection Timing	pick from list
Horsepower:	0
Fuel consumption (Btu/hp-hr):	0
Hours of operation per year:	0
Engine Type:	pick from list

Method of Emission Control

	Yes/No
NSCR Catalyst	
SCR Catalyst	
JLCC Catalyst	
Parameter Adjustment	
Stratified Charge	
Other (Specify)	

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	
MACT Subpart ZZZZ	
30 TAC, Chapter 117	

Additional Required Information

1. Submit a copy of the engine manufacturer's site rating or general rating specification data.
2. Submit a typical fuel analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents.
3. Submit a description of the air/fuel ratio control system (manufactuer's information is acceptable).

SO_2 Mass Balance calculation for sour gas fuel:

Fuel Heat Value (Btu/SCF)	0.00	MW SO_2 =	64.06	grams/mole
Fuel H_2S content (mol%)	0.00	Ideal Gas Law	378.61	SCF/lb-mole
SO_2 produced (lb/hr) =	**0.00**			
SO_2 produced (tpy) =	**0.00**			

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
For emission factors in terms of lb/MMBtu
(Emission factor) * (Fuel Consumption) * (Horsepower) * (Conversion factor)
(lb/MMBtu) * (Btu/hp-hr) * (hp) * (1 MMBtu/1,000,000 Btu)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	**No**

To Determine Emissions for Air Permitting

		from AP-42:												
	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	**Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)**	**Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)**	**Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)**	appropriate AP-42 factor	emission factor used	units	**Uncontrolled lb/hr**	**Uncontrolled tpy**	**If present, enter the efficiency of any control device (as a %)**	**If present, enter the controlled emission factor (as g/hp-hr)**	control factor used	**lb/hr**	**tpy**
VOC	**0**	**0.12**	**0.118**	**0.0296**	0.0296	0.0296	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
NOx	**0**	**3.17**	**4.08**	**2.21**	2.21	2.21	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
CO	**0**	**0.386**	**0.317**	**3.72**	3.72	3.72	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
PM_{10}	**0**	**0.04831**	**0.0099871**	**0.01941**	0.01941	0.01941	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
$PM_{2.5}$	**0**	**0.04831**	**0.0099871**	**0.01941**	0.01941	0.01941	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
SO_2	**0**	**0.000588**	**0.000588**	**0.000588**	0.000588	0.000588	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
Formaldehyde	**0**	**0.0552**	**0.0528**	**0.0205**	0.0205	0.0205	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**
Benzene	**0**	**0.00194**	**0.000404**	**0.00158**	0.00158	0.00158	lb/MMBtu	**0.000**	**0.000**			0	**0.00**	**0.00**

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:	

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Heaters-Boilers Emissions

A) Enter information into the yellow boxes.

B) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

C) Make sure to select the correct *Emission Type* from the pull down menus below. A *VOC type* does not need to be selected here; see the note in the comment for more explanation.

Heater and Boiler Emission Calculations (fueled by natural gas)

EPN	H1
Name	Heater Treater
Heater/Boiler rating (MMBtu/hr):	1
Rating above is **(select from list)**:	below 100 MMBtu/hr, uncontrolled
Operating hours/year:	8760
Fuel Heat Value (Btu/SCF):	1211

(assume uncontrolled, unless specifically stated otherwise)

Pollutant	Emission Factor (lb/MMCF)	lb/hr	tpy
VOC	5.5	0.005	0.020
NOx	100	0.083	0.362
CO	84	0.069	0.304
PM_{10}	7.6	0.006	0.027
$PM_{2.5}$	5.7	0.005	0.021
SO_2	0.6	0.001	0.002

If the heater/boiler is fueled by Sour Gas, cannot use emission factors above to calculate SO_2 emissions, must use SO_2 mass balance:

SO_2 Mass Balance calculation:	
Fuel H_2S content (mol %) =	**0.0004**
SO_2 produced (lb/hr) =	**0.0006**
SO_2 produced (tpy) =	**0.0024**

assumptions:

SO2 MW	64.06	lb/lb-mole
Ideal Gas Law	378.61	SCF/lb-mole

Emission Type: (pick from list)

Steady State (continuous)

Enter any notes here:	

Next Tab

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Lab Gas Oil Ratio (GOR) Method

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) The table below can be used to calculate the flash gas molecular weight and the component weight percents if needed.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

GOR [FOR ESTIMATING FLASH LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Flash Initial Press. (psig)	Flash Initial Temp. (°F)	Flash Final Press. (psig)	Flash Final Temp. (°F)	GOR (scf of flash gas/bbl of oil/cond. produced)	Barrels of Oil or Condensate per day (bbl/day)	Flash Gas Molecular Weight	Flash Gas VOC wt%	Flash Gas Benzene wt%	Flash Gas H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
T1	Crude Oil Tank	54	81	0	70	19.1	50	34.771666	64.6458	0.1303	0.0004	0	(A) uncontrolled			2.36	10.32	0.00	0.02	0.00	0.00
T2	Crude Oil Tank	54	81	0	70	19.1	50	34.771666	64.6458	0.1303	0.0004	0	(A) uncontrolled			2.36	10.32	0.00	0.02	0.00	0.00
															Totals:	**4.71**	**20.65**	**0.01**	**0.04**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

GOR Calculator

This table can be used to calculate the flash gas molecular weight and the component weight percents if needed, if the flash gas mole percents are entered. It can also calculate the overall VOC, benzene, and H2S flash emissions if the GOR and the oil/condensate throughput are entered.

Gas Oil Ratio:	19.1	in standard cubic feet of flash gas per barrel (SCF/bbl) of oil/condensate produced
Barrels of Oil or Condensate per day:	100	

Flash Gas Speciation:					Flash Gas MW =	34.771666
Component	**mole %**	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	**weight %**		
hydrogen	0.0000	2.01588	0	0.0000	Total gas emitted:	
helium	0.0000	4.0026	0	0.0000	lb/hr:	7.2921412
nitrogen	0.7970	28.01340	22	0.6421	tpy:	31.939579
CO2	0.7520	44.00950	33	0.9518		
H2S	0.0004	34.08188	0	0.0004	VOC wt% =	64.6458
methane (C1)	37.8800	16.04246	608	17.4765		
ethane (C2)	18.8300	30.06904	566	16.2834	VOC, lb/hr:	4.7140642
propane (C3)	23.5040	44.09562	1036	29.8066	VOC, tpy:	20.647601
butanes (C4)	11.2060	58.12220	651	18.7313		
pentanes (C5)	4.1960	72.14878	303	8.7064	Benzene wt% =	0.1303
benzene	0.0580	78.110000	5	0.1303		
other hexanes (C6)	1.9240	86.18000	166	4.7685	Benzene, lb/hr:	0.0095009
toluene	0.0220	92.140000	2	0.0583	Benzene, tpy:	0.0416139
other heptanes (C7)	0.7140	100.20000	72	2.0575		
ethylbenzene	0.0010	106.170000	0	0.0031	H_2S wt% =	0.0004
xylenes (o, m, p)	0.0000	106.170000	0	0.0000		
other octanes (C8)	0.1090	114.23000	12	0.3581	H_2S, lb/hr:	2.859E-05
nonanes (C9)	0.0070	128.26000	1	0.0258	H_2S, tpy:	0.0001252
decanes plus (C10+)	0.0000		0	0.0000		
Totals:	100.0004	34.77	3477	100.00		

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Tanks 4.0

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) Make sure to answer the control device question.

G) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Tanks 4.0 Software TANKS 4.0 SOFTWARE [FOR ESTIMATING WORKING AND BREATHING LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Throughput (gal/year)	Turnovers per year	Mixture/Component	Basis for VP Calculations	Vapor MW	Total Uncontrolled Emissions (lb/hr)	Total Uncontrolled Emissions (ton/yr)	Tank Vapor VOC wt%	Tank Vapor Benzene wt%	Tank Vapor H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
T1	Crude Oil Tank	766,500	37.75	Crude Oil - RVP 4.76	Lab Analysis	50	0.2046	0.8961	99.02289	0.178655	0.00013	0	(A) uncontrolled			0.20	0.89	0.00	0.00	0.00	0.00
T2	Crude Oil Tank	766,500	37.75	Crude Oil - RVP 4.76	Lab Analysis	50	0.2046	0.8961	99.02289	0.178655	0.00013	0	(A) uncontrolled			0.20	0.89	0.00	0.00	0.00	0.00
															Totals:	**0.41**	**1.77**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Lab Gas Oil Ratio (GOR) Method

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) The table below can be used to calculate the flash gas molecular weight and the component weight percents if needed.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

GOR [FOR ESTIMATING FLASH LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Flash Initial Press. (psig)	Flash Initial Temp. (°F)	Flash Final Press. (psig)	Flash Final Temp. (°F)	GOR (scf of flash gas/bbl of oil/cond. produced)	Barrels of Oil or Condensate per day (bbl/day)	Flash Gas Molecular Weight	Flash Gas VOC wt%	Flash Gas Benzene wt%	Flash Gas H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
WT1	Produced Water Tank	54	81	0	70	19.1	100	34.771666	64.6458	0.1303	0.0004	99	(A) uncontrolled			0.05	0.21	0.00	0.00	0.00	0.00
WT2	Produced Water Tank	54	81	0	70	19.1	100	34.771666	64.6458	0.1303	0.0004	99	(A) uncontrolled			0.05	0.21	0.00	0.00	0.00	0.00
															Totals:	**0.09**	**0.41**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

GOR Calculator

This table can be used to calculate the flash gas molecular weight and the component weight percents if needed, if the flash gas mole percents are entered. It can also calculate the overall VOC, benzene, and H2S flash emissions if the GOR and the oil/condensate throughput are entered.

Gas Oil Ratio:	19.1	in standard cubic feet of flash gas per barrel (SCF/bbl) of oil/condensate produced
Barrels of Oil or Condensate per day:	200	

Flash Gas Speciation:					Flash Gas MW =	34.771666
Component	**mole %**	Molecular Weight (grams/mole, lb/lb-mol)	grams per 100 moles of gas	**weight %**		
hydrogen	0.0000	2.01588	0	0.0000	Total gas emitted:	
helium	0.0000	4.0026	0	0.0000	lb/hr:	14.584282
nitrogen	0.7970	28.01340	22	0.6421	tpy:	63.879157
CO2	0.7520	44.00950	33	0.9518		
H2S	0.0004	34.08188	0	0.0004	VOC wt% =	64.6458
methane (C1)	37.8800	16.04246	608	17.4765		
ethane (C2)	18.8300	30.06904	566	16.2834	VOC, lb/hr:	9.4281285
propane (C3)	23.5040	44.09562	1036	29.8066	VOC, tpy:	41.295203
butanes (C4)	11.2060	58.12220	651	18.7313		
pentanes (C5)	4.1960	72.14878	303	8.7064	Benzene wt% =	0.1303
benzene	0.0580	78.110000	5	0.1303		
other hexanes (C6)	1.9240	86.18000	166	4.7685	Benzene, lb/hr:	0.0190018
toluene	0.0220	92.140000	2	0.0583	Benzene, tpy:	0.0832278
other heptanes (C7)	0.7140	100.20000	72	2.0575		
ethylbenzene	0.0010	106.170000	0	0.0031	H_2S wt% =	0.0004
xylenes (o, m, p)	0.0000	106.170000	0	0.0000		
other octanes (C8)	0.1090	114.23000	12	0.3581	H_2S, lb/hr:	5.718E-05
nonanes (C9)	0.0070	128.26000	1	0.0258	H_2S, tpy:	0.0002504
decanes plus (C10+)			0	0.0000		
Totals:	100.0004	34.77	3477	100.00		

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Tank Emissions - Tanks 4.0

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) A reduction for produced water tank emissions calculated as oil/condensate may be entered.

D) The tank vapor VOC, benzene, and H_2S weight percents may be entered.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) Make sure to answer the control device question.

G) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Tanks 4.0 Software TANKS 4.0 SOFTWARE [FOR ESTIMATING WORKING AND BREATHING LOSSES FROM STORAGE TANKS]

EPN	Tank Identifier	Throughput (gal/year)	Turnovers per year	Mixture/Component	Basis for VP Calculations	Vapor MW	Total Uncontrolled Emissions (lb/hr)	Total Uncontrolled Emissions (ton/yr)	Tank Vapor VOC wt%	Tank Vapor Benzene wt%	Tank Vapor H_2S wt%	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)	Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	VOC Control Efficiency (%)	H_2S Control Efficiency (%)	VOC Results (lb/hr)	VOC Results (tpy)	Benzene Results (lb/hr)	Benzene Results (tpy)	H_2S Results (lb/hr)	H_2S Results (tpy)
WT1	Produced Water Tank	1,533,000	75.5	Crude Oil RVP 4.76	Lab Analysis	50	0.232	1.016	99.02289	0.178655	0.00013	99	(A) uncontrolled			0.00	0.01	0.00	0.00	0.00	0.00
WT2	Produced Water Tank	1,533,000	75.5	Crude Oil RVP 4.76	Lab Analysis	50	0.232	1.016	99.02289	0.178655	0.00013	99	(A) uncontrolled			0.00	0.01	0.00	0.00	0.00	0.00
															Totals:	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Loading Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control and collection efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered.

D) There are two separate areas below to calculate hourly and annual loading emissions. Then underneath, there is a table summarizing the hourly and annual loading emissions.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) If vapor balancing is being performed and the tank is not being controlled, contact TCEQ about the appropriate tank working loss calculation.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

EPN	L1
Identifier	Crude Oil Loading

Truck Hourly Loading Emission Calculations

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

S =	**0.60**	**Saturation Factor**
P =	**4.09**	**True vapor pressure of liquid loaded (psia)**
M =	**50.00**	**Molecular Weight of Vapors (lb/lb-mole)**
T =	**541.67**	**Temperature of bulk liquid loaded (in degrees Rankine)**
Hourly Loading Rate	**8000**	**Gallons Loaded per Hour**
L_L =	**2.82**	**Loading Loss (lb VOC released/1000 gal liquid loaded)**
	22.58	**VOC Uncontrolled Emissions (lb/hr)**

Are loading vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled

Vapor Weight Percents

VOC	**99.02**	**Vapor VOC wt%**
benzene	**0.18**	**Vapor Benzene wt%**
H_2S	**0.00**	**Vapor H_2S wt%**

Produced Water Reduction

	0.00	**Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)**

Uncontrolled Emissions

VOC	**22.36**	**Emissions Uncontrolled VOC (lb/hr)**
benzene	**0.04**	**Emissions Uncontrolled Benzene (lb/hr)**
H_2S	**0.00**	**Emissions Uncontrolled H_2S (lb/hr)**

Control Efficiency

VOC	**0.00**	**VOC Control Efficiency (%)**
H_2S	**0.00**	**H_2S Control Efficiency (%)**

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	**0.00**	**VOC Results (lb/hr)**
benzene	**0.00**	**Benzene Results (lb/hr)**
H_2S	**0.00**	**H_2S Results (lb/hr)**

Enter temperature in Fahrenheit °F):	**Temperature in Rankine (°R):**
82	541.67

Enter Barrels of Liquid	**Gallons of liquid:**
100	4200

Enter gallons per year	**Barrels per day:**
1533000	100

Enter any notes here:

Truck Annual Loading Emission Calculations

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

S =	0.60	= Saturation Factor
P =	3.56	= True vapor pressure of liquid loaded (psia)
M =	50.00	= Molecular Weight of Vapors (lb/lb-mole)
T =	534.17	= Temperature of bulk liquid loaded (in degrees Rankine)
Annual Loading Rate	1533000	= Gallons Loaded per Year
L_L =	2.49	Loading Loss (lb VOC released/1000 gal liquid loaded)
	1.91	VOC Uncontrolled Emissions (ton/yr)

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	0.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	1.89	Emissions Uncontrolled VOC (ton/yr)
benzene	0.00	Emissions Uncontrolled Benzene (ton/yr)
H_2S	0.00	Emissions Uncontrolled H_2S (ton/yr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (ton/yr)
benzene	0.00	Benzene Results (ton/yr)
H_2S	0.00	H_2S Results (ton/yr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
74.5	534.17

Enter Barrels of Liquid	Gallons of liquid:
100	4200

Enter gallons per year	Barrels per day:
1533000	100

Enter any notes here:

Loading Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	22.36	1.89
benzene	0.04	0.00
H_2S	0.00	0.00

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Low Pressure Periodic

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Loading Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control and collection efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered.

D) There are two separate areas below to calculate hourly and annual loading emissions. Then underneath, there is a table summarizing the hourly and annual loading emissions.

E) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

F) If vapor balancing is being performed and the tank is not being controlled, contact TCEQ about the appropriate tank working loss calculation.

G) Make sure to answer the control device question.

H) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

EPN	L2
Identifier	Produced Water Loading

Truck Hourly Loading Emission Calculations

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

S =	0.60	Saturation Factor
P =	4.09	True vapor pressure of liquid loaded (psia)
M =	50.00	Molecular Weight of Vapors (lb/lb-mole)
T =	541.67	Temperature of bulk liquid loaded (in degrees Rankine)
Hourly Loading Rate	8000	Gallons Loaded per Hour
L_L =	2.82	Loading Loss (lb VOC released/1000 gal liquid loaded)
	22.58	VOC Uncontrolled Emissions (lb/hr)

Are loading vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	99.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	0.22	Emissions Uncontrolled VOC (lb/hr)
benzene	0.00	Emissions Uncontrolled Benzene (lb/hr)
H_2S	0.00	Emissions Uncontrolled H_2S (lb/hr)

Collection Efficiency

	0.00	Collection Efficiency (%)

Vapors Uncaptured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Vapors Captured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (lb/hr)
benzene	0.00	Benzene Results (lb/hr)
H_2S	0.00	H_2S Results (lb/hr)

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
82	541.67

Enter Barrels of Liquid	Gallons of liquid:
200	8400

Enter gallons per year	Barrels per day:
3066000	200

Enter any notes here:

Truck Annual Loading Emission Calculations

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

S =	0.60	= Saturation Factor
P =	3.56	= True vapor pressure of liquid loaded (psia)
M =	50.00	= Molecular Weight of Vapors (lb/lb-mole)
T =	534.17	= Temperature of bulk liquid loaded (in degrees Rankine)
Annual Loading Rate	3066000	= Gallons Loaded per Year
L_L =	2.49	Loading Loss (lb VOC released/1000 gal liquid loaded)
	3.82	VOC Uncontrolled Emissions (ton/yr)

Vapor Weight Percents

VOC	99.02	Vapor VOC wt%
benzene	0.18	Vapor Benzene wt%
H_2S	0.00	Vapor H_2S wt%

Produced Water Reduction

	99.00	Percent Reduction for Produced Water Tank Calc. as Oil/Cond. (%)

Uncontrolled Emissions

VOC	0.04	Emissions Uncontrolled VOC (ton/yr)
benzene	0.00	Emissions Uncontrolled Benzene (ton/yr)
H_2S	0.00	Emissions Uncontrolled H_2S (ton/yr)

Collection Efficiency

	0.00	Collection Efficiency (%)

Vapors Uncaptured by Control Device

VOC	0.00	VOC Uncaptured Vapors (ton/yr)
benzene	0.00	benzene Uncaptured Vapors (ton/yr)
H_2S	0.00	H_2S Uncaptured Vapors (ton/yr)

Vapors Captured by Control Device

VOC	0.00	VOC Uncaptured Vapors (lb/hr)
benzene	0.00	benzene Uncaptured Vapors (lb/hr)
H_2S	0.00	H_2S Uncaptured Vapors (lb/hr)

Control Efficiency

VOC	0.00	VOC Control Efficiency (%)
H_2S	0.00	H_2S Control Efficiency (%)

Vapors Uncontrolled by Control Device (Controlled Emissions)

VOC	0.00	VOC Results (ton/yr)
benzene	0.00	Benzene Results (ton/yr)
H_2S	0.00	H_2S Results (ton/yr)

Loading Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC		
benzene		
H_2S		

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Low Pressure Periodic

Enter temperature in Fahrenheit °F):	Temperature in Rankine (°R):
74.5	534.17

Enter Barrels of Liquid	Gallons of liquid:
200	8400

Enter gallons per year	Barrels per day:
3066000	200

Enter any notes here:

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Flare / Vapor Combustor

A) Enter information into the yellow boxes.

B) See notes/instructions incuded below.

C) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

D) Make sure to select the correct *Emission Type* from the pull down menu below.

General Information	
Unit Name:	Process Vent
Unit EPN:	V1
Which is utilized for this device?	automatic ignition system

NOx and CO Emission Factors		
For Waste Gas:		
What kind of device is this? Pick from list.	non-steam assisted flare with high Btu stream flared	
NOx	0.138	lb/MMBtu
CO	0.2755	lb/MMBtu
For Pilot Stream(s):		
If there is one or more pilot streams, are they made up of pipeline quality natural gas, propane, or field gas? Pick from drop down list to the right and follow instructions below.		
NOx	0	
CO	0	
Since there is no pilot, you do not need to enter anything in the column for Stream No. 1 below.		
For Added Fuel Stream(s):		
If there is one or more added fuel streams, are they made up of pipeline quality natural gas, propane, or field gas? Pick from drop down list to the right and follow instructions below.		
NOx	0	
CO	0	
Since there is no added fuel stream, you do not need to enter anything in the column for Stream No. 2 below.		

Destruction Efficiency	
VOC percent destruction efficiency (%)	0
propane percent destruction efficiency (%) *OPTIONAL*	0
H_2S percent destruction efficiency (%)	0

Emission Factors

Emission Factors from AP-42 Table 1.4-1 and 1.4-2 (lb/MMscf)

NOx	100	
CO	84	
PM10, PM2.5	7.6	5.7

Emission Factors from TCEQ Guidance (lb/MMBtu)

Non-steam assisted, high Btu		Steam assisted, high Btu	
NOx	0.138	NOx	0.0485
CO	0.2755	CO	0.3503
Non-steam assisted, low Btu		**Steam assisted, low Btu**	
NOx	0.0641	NOx	0.068
CO	0.5496	CO	0.3465

Emission Factors from AP-42 Table 1.4-2 and 1.4-3 (lb/MMscf)

SO_2	0.6
VOC	5.5
benzene	2.10E-03

Constants

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

Stream Information

Each numbered column represents a stream. The first two columns are always for pilot and added fuel streams. The next ten columns, Columns 3-12, are for any streams sent to the control device, such as "tank 1", "amine regenerator vent", etc. Under the column numbers, these columns should be labeled with the stream name. Information only needs to be entered for the number of streams sent to the flare. If for example, there are only two process/waste streams routed to the flare, only colums 3 and 4 need to be filled out, and potentially 1 and 2 if there are also any pilot or added fuel streams.

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name (Enter Names of Each Stream Here)	pilot(s)	added fuel stream(s)	Produced Gas										-
Maximum Expected Hourly Volumtric Flow Rate of Stream (scf/hr)	0	0	200000										200000
Amount of Time Stream Routed to Flare/Vapor Combustor (hrs/yr)	0	0	1400										-
Maximum Expected Annual Volumtric Flow Rate of Stream (scf/yr)	0	0	280000000										280000000
Heat Value of Stream - from program results or gas analysis (Btu/scf)	0	0	0										-
propane weight percent of total stream (%) *OPTIONAL*	0	0	0										-
VOC weight percent of total stream (%) *OPTIONAL*	0	0	22.7251083										-

It is suggested that you link these cells below to the cells in the other tabs of this spreadsheet which contain the calculated uncontrolled emissions for the stream.

Mass Flow Rates of the Vapors Sent to this Control Device, Hourly Basis (lb/hr)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
H2S	-	-	2.95E-03										0.00295
Crude or Condensate VOC	-	-	103.588618										103.588618
Natural Gas VOC	-	-	0										0
Total VOC	-	-	103.588618										103.588618
benzene	-	-	0.15212039										0.15212039

Mass Flow Rates of the Vapors Sent to this Control Device, Annual Basis (tpy)

H2S	-	-	2.06E-03										0.002065
Crude or Condensate VOC	-	-	72.5120329										72.5120329
Natural Gas VOC	-	-	0										0
Total VOC	-	-	72.5120329										72.5120329
benzene	-	-	0.10648428										0.10648428

Controlled Emissions

Hourly (lb/hr)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
NOx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
CO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
PM2.5	0.000	0.000	1.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.14**
PM10	0.000	0.000	1.520	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.52**
H2S	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
SO2	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.01**
Crude or Condensate VOC	-	-	103.589	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**103.59**
Natural Gas VOC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Total VOC	0.000	0.000	103.589	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**103.59**
benzene	0.000	0.000	0.152	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.15**

Annual (tpy)

Stream Sent to Flare/Vapor Combustor No.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Stream Sent to Flare/Vapor Combustor Name	pilot(s)	added fuel stream(s)	Produced Gas										-
NOx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
CO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
PM2.5	0.000	0.000	0.798	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.80**
PM10	0.000	0.000	1.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.06**
H2S	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
SO2	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Crude or Condensate VOC	-	-	72.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**72.51**
Natural Gas VOC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
Total VOC	0.000	0.000	72.512	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**72.51**
benzene	0.000	0.000	0.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.11**

Flare/Vapor Combustor Total Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Total Crude Oil or Condensate VOC	103.59	72.51
Total Natural Gas VOC	0.00	0.00
Total VOC	103.59	72.51
NOx	0.00	0.00
CO	0.00	0.00
PM2.5	1.14	0.80
PM10	1.52	1.06
H2S	0.00	0.00
SO2	0.01	0.00
benzene	0.15	0.11

Emission Type: (pick from list)
Steady State (continuous)

Calculations

Scf/hr = (Uncontrolled (lb/hr) / Molecular Weight (lb/lb-mole)) * 379 (ft3/lb-mole)

VOC = Uncontrooled (lb/hr) * ((100-DRE%)/100)
NOx = (Flow rate = scf/hr) * (Heat content = Btu/scf) * (Emission factor = lb/MM Btu)*(1MM Btu / 1,000,000 Btu)
CO = (Flow rate = scf/hr)*(Heat content = Btu/scf) * (Emission factor = lb/MM Btu) * (1MM Btu/1,000,000 Btu)

PBR/Standard Permit Compliance	
Minimum Heat Value Requirement	
Total Stream Heat Value (weighted with hourly volumetric flow rates, Btu/scf)	0
Total Stream Heat Value (weighted with annual volumetric flow rates, Btu/scf)	0
Maximum Flare/Burner Tip Velocity Requirement	
How many flare/burner tips does the unit have?	
What is the diameter of the flare/burner tip(s) (in)?	
Total Flare/Burner Tip Surface Area (ft^2)?	0
What is the flare/burner tip surface area that the hourly worst case (highest flow) stream passes through (ft^2)?	
Stream Velocity Through Burner Tip (based on hourly worst case, ft/sec)	0.00

Enter any notes here as needed. You must address the following: (1) How is this control efficiency justified? Please be specific. (2) Explain what happens when this unit is down. Include how long the unit could be down for.

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Emissions Summary

The table below is a summary of all emission points for this registration. It is separated into *Project Emissions* and *Other Site Wide Emissions*.

The table has separate totals for *Project Total Emission Rates* and *Site Wide Total Emission Rates*.

On the table, for each emission source, there is a space for three emission rates on a pound per hour (lb//hr) basis and one emission rate on a ton per year (tpy) basis. Periodic emissions are authorized to exceed the steady state limits of the rule (150, 300, and 600 hours per year for PBR Level 1, PBR Level 2, and the Standard Permit, respectively), in which case the periodic emission limits must be met. Note that periodically emitting activities, such as loading and MSS activities, are not limited to occurring less than these time limits. It is only for that amount of time that the emissions can exceed the normal steady state limits.

Update

Any formaldehyde emissions must be included as part of VOC emissions.

Before pressing the *Update* button, make sure you have selected the correct VOC Type and Emission Type from the pull down menus in each emission calculation tab.

Emissions Summary

Project Emissions (This needs to include all emission points being added for the first time to the registration or emission points with emissions that are changing from previously registered emissions. It does NOT include emission points for which the emissions have not changed and have previously been registered (unless the emission point emissions are chosen to be re-calculated as part of this project); those emissions will be entered below in the Other Registration Emissions section of this table.)

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates			
			steady state lbs/hr	< 30 psig periodic lbs/hr	≥ 30 psig periodic lbs/hr	TPY (4)
F1	Fugitives	Total VOC	0.1226			0.5371
		Total Crude Oil or Condensate VOC	0.1226			0.5371
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0002			0.0009
		Formaldehyde	0.0000			0.0000
		H_2S	0.0001			0.0002
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.0000			0.0000
		Total Crude Oil or Condensate VOC	0.0000			0.0000
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000

H1	Heater Treater	**Total VOC**	0.0045			0.0199
		Total Crude Oil or Condensate VOC	0.0000			0.0000
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0006			0.0024
		NO_X	0.0826			0.3617
		CO	0.0694			0.3038
		PM_{10}	0.0063			0.0275
		$PM_{2.5}$	0.0047			0.0206
T1	Crude Oil Tank	**Total VOC**	2.3570			10.3238
		Total Crude Oil or Condensate VOC	2.3570			10.3238
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0048			0.0208
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
T2	Crude Oil Tank	**Total VOC**	2.3570			10.3238
		Total Crude Oil or Condensate VOC	2.3570			10.3238
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0048			0.0208
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
T1	Crude Oil Tank	**Total VOC**	0.2026			0.8873
		Total Crude Oil or Condensate VOC	0.2026			0.8873
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0004			0.0016
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.2026			0.8873

T2	Crude Oil Tank	**Total Crude Oil or Condensate VOC**	0.2026			0.8873
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0004			0.0016
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT1	Produced Water Tank	**Total VOC**	0.0471			0.2065
		Total Crude Oil or Condensate VOC	0.0471			0.2065
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0001			0.0004
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT2	Produced Water Tank	**Total VOC**	0.0471			0.2065
		Total Crude Oil or Condensate VOC	0.0471			0.2065
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0001			0.0004
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0001
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
WT1	Produced Water Tank	**Total VOC**	0.0023			0.0101
		Total Crude Oil or Condensate VOC	0.0023			0.0101
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
		Total VOC	0.0023			0.0101

WT2	Produced Water Tank	**Total Crude Oil or Condensate VOC**	0.0023			0.0101
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.0000			0.0000
		Formaldehyde	0.0000			0.0000
		H_2S	0.0000			0.0000
		SO_2	0.0000			0.0000
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000
L1	Crude Oil Loading	**Total VOC**		22.3591		1.8909
		Total Crude Oil or Condensate VOC		22.3591		1.8909
		Total Natural Gas VOC		0.0000		0.0000
		Benzene		0.0403		0.0034
		Formaldehyde		0.0000		0.0000
		H_2S		0.0000		0.0000
		SO_2		0.0000		0.0000
		NO_X		0.0000		0.0000
		CO		0.0000		0.0000
		PM_{10}		0.0000		0.0000
		$PM_{2.5}$		0.0000		0.0000
L2	Produced Water Loading	**Total VOC**		0.0000		0.0000
		Total Crude Oil or Condensate VOC		0.0000		0.0000
		Total Natural Gas VOC		0.0000		0.0000
		Benzene		0.0000		0.0000
		Formaldehyde		0.0000		0.0000
		H_2S		0.0000		0.0000
		SO_2		0.0000		0.0000
		NO_X		0.0000		0.0000
		CO		0.0000		0.0000
		PM_{10}		0.0000		0.0000
		$PM_{2.5}$		0.0000		0.0000
V1	Process Vent	**Total VOC**	103.5886			72.5120
		Total Crude Oil or Condensate VOC	103.5886			72.5120
		Total Natural Gas VOC	0.0000			0.0000
		Benzene	0.1521			0.1065
		Formaldehyde	0.0000			0.0000
		H_2S	0.0029			0.0021
		SO_2	0.0055			0.0039
		NO_X	0.0000			0.0000
		CO	0.0000			0.0000
		PM_{10}	0.0000			0.0000
		$PM_{2.5}$	0.0000			0.0000

Project Total Emission Rates (Note that these periodic totals are NOT simply the sum of the periodic emission rates from each emission point. The periodic emission limits in the rule need to be compared to the sum of steady state and periodic emissions, that is the worst case combination of continuously and periodically emitting sources that could occur in any one hour. The periodic emission rates shown here are the sum of all steady state and periodic emissions in the project. If the worst case combination of continuously and periodically emitting sources is less than this, then please input the values in this table to the right. **Please explain below which emission points are included in this worst case combination.**)	**Air Contaminant Name (3)**	**Emission Rates**			
		steady state lbs/hr	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY (4)**
	Total VOC	108.93	131.29	131.29	97.82
	Total Crude Oil or Condensate VOC	108.93	131.29	131.29	97.80
	Total Natural Gas VOC	0.00	0.00	0.00	0.00
	Benzene	0.16	0.20	0.20	0.16
	Formaldehyde	0.00	0.00	0.00	0.00
	H_2S	0.00	0.00	0.00	0.00
	SO_2	0.01	0.01	0.01	0.01
	NO_X	0.08	0.08	0.08	0.36
	CO	0.07	0.07	0.07	0.30
	PM_{10}	0.01	0.01	0.01	0.03
	$PM_{2.5}$	0.00	0.00	0.00	0.02
If the automated formulas for the project emission totals (which assume that it is possible for all steady state and periodic emissions in the project to occur in the same hour) have been overwritten, explain any changes made and list the project emission points that occur in the realistic worst case hour. (Leave this blank or put NA if none of the formulas have been overwritten.)					

Other Site Wide Emissions (This needs to include any other emission points not included in the Project Emissions Summary but are associated with the site. This should be all the operationally dependent units that are within 1/4 mile of each other and are also owned/operated by the same company and located on contiguous or adjacent property. It is possible that nothing needs to be entered here.)

There are no other site wide emission points other than project emission points.

Site Wide Total Emission Rates (Note that these periodic totals are NOT simply the sum of the periodic emission rates from each emission point. The periodic emission limits in the rule need to be compared to the sum of steady state and periodic emissions, that is the worst case combination of continuously and periodically emitting sources that could occur in any one hour. The periodic emission rates shown here are the sum of all steady state and periodic emissions in the registration. If the worst case combination of continuously and periodically emitting sources is less than this, then please input the values in this table to the right. **Please explain below which emission points are included in this worst case combination.**)	**Air Contaminant Name (3)**	**steady state lbs/hr**	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY (4)**
	Total VOC	108.93	131.29	131.29	97.82
	Total Crude Oil or Condensate VOC	108.93	131.29	131.29	97.80
	Total Natural Gas VOC	0.00	0.00	0.00	0.00
	Benzene	0.16	0.20	0.20	0.16
	Formaldehyde	0.00	0.00	0.00	0.00
	H_2S	0.00	0.00	0.00	0.00
	SO_2	0.01	0.01	0.01	0.01
	NO_X	0.08	0.08	0.08	0.36
	CO	0.07	0.07	0.07	0.30
	PM_{10}	0.01	0.01	0.01	0.03
	$PM_{2.5}$	0.00	0.00	0.00	0.02
If the automated formulas for the registration emission totals (which assume that it is possible for all steady state and periodic emissions in the registration to occur in the same hour) have been overwritten, explain any changes made and list the registration emission points that occur in the realistic worst case hour. (Leave this blank or put NA if none of the formulas have been overwritten.)					
Based on the Site Wide Total Emission Rates, this authorization falls under:				**Standard Permit**	

Enter any notes here:	*** No PM emissions included for process vent emissions. ** Note that facility is located > 1.0 mile from the any receptors or property line so no impacts evaluation is required.**

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.

(2) Specific point source name. For fugitive sources, use area name or fugitive source name.

(3)
- VOC — volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
- H_2S — hydrogen sulfide
- SO_2 — sulfur dioxide
- NO_X — total oxides of nitrogen
- CO — carbon monoxide
- PM_{10} — total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$
- $PM_{2.5}$ — particulate matter equal to or less than 2.5 microns in diameter

(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.

(5) If emissions from a source are:

(A) uncontrolled, then the uncontrolled emissions are reported in this table as being emitted from the source.

(B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU), then the controlled emissions are reported on this table as being emitted from the control device.

(C) controlled by another type of control device, then the controlled emissions are reported on this table for the source (even though emissions are actually being emitted at the control device).

(6) For controlled tank, glycol/amine flash tank and regenerator, and MSS emissions, it is assumed that all vapors make it to the control device (100% collection efficiency). For controlled loading emissions, a 100% collection efficiency is not assumed.

(7) A VRU itself is not actually considered an emission point; however, this table associates unrecovered (uncontrolled) emissions from sources controlled by a VRU at the VRU.

Major Source determination

Major Source determination: A site is required to obtain an operating permit if it is considered to be a major source (per 30 TAC Section 122.10). A site's potential to emit is an important factor to determine if the site is a major source and is thus required to apply and obtain an FOP.

Company Name	EP Energy E&P Company LP
Site Name	University Lands 39-11-1H Facility
County	Other

Annual Site Wide Emission Rates

Air Contaminant Name (3)	TPY (4)
Total VOC	97.82
Benzene	0.16
Formaldehyde	0.00
SO_2	0.01
NO_X	0.36
CO	0.30
PM_{10}	0.03
$PM_{2.5}$	0.02

Major Source Determination

Air Contaminant Name (3)	Major Source determination
Total VOC	**NA**
Benzene	**NA**
Formaldehyde	**NA**
SO_2	**NA**
NO_X	**NA**
CO	**NA**
PM_{10}	**NA**
$PM_{2.5}$	**NA**

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Authorization Level Determination

The level of authorization is determined by comparing the Registration Total Emission Rates (as shown on the previous tab) to the emission limits of the different authorization levels.

This table is an expanded explanation of how the authorization level shown on the Emissions Summary tab was determined. The table shows which authorization level each compound's emissions fall into, and then at the bottom of the chart it shows which authorization level the entire authorization falls under.

The possible authorization levels are:

PBR Level 1
PBR Level 2
Standard Permit
NSR Case-by-case Permit

	Based on the Registration Total Emission Rates (on the previous tab), what Level of Authorization Does Each Emission Rate Fall Into?			
Air Contaminant Name	**Emission Rates**			
	steady state lbs/hr	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY**
Total VOC	NA, no limit	NA, no limit	NA, no limit	Standard Permit
Total Crude Oil or Condensate VOC	Standard Permit	PBR Level 1	PBR Level 1	Standard Permit
Total Natural Gas VOC	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
Benzene	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
Formaldehyde	NA, no limit	NA, no limit	NA, no limit	PBR Level 1
H_2S	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
SO_2	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
NO_X	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
CO	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
PM_{10}	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
$PM_{2.5}$	PBR Level 1	PBR Level 1	PBR Level 1	PBR Level 1
	What Level of Authorization Applies to this Registration? (If any of the registration emissions are equal to or greater than the limits of a level, then the whole registration falls into that level above.)			
	Standard Permit			

EP Energy E&P Company LP
University Lands 39-11-1H Facility

Is a Full Impacts Review Required?

and NO_2. A full impacts review involves showing protection of public health and welfare and compliance with applicable ambient air standards (state and federal) on a short term and long term basis.

A full impacts review is not required for a certain compound under these certain circumstances:

> **if there is no receptor (to be affected by benzene emissions) or property line (where compliance with NO_2, SO_2, and H_2S ambient air quality standards is required) within a certain distance of a registration (that is if there is no receptor or property line within a certain distance of any emitting source in the registration), or**
>
> **if the net project emission increases of that compound are very small.**

Based on these circumstances, the worksheet below determines whether or not a full impacts review is required for any of the four compounds (benzene, H_2S, SO_2, and NO_2).

If any of (1)-(3) below shows that a full impacts review is not required for a compound, then under (4) it will show that no further impacts review needs to be done and it will explain that "you are done" for that compound. If all of (1)-(3) show that a full impacts review is required, then (4) will explain that one of the three methods for doing a full impacts review (screening modeling, dispersion modeling, or the modeling tables from the rule) must be used.

If the modeling tables from the rule are used, then the spreadsheet tabs labeled for benzene, H_2S, SO_2, and NO_2 should be used. These tabs provide a way to use the modeling tables and perform the necessary calculations to show whether the impacts review is passed.

(1) **Based on receptor and property line distances, is a full impacts review required for any air contaminant? (Is there a receptor or property line within the specified distance of the registration? The distances are 1/4 mile for PBR Level 1, 1/2 mile for PBR Level 2, and 1 mile for Standard Permit.) First the level of authorization must be known.**

Based on the Registration Total Emission Rates, this authorization falls under:
Standard Permit

What is the shortest distance in feet to any receptor from any facility/unit included in this registration?	5500	ft
What is the shortest distance in feet to any property line from any facility/unit included in this registration?	5500	ft

Based on the nearest receptor distance:
A full impacts review is NOT required for benzene.

Based on the nearest property line distance:
A full impacts review is NOT required for H2S, SO2, and NO2.

(2) **Based on the net project emission increases, is a full impacts review required for any air contaminent? (Are the net project emission increases less than any of the de-minimis rates?)**

Net Project Emission Increases				
Air Contaminant Name	**Emission Rates**			
	steady state lbs/hr	**< 30 psig periodic lbs/hr**	**≥ 30 psig periodic lbs/hr**	**TPY**
Benzene	0.16	0.20	0.20	0.16
H_2S	0.00	0.00	0.00	0.00
SO_2	0.01	0.01	0.01	0.01
NO_X	0.08	0.08	0.08	0.36
Please explain the logic behind the values here if any values are different than the Project Total Emission Rates from the Emissions Summary tab.				

De-minimis Rates	
Air contaminant	**lb/hr**
Benzene	0.039
H_2S	0.025
SO_2	2
NO_X	4

Based on the net project emission increases:
A full impacts review is required for benzene.
A full impacts review is NOT required for H2S.
A full impacts review is NOT required for SO2.
A full impacts review is NOT required for NO2.

(3) **Based on the project maximum predicted concentrations, is a full impacts review required for any air contaminant? (Are the project maximum predicted benzene concentrations ≤ 10% of the applicable effects screening level (ESL) or ≤ 25% of the applicable ESL when combined with project increases over 60-month period after rule effective date? Are project maximum predicted H_2S, SO_2, and NO_X concentrations ≤ the significant impact level, SIL, also known as a de-minimis impact in Chapter 101 of 30 TAC, where the SIL = 4% of the applicable ambient air standard (AAQS)?)**

ESLs and AAQS needed for impacts review:	
ESLs and AAQSs	**(µg/m^3)**
Benzene Short Term ESL	170
Benzene Long Term ESL	4.5
H_2S Hourly SAAQS	108
SO_2 Hourly NAAQS	196
NO_2 Hourly NAAQS	188

What is the project maximum predicted 1-hr concentration of benzene in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an hourly basis.		

What is the maximum predicted 1-hr concentration of benzene in micrograms per cubic meter for the project combined with previous project increases over a 60-month period after the effective date of the this rule?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an hourly basis.		

What is the project maximum predicted annual concentration of benzene in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an annual basis.		

What is the maximum predicted annual concentration of benzene in micrograms per cubic meter for the project combined with previous project increases over a 60-month period after the effective date of the this rule?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for benzene on an annual basis.		

What is the project maximum predicted 1-hr concentration of H_2S in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for H2S on an hourly basis.		

What is the project maximum predicted 1-hr concentration of SO_2 in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for SO2 on an hourly basis.		

What is the project maximum predicted 1-hr concentration of NO_2 in micrograms per cubic meter?	NA	**(µg/m^3)**
Based on this:		
A full impacts review is required for NO2 on an hourly basis.		

(4)

Based on the above assessment from (1) - (3):
A full impacts review is NOT required for benzene.
A full impacts review is NOT required for H2S.
A full impacts review is NOT required for SO2.
A full impacts review is NOT required for NO2.

Press this button to make the impacts review tabs visible if needed, that is if you want to use the modeling tables from the rule for any of the four compounds.

Texas Commission on Environmental Quality

OGS SP for New Registration

113502

Site Information (Regulated Entity)

What is the name of the site to be authorized?	UNIVERSITY LANDS 39-11-1H FACILITY
Does the site have a physical address?	
County	STERLING
Latitude (N) (##.######)	31.9556
Longitude (W) (-###.######)	-101.0945
Primary SIC Code	1311
Secondary SIC Code	
Primary NAICS Code	211111
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	RN106118060
What is the name of the Regulated Entity (RE)?	UNIVERSITY LANDS 39 20 1H FACILITY
Does the RE site have a physical address?	No
Because there is no physical address, describe how to locate this site:	FROM STERLING CITY TRAVEL W ON HWY 87 FOR 8.0 MI R ON KINNEBREW LN FOR 3.5 MI TO FACIITY ON L W SIDE OF ROAD
City	STERLING CITY
State	TX
ZIP	76951
County	STERLING
Latitude (N) (##.######)	0.0
Longitude (W) (-###.######)	0.0
What is the primary business of this entity?	OIL AND GAS PRODUCTION

EP Ener-Customer (Applicant) Information

How is this applicant associated with this site?	OWNER OPERATOR
What is the applicant's Customer Number (CN)?	CN604089854
Type of Customer	Partnership
Full legal name of the applicant:	
Legal Name	EP Energy E&P Company, L.P.
Texas SOS Filing Number	8567711
Federal Tax ID	
State Franchise Tax ID	17604870927
DUNS Number	
Number of Employees	501+
Independently Owned and Operated?	No
I certify that the full legal name of the entity applying for this permit has been provided and is legally	Yes

authorized to do business in Texas.	
Responsible Authority Contact	
Organization Name	EP Energy E&P Company, L.P.
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Responsible Authority Mailing Address	
Enter new address or copy one from list:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002
Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

Responsible Official Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	EP Energy E&P Company, L.P.
Organization Name	EP Energy E&P Company LP
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Enter new address or copy one from list:	EP Energy E&P Company, L.P.
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002

Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

Technical Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	
Organization Name	EP ENERGY E&P COMPANY LP
Prefix	MR
First	BERNARD
Middle	
Last	KADLUBAR
Suffix	
Title	SR. EHS SPECIALIST
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	1001 LOUISIANA ST
Routing (such as Mail Code, Dept., or Attn:)	PO BOX 4660
City	HOUSTON
State	TX
ZIP	77002
Phone (###-###-####)	7139975464
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	BERNARD.KADLUBAR@EPENERGY.COM

OGS General Information- Standard Permit New Sites

1) Is this a new or existing site?	New
2) Select the Oil and Gas rule being applied for	6002 - NON RULE 2012-NOV-08
3) In what county is the site located?	CROCKETT
4) Is this site a petroleum storage and transfer unit with a total storage capacity exceeding 300,000 barrels according to the PSD source categories?	No
4.1. Are emissions of any criteria pollutant increasing by 250 tpy?	No
5) Does this business qualify as a small business, non-profit organization, or small government entity?	No

Scope Standard Permits New Sites

1) Are all emissions from operationally dependent facilities located within a 1/4 mile included in this registration?	Yes
2) Has the TCEQ Oil and Gas Spreadsheet been used to calculate emissions for this registration and will it be attached?	Yes
3) When relying on control or recovery devices in emission calculations, are you going to monitor and keep records, per Table 8?	NA

MSS Standard Permit New Sites

1) Will planned MSS emissions be registered with this authorization?	No

Standard Permit New

1) Whichever occurred first, is this registration being submitted within 90 days from either the start of operation or implemented changes?	Yes
2) What are the annual VOC emissions in tons per year (tpy) for this registration?	97.82
3) What are the total steady-state emissions from crude oil or condensate in lb/hr for this registration?	103.59
4) What are the total periodic emissions from crude oil or condensate in lb/hr if less than 30 psig?	22.36
5) What are the total periodic emissions from crude oil or condensate in lb/hr if greater than 30 psig?	0
6) What are the total VOC steady-state emissions from natural gas in lb/hr for this registration?	0
7) What are the total periodic emissions from natural gas VOC in lb/hr if less than 30 psig?	0
8) What are the total periodic emissions from natural gas VOC in lb/hr if more than 30 psig?	0
9) What are the total annual benzene emissions in tpy?	0.16
10) What are the total steady-state benzene emissions in lb/hr for this registration?	0.16
11) What are the total periodic emissions from benzene in lb/hr if less than 30 psig?	0
12) What are the total periodic emissions from benzene in lb/hr if more than 30 psig?	0
13) What are the total annual hydrogen sulfide (H2S) emissions in tpy for this registration?	0.01
14) What are the total steady-state H2S emissions in lb/hr for this registration?	0.01
15) What are the total periodic emissions from H2S in lb/hr if less than 30 psig?	0
16) What are the total periodic emissions from H2S in	0

lb/hr if greater than 30 psig?	
17) What are the total annual SO2 emissions in tpy for this registration?	0.01
18) What are the total steady-state SO2 emissions in lb/hr for this registration?	0.01
19) What are the total periodic SO2 emissions in lb/hr if less than 30 psig for this registration?	0
20) What are the total annual NOx emissions in tpy for this registration?	0.36
21) What are the total steady-state NOx emissions in lb/hr for this registration?	0.08
22) What are the total annual CO emissions in tpy for this registration?	0.3
23) What are the total steady-state CO emissions in lb/hr for this registration?	0.07
24) What are the total annual PM10/PM2.5 emissions in tpy for this registration?	0.05
25) What are the total steady-state PM10/PM2.5 emissions in lb/hr for this registration?	0.01
26) What is the distance in feet to the nearest property line?	5500
27) What is the distance in feet to the nearest receptor?	5500

Best Management Practice Standard Permit New Sites

1) Has a program been developed and will it be followed to replace, repair, and/or maintain facilities in good working order?	Yes
2) Are there any engines or turbines located at this site?	No
3) Are there any open-topped tanks or ponds located at this site?	No
4) Will all fugitive components found to be leaking be repaired in a timely manner consistent with the rule?	Yes
5) Will tank hatches remain closed (but not completely sealed in order to maintain safe design functionality) except during sampling, gauging, loading, unloading, or planned maintenance activities?	Yes
6) Will new and reworked valves and piping connections be located in a place that is reasonably accessible for leak checking?	Yes
7) When a Leak Detection and Repair (LDAR) program has been used to reduce emissions, have the requirements of Table 9 been met?	NA
8) Are there any tanks or vessels located at this site?	Yes
8.1. List the color of the tanks or vessels.	Tan
8.2. Are any tanks applicable to Chapter 115, 40 CFR part 60, or any other state or federal standards?	No
9) Are any of the following units needed to meet the limitations of this rule?	None

10) If there are any other state or federal standards applicable to this site, be prepared to attach an explanation showing how the requirements have been met.	Yes
11) Will the site be in compliance with all other recordkeeping, sampling and monitoring requirements?	Yes

OGS Attachments Standard Permits New Sites

Please attach all required documents to complete the project.

[File Properties]

File Name	UL 39-11-1H NR Standard Permit 9-24-2013.pdf
Hash	302CB492F21E75A532C4891EEE7D0BB0E3C56B6AA011EC37C91D0DF2EBE0C829
MIME-Type	application/pdf

Please attach additional information needed to complete the registration.

[File Properties]

File Name	University Lands 39-11-1H 09-24-2013.xlsm
Hash	3FE8EAC35406A3B7577642949EEB728016F01E5E5B21F818BC87A8CBC9B6FCB4
MIME-Type	application/vnd.ms-excel.sheet.macroenabled.12

Please attach any other information needed to complete the registration.

Certification

The electronic signature below indicates that the Responsible Official has knowledge of the facts herein set forth and that the same are true, accurate, and complete to the best of my knowledge and belief. By this signature, the maximum emission rates listed on this certification reflect the maximum anticipated emissions due to the operation of this facility and all representations in this certification of emissions are conditions upon which the facilities and sources will operate. It is understood that it is unlawful to vary from these representations unless the certification is first revised. The signature certifies that to the best of the Responsible Officials knowledge and belief, the project will satisfy the conditions and limitations of the indicated exemption or permit by rule and the facility will operated in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. The signature below certifies that, based on information and belief formed after reasonable inquiry, the statements and information above and contained in the attached document(s) are true, accurate, and complete.

1. I am Bernard J Kadlubar, the owner of the STEERS account ER031441.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.

8. I am knowingly and intentionally signing OGS SP for New Registration.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER OPERATOR Signature: Bernard J Kadlubar OWNER OPERATOR

Account Number:	ER031441
Signature IP Address:	136.143.128.40
Signature Date:	2013-09-26
Signature Hash:	051ECE7A58C94EA32F05C98E1CFB1CF9E680F3AC2EE24201B2277B0AA388E262
Form Hash Code at time of Signature:	7D238DF172ED7ED3DC4C24ED4056FEF9A22EAB7484F319A9BFA1ECADECF5C65A

Fee Payment

Transaction by:	The application fee payment transaction was made by ER028035/Paul E Deciutiis
Paid by:	The application fee was paid by PAUL DECIUTIIS
Fee Amount:	$850.00
Paid Date:	The application fee was paid on 2013-09-26
Transaction/Voucher number:	The transaction number is 582EA000150026 and the voucher number is 188776

Submission

Reference Number:	The application reference number is 74639
Submitted by:	The application was submitted by ER028035/Paul E Deciutiis
Submitted Timestamp:	The application was submitted on 2013-09-26 at 08:19:56 CDT
Submitted From:	The application was submitted from IP address 72.183.111.162
Confirmation Number:	The confirmation number is 75972
Steers Version:	The STEERS version is 5.90
Permit Number:	The permit number is 113502

Additional Information

Application Creator: This account was created by Paul E Deciutiis