June 30, 2020

Ms. Liz Bisbey-Kuehn
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505

Re: General Construction Permit – Oil & Gas Registration
ConocoPhillips Company – Vacuum Glorietta East Unit West Battery

Dear Ms. Bisbey-Kuehn,

On behalf of ConocoPhillips Company, Cirrus Consulting, LLC submits the enclosed General Construction Permit – Oil & Gas (GCP-OG) Registration Form for the Vacuum Glorietta East Unit West Battery.

A check for the registration fee ($4,260.00) is also enclosed.

Thank you for your help. If you have questions or need any additional information, please contact Michael (Myke) K. Lane of ConocoPhillips Company at (832) 486-2614.

Sincerely,

CIRRUS CONSULTING, LLC

James W. Newby

James W. Newby

Enclosures
Check
GCP-OG Registration

c: Michael K. Lane, ConocoPhillips Company

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GENERAL CONSTRUCTION PERMIT
OIL & GAS REGISTRATION

Vacuum Glorietta East Unit West Battery

Submitted By:

ConocoPhillips

CONOCOPHILLIPS COMPANY
925 North Eldridge Parkway SP2
Houston, Texas 77074

Prepared By:

CIRRUS CONSULTING, LLC
951 Diestel Road
Salt Lake City, Utah 84105
(801) 484-4412

June 2020

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Mail Registration To:		For Department use only:
New Mexico Environment Department Air Quality Bureau 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone (505) 476-4300 Fax (505) 476-4375 www.env.nm.gov/aqb	NEW MEXICO ENVIRONMENT DEPARTMENT	

General Construction Permit (GCP-Oil and Gas) Registration Form Section 1

(Locating outside of Bernalillo County, Tribal Lands, and Nonattainment Areas)

This Registration is being submitted as (check all that apply)**:**

☐ An initial GCP-Oil and Gas Registration Form for a new facility (**Registration fee required**).
☑ An updated GCP-Oil and Gas Registration Form for a modification to an existing facility (**Registration fee required**).
☐ A GCP-Oil and Gas Registration Form for an existing facility currently operating under GCP-1 or GCP-4 **(No fee required)**

The Permitting Administrative Multi-Form may be used for administrative changes identified in the GCP O&G Permit Condition C101.A. No public notification is required, and no filing fees or permit fees apply.

Construction Status: ☐ Not Constructed ☑ Existing Permitted (or NOI) Facility ☐ Existing Non-Permitted (or NOI) Facility

Acknowledgements:

☑ I acknowledge that a pre-application meeting is available to me upon request.
☑ An original signed and notarized Certification for Submittal for this GCP-Oil and Gas Registration is included.
☑ Proof of public notice is included, if required.
☑ The Air Emission Calculation Tool (AECT) is included.
☑ The emissions specified in this Registration Form will establish the emission limits in the GCP-Oil and Gas.
☑ **For new registrations or modifications, a check for the registration fee is included for $4190 prior to 1/1/20 or $4260 beginning 1/1/20.** There is an annual fee in addition to the registration fee: www.env.nm.gov/air-quality/permit-fees-2/
Facilities qualifying as a "small business" under 20.2.75.7.F NMAC qualify for reduced fees, provided that NMED has a Small Business Certification Form from your company on file. This form can be found at: www.env.nm.gov/aqb/sbap/Small_Business_Forms.html
Provide your Check Number: **2470** and Amount: **$4,260.00**

If a fee is required and is not submitted with the application, the registration will be denied.

1)	**Company Information**	AI # (ifknown): **39319**	If updating, provide Permit/NOI #: **GCP-OG 8619**
1	Facility Name: **Vacuum Glorietta East Unit (VGEU) West Battery**	Plant primary SIC Code (4 digits): **1311**	
		Plant NAIC code (6 digits): **211120**	
a	Facility Street Address (If no facility street address, check here ☑ and provide directions in Section 4): **See 4.5 below**		
2	Plant Operator Company Name: **ConocoPhillips Company**	Phone/Fax: **(832) 486-2000**	
a	Plant Operator Address: **935 North Eldridge Parkway SP2, Houston, Texas 77074**		
3	Plant Owner(s) name(s): **See 2 above**	Phone/Fax: **See 2 above**	
a	Plant Owner(s) Mailing Address(s): **See 2a above**		

4	Bill To (Company): **See 2 above**	Phone/Fax: **See 2 above**
a	Mailing Address: **See 2a above**	E-mail: **N/A**
5	☐ Preparer: ☑ Consultant: **James Newby (Cirrus Consulting, LLC)**	Phone/Fax: **(801) 294-3024**
a	Mailing Address: **11139 Crisp Air Drive, Colorado Springs, CO 80908**	E-mail: **jnewby@cirrusllc.com**
6	Plant Operator Contact: **Chris Wood**	Phone/Fax: **(575) 391-3106**
a	Mailing Address: **29 Vacuum Complex Lane, Lovington, New Mexico 88260**	E-mail: **chris.wood@conocophillips.com**
7	Air Permit Contact[1]: **Michael (Myke) K. Lane**	Title: **Sr. Environmental Coordinator**
a	E-mail: **myke.k.lane@conocophillips.com**	Phone/Fax: **(832) 486-2614**
b	Mailing Address: **935 N. Eldridge Parkway, SP2-12-12W184, Houston, Texas 77079-1175**	
	[1]The Air Permit Contact will receive official correspondence from the Department.	
8	Will this facility operate in conjunction with other air regulated parties on the same property? ☑ No ☐ Yes If yes, what is the name and NOI or permit number (if known) of the other facility? **N/A**	

2) Applicability

1	Is the facility located in Bernalillo County, on tribal lands, or in a nonattainment area?	☑ **No** ☐ **Yes**
	If you answered ***Yes*** to the question above, your facility **does not** qualify for this general construction permit.	
2	Is the facility's SIC code 1311, 1321, 4619, 4612 or 4922? (Other SIC codes may be approved provided that all the equipment at the facility is allowed in the GCP-Oil & Gas Permit.)	☐ **No** ☑ **Yes**
3	Does the regulated equipment under this GCP-Oil and Gas Registration include any combination of Allowable Equipment listed in Table 104 of the GCP Oil & Gas Permit, and no others?	☐ **No** ☑ **Yes**
4	Will the regulated equipment as specified in this GCP-Oil and Gas Registration emit less than the total emissions in Table 106 of the GCP-Oil and Gas permit?	☐ **No** ☑ **Yes**
5	Does all equipment comply with the stack parameter requirements as established in the GCP-Oil and Gas Permit?	☐ **No** ☑ **Yes**
6	Equipment shall be at least 100 meters (m) from any stack to terrain that is five (5) or more meters above the top of the stack. Will the equipment at the facility meet this terrain requirement?	☐ **No** ☑ **Yes**
7	Is the facility at least 150 m from any source that emits over 25 tons/year of NO_x? This is the distance between the two nearest stacks that emit NOx at each of the facilities. Not the facility boundaries or the center to center distances.	☐ **No** ☑ **Yes**
8	Is the facility at least 3 miles from any Class I area? This is the distance from the nearest facility boundary to the nearest boundary of the Class I area.	☐ **No** ☑ **Yes**
	If you answered ***NO*** to any of questions 2-8, your facility **does not** qualify for this general construction permit.	

3) Current Facility Status

1	Has this facility already been constructed? ☑ Yes ☐ No	If yes, is it currently operating in New Mexico? ☑ Yes ☐ No
2	Does this facility currently have a construction permit or Notice of Intent (NOI) (20.2.72 NMAC or 20.2.73 NMAC)? ☑ Yes ☐ No	If yes, the permit No. or NOI No., and whether it will remain active or not: **GCP-OG 8619 (Replaced)**
3	Is this Registration in response to a Notice of Violation (NOV)? ☐ Yes ☑ No If so, provide current permit #: **N/A**	If yes, NOV date: **N/A** — NOV Tracking No. **N/A**
4	Check if facility is a: Minor Source: ☐ Synthetic Minor Source: ☐ SM80 = Controlled Emissions > 80 TPY of any regulated air pollutant: ☑	

4) Facility Location Information

1	a) Latitude (decimal degrees): **32.79754**	b) Longitude (decimal degrees): **-103.48894**	c) County: **Lea**	d) Elevation (ft): **3,980**
2	a) UTM Zone: ☐ 12 or ☑ 13	b) UTME (to nearest 10 meters): **641,485**	c) UTMN (to nearest 10 meters): **3,629,853**	
3	e) Specify which datum is used: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84 See this link for more info. http://en.wikipedia.org/wiki/North_American_Datum			
4	Name and zip code of nearest New Mexico town and tribal community: **Lovington (88260) and Mescalera Apache Indian Reservation (88340)**			

5	Detailed Driving Instructions including direction and distance from nearest NM town and tribal community (attach a road map if necessary). If there is no street address, provide public road mileage marker: **From Hobbs (in Lea County, New Mexico) take US 180 (West Carlsbad Hwy) and drive west approximately 12 miles to NM-483, turn right (north) and drive approximately 8 miles to Buckeye Road, turn left and drive approximately 8.5 miles (past the Buckeye field offices and EVLRP plant), facility is on the left.**
6	The facility is **approximately 13.0** (distance) miles **southwest** (direction) of **Lovington, New Mexico** (nearest town).
7	Land Status of facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Government ☐ BLM ☐ Forest Service ☐ Military

5) Other Facility Information

1	Enter the maximum daily and annual throughput of oil, gas, and natural gas liquids (NGL).	Oil (bbl/day): **550** (bbl/yr): **200,750** Gas (MMscf/day): **0.15** (MMscf/yr): **54.75** NGL (bbl/day): **N/A** (bbl/yr): **N/A**
2	The facility, as described in this Registration, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes.	☐ **No** ☑ **Yes**

6) Submittal Requirements

1	Include one hard copy **original signed and notarized Registration package printed double sided 'head-to-toe' 2-hole punched** as we bind the document on top, not on the side; except landscape tables, which should be head-to-head. If 'head-to-toe printing' is not possible, print single sided. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process.
2	Include one **double sided hard copy, flip on long edge** for Department use. This copy does not need to be 2-hole punched.
3	The entire Registration package should be submitted electronically on one compact disk (CD). Include a single PDF document of the entire Registration as submitted and the individual documents comprising the Registration. The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDFs of files (items that were not created electronically: i.e. brochures, maps, graphics, etc.), submit these items in hard copy format. Spreadsheets must be unlocked since we must be able to review the formulas and inputs. **Ensure all of these are included in both the electronic and hard copies.** ☑ Word Document part of the Registration Form (Sections 1 and 3-10) ☑ Excel Document part of the Registration Form (Section 2) ☑ Air Emissions Calculation Tool (AECT) If there is a justified reason for including other calculations, include the unlocked Excel Spreadsheet. Justification must be provided in Section 5 of the application. ☑ PDF of entire application **To avoid errors, it is best to start with both a blank version of this form and the AECT for each application.**

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Section 2

Tables

Insert Excel spreadsheet with applicable tables filled out. If applicable to the facility all tables must be filled out completely. The unit numbering system must be consistent throughout this Registration

Please see the following pages.

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. Equipment that qualifies for an exemption under 20.2.72.202.B NMAC should be included in Table 2-B . **Note:** Equipment options **are not authorized.**

Unit Number[1]	Source Description	Manufacturer/Make /Model	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	RICE Ignition Type (CI, SI, 4SLB, 2SLB)[4]	For Each Piece of Equipment, Check Onc
ENG-1	Standby Air Compressor Engine	Kohler / CH 745S	4017909001	25 hp	25 hp	6/28/2010 2010	N/A ENG-1	20200307	SI	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
FL-1	Emergency Flare	Flare King / FKUT AVP-H35-R60S-EPT		1.5 MMSCFD	1.5 MMSCFD	2006 2006	N/A FL-1	31000160	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
TK-1	Crude Oil Storage Tank (Test)			500 bbl	500 bbl	1994 1994	N/A N/A	40400312	N/A	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-2	Crude Oil Storage Tank (Sales)			900 bbl	900 bbl	1994 1994	N/A N/A	40400312	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
TK-3	Crude Oil Storage Tank (Sales)			500 bbl	500 bbl	1994 1994	N/A N/A	40400312	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
TK-4	Crude Oil Storage Tank (Emergency Overflow)			2,000 bbl	2,000 bbl	1994 1994	N/A N/A	40400312	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
STK-1	Crude Oil Storage Tank (Skim Oil)			210 bbl	210 bbl	1994 1994	N/A N/A	40400312	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
PWTK-1	Produced Water Storage Tank (Skim)			2,000 bbl	2,000 bbl	1994 1994	N/A N/A	40400315	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
PWTK-2	Produced Water Storage Tank			1,500 bbl	1,500 bbl	1994 1994	N/A N/A	40400315	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
PWTK-3	Produced Water Storage Tank			1,500 bbl	1,500 bbl	1994 1994	N/A N/A	40400315	N/A	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced
SSM	Startups, Shutdowns & Maintenance	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	N/A	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. Equipment that qualifies for an exemption under 20.2.72.202.B NMAC should be included in Table 2-B . **Note:** Equipment options **are not authorized.**

Unit Number[1]	Source Description	Manufacturer/Make /Model	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	RICE Ignition Type (CI, SI, 4SLB, 2SLB)[4]	For Each Piece of Equipment, Check Onc
FUG-1	Equipment Leaks	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	N/A	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MAL	Malfunctions	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	N/A	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.

[2] Specify dates required to determine regulatory applicability.

[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.

[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Exempted Equipment (20.2.72 NMAC)

All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 5, Calculations. Unit & stack numbering must be consistent throughout the application package.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[1]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units		Date of Installation /Construction[1]	
N/A							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
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							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
VRU	Vapor Recovery Unit	2006	VOC, H2S & HAP	TK-2 thru TK-4, STK-1, PWTK-1 thru PWTK-3	95	NMAQB
FL-1	Flare	2006	VOC, H2S & HAP	Sales Gas Venting	98	Manufacturer

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

[2] Glycol Dehydration Units: Indicate each stream that is being controlled and which unit is controlling each stream (condensables, non-condensables, flash tank, reboiler etc.)

Table 2-D: Maximum Emissions (Consider federally enforceable controls under normal operating conditions)

This table must be filled out

Maximum Federally Enforceable Emissions are the emissions at maximum capacity with only federally enforceable methods of reducing emissions. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum facility capacity without pollution controls for 8760 hours per year. Account for federally enforcable controls, such as an NSPS or MACT regulation. Consider federally enforceable controls due to permitting. List Hazardous Air Pollutants (HAP) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	2.75E-01	1.20	1.74E-01	7.62E-01	3.75E-01	1.64	1.48E-02	6.47E-02	1.80E-02	7.88E-02	1.80E-02	7.88E-02	-	-	-	-
FL-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	-	10.00	-	-	-	-	-	-	-	1.03	-	-
MAL	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-
FUG-1	-	-	-	-	1.13	4.98	-	-	-	-	-	-	5.30E-02	2.32E-01	-	-
TK-2	-	-	-	-	40.84	178.82	-	-	-	-	-	-	8.82E-01	3.86	-	-
TK-3	-	-	-	-	40.22	176.13	-	-	-	-	-	-	8.71E-01	3.81	-	-
TK-4	-	-	-	-	2.49	13.63	-	-	-	-	-	-	2.76E-02	1.21E-01	-	-
STK-1	-	-	-	-	2.90E-01	1.25	-	-	-	-	-	-	2.16E-02	9.48E-02	-	-
PWTK-1	-	-	-	-	40.64	177.97	-	-	-	-	-	-	13.71	60.07	-	-
PWTK-2	-	-	-	-	4.48	19.63	-	-	-	-	-	-	6.46	28.29	-	-
PWTK-3	-	-	-	-	4.48	19.63	-	-	-	-	-	-	6.46	28.29	-	-
Sales Gas Venting	-	-	-	-	349.99	157.49	-	-	-	-	-	-	11.40	5.13	-	-
Flare emissions are not included because the flare is a control device. The table header says to identify emissions assuming no controls.																
Sales gas venting is added, because without the control device (flare) sales gas would be vented to atmosphere during curtailments.																
GCP-OG permits do not allow the permitting of malfunction H2S emissions. For this reason, malfunction H2S emissions have not been included in the table. They are identified in Section 5.																
Totals	2.75E-01	1.20	1.74E-01	7.62E-01	484.94	771.18	1.48E-02	6.47E-02	1.80E-02	7.88E-02	1.80E-02	7.88E-02	39.89	130.93	-	-

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source.

Table 2-E: Requested Allowable Emissions

Enter an allowable emission limit for each piece of equipment with either an uncontrolled emission rate greater than 1 lb/hr or 1 ton per year (tpy) or a controlled emission rate of any amount. For H2S please represent all emissions even if they are less than 1 lb/hr and 1 tpy. If selecting combustion SSM emissions, enter lb/hr and tpy values. If selecting up to 10 tpy of Malfunction VOC emissions, enter tpy values. Combustion emissions from malfunction events are **not authorized** under this permit. Fill all cells in this table with the emissions in lb/hr and tpy, or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Total the emissions from all equipment in the Totals row. Add additional rows as necessary. Unit & stack numbering must be consistent throughout the application package. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	2.75E-01	1.20	1.74E-01	7.62E-01	3.75E-01	1.64	1.48E-02	6.47E-02	1.80E-02	7.88E-02	1.80E-02	7.88E-02	-	-	-	-
FL-1	13.64	6.14	27.24	12.28	68.09	30.64	205.27	92.37	-	-	-	-	2.22	9.99E-01	-	-
SSM	-	-	-	-	-	10.00	-	-	-	-	-	-	-	1.03	-	-
MAL	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-
FUG-1	-	-	-	-	1.13	4.98	-	-	-	-	-	-	5.30E-02	2.32E-01	-	-
TK-2	-	-	-	-	2.05	8.94	-	-	-	-	-	-	4.41E-02	1.93E-01	-	-
TK-3	-	-	-	-	2.01	8.81	-	-	-	-	-	-	4.36E-02	1.91E-01	-	-
TK-4	-	-	-	-	1.60E-01	6.80E-01	-	-	-	-	-	-	1.40E-03	6.00E-03	-	-
STK-1	-	-	-	-	1.00E-02	6.00E-02	-	-	-	-	-	-	1.10E-03	4.70E-03	-	-
PWTK-1	-	-	-	-	2.04	8.90	-	-	-	-	-	-	6.86E-01	3.00	-	-
PWTK-2	-	-	-	-	2.20E-01	9.80E-01	-	-	-	-	-	-	3.23E-01	1.41	-	-
PWTK-3	-	-	-	-	2.20E-01	9.80E-01	-	-	-	-	-	-	3.23E-01	1.41	-	-
Note that the Total Requested Emissions table in the AECT does not include storage tanks emissions or SSM H2S emissions. Consequently, the VOC and H2S emissions totals in this table do not match the totals in the AECT.																
GCP-OG permits do not allow the permitting of malfunction H2S emissions. For this reason, malfunction H2S emissions have not been included in the table. They are identified in Section 5.																
Totals	13.92	7.34	27.41	13.04	76.31	86.61	205.28	92.43	1.80E-02	7.88E-02	1.80E-02	7.88E-02	3.69	8.49	-	-

[1] Condensable Particulate Matter: Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source.

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions.

Stack Type (Engine, Turbine, Flare, ECD, or Thermal Oxidizer Etc.)	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Velocity (ft/sec)	Inside Diameter (ft)
Engine	ENG-1	Vertical	9.20	1,150	170	40.08	0.30
Flare	FL-1	Vertical	40.00	1,832	17	65.62	7.26

Table 2-I: Emission Rates for HAPs

HAP In the table below, report the potential emission rate for each HAP from each regulated emission unit listed in Table 1, only if the entire facility emits the HAP. For each such emission unit, HAP shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAP shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA. Include tank-flashing emissions estimates of HAP in this table. For each HAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A “-” symbol indicates that emissions of this pollutant are not expected, or the pollutant is emitted in a quantity less than the threshold amounts described above. Add additional rows as necessary.

Stack No.	Unit No.(s)	Total HAPs		Benzene ☑ HAP		n-Hexane ☑ HAP		Toluene ☑ HAP		Provide Pollutant Name Here ☐ HAP		Provide Pollutant Name Here ☐ HAP		Provide Pollutant Name Here ☐ HAP		Provide Pollutant Name Here ☐ HAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	ENG-1	-	-	-	-	-	-	-	-								
FL-1	FL-1	1.9	0.8	0.5	0.2	0.8	0.4	0.4	0.2								
SSM	SSM	-	0.3	-	0.1	-	0.1	-	0.1								
MAL	MAL	-	0.3	-	0.1	-	0.1	-	0.1								
FUG-1	FUG-1	0.1	0.3	-	0.1	-	0.1	-	0.1								
TK-2	TK-2	0.1	0.3	-	0.1	-	0.1	-	0.1								
TK-3	TK-3	0.1	0.3	-	0.1	-	0.1	-	0.1								
TK-4	TK-4	-	-	-	-	-	-	-	-								
STK-1	STK-1	-	-	-	-	-	-	-	-								
PWTK-1	PWTK-1	0.4	1.6	0.1	0.6	0.1	0.3	0.1	0.5								
PWTK-2	PWTK-2	0.1	0.6	0.1	0.3	-	-	0.1	0.2								
PWTK-3	PWTK-3	0.1	0.6	0.1	0.3	-	-	0.1	0.2								
Totals:		2.7	5.1	0.8	1.8	0.9	1.2	0.7	1.6								

Table 2-J: Allowable Fuels and Fuel Sulfur for Combustion Emission Units:

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (Natural Gas, Field Gas, Propane, Diesel, …)	Fuel Source (purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas, or other	Specify Units				
			Engines and Turbines: SO2 percentage (%) of the NOx emission rate (except flares)	Diesel Fuel Only: ppm of Sulfur	Lower Heating Value (BTU/SCF)	Annual Fuel Usage (MMSCF/y)	Does the Allowable Fuel and Fuel Sulfur Content meet GCP O&G Condition A110.A?
ENG-1	Gasoline	Purchased Commercial	5.38	N/A	130,000 Btu/gal	21,418 gal/yr	☑ Yes ☐ No
FL-1	Field Gas	Raw/Field Natural Gas	N/A	N/A	1,581.53	56.36	☑ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No
							☐ Yes ☐ No

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Unit and stack numbering must correspond throughout the application package.

Tank No.	Date Installed	Materials Stored	Roof Type	Seal Type	Capacity (bbl)	Diameter (M)	Vapor Space (M)	Color		Separator Pressure (psia)	Annual Throughput (gal/yr)	Turn-overs (per year)
								Roof	Shell			
TK-2	1994	Crude Oil	Vertical - Fixed Roof (FX)		900	6.10		Lt	Lt		4,215,750	112
TK-3	1994	Crude Oil	Vertical - Fixed Roof (FX)		500	4.72		Lt	Lt		8,431,500	201
TK-4	1994	Crude Oil	Vertical - Fixed Roof (FX)		2,000	9.07		Lt	Lt		86,020	1
STK-1	1994	Skim Oil	Vertical - Fixed Roof (FX)		210	3.05		Lt	Lt		127,875	14
PWTK-1	1994	Produced Water	Vertical - Fixed Roof (FX)		2,000	6.55		Lt	Lt		237,743,227	2830
PWTK-2	1994	Produced Water	Vertical - Fixed Roof (FX)		1,500	6.55		Lt	Lt		118,807,500	1,886
PWTK-3	1994	Produced Water	Vertical - Fixed Roof (FX)		1,500	4.72		Lt	Lt		118,807,500	1,886

Section 3

Registration Summary

The Registration Summary: Provide information about the registration submittal. The Registration Summary shall include a brief description of the facility and its process. In case of a modification to a facility, please describe the proposed changes.

Specify Facility Type: Check the appropriate box below:

- ☑ Production Site
- ☐ Tank Battery
- ☐ Compressor Station
- ☐ Natural Gas Plant
- ☐ Other, please specify:______________

Registration Summary: Provide Registration summary here. See above instructions.

The VGEU West Battery is an upstream production facility which receives mixed streams from oil wells and separates the gas and liquids. Gas is piped to DCP Midstream. Crude oil is sold to Phillips Pipeline. Water is piped to injection wells.

The facility is equipped with the following emissions sources: one gasoline powered standby air compressor, one emergency flare, four crude oil storage tanks, one skim oil storage tank, one produced water skim storage tank, and two produced water storage tanks. The facility will also be equipped with the following non-emission sources: one free water knockout (FWKO) separator, one test treater, one process treater, one gas scrubber, one vapor recovery unit (VRU), one electric air compressor, and one electric booster compressor.

This registration is being submitted to update the facility throughputs (gas, crude oil, and produced water) and remove one crude oil storage tank. The update in facility throughputs and removal of the tank will impact emissions from the flare and all the storage tanks.

Written description of the routine operations of the facility: Include a detailed description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated.

When product enters the facility, separators, treaters, and a scrubber will be used to separate the gas and liquids.

When gas sales are curtailed, the sales gas will vent to the flare. It is estimated the flare will provide 98% control efficiency (based on TCEQ and manufacturer estimates). Note that the flare will only control sales gas emissions; it will not control the tanks when the VRU is down.

The VRU will collect vapors from the crude oil, skim and produced water storage tanks and route them to sales. During operation the VRU will collect 100% of the vapors from the tanks. In accordance with New Mexico Air Quality Bureau (NMAQB) policy, it is assumed the VRU will operate 95% of the year. Any time the VRU is not in operation, all vapors from the tanks will be vented to atmosphere.

Facility total crude oil and produced water annual throughputs will be limited to those identified in ProMax (bbl per day multiplied by 365 day per year). In accordance with direction received from the NMAQB, the emissions from each tank as identified in Tables 2-D, 2-E and 2-I are taken directly from the ProMax results (facility caps are not used). Also, in accordance with direction received from the NMAQB, the permit limits for the tanks are not the hourly and annual emissions rates identified for each tank in Table 2-E, but rather the sum of the hourly and annual emission rates for each tank type (a facility total emissions cap). Thus, the emissions limits for tanks TK-2 thru TK-4 and STK-1 are the <u>sum of the hourly and annual emissions</u> shown in the tables for those four tanks. And the emissions limit for tanks PWTK-1 thru PWTK-3 are the <u>sum of the hourly and annual emissions</u> shown in the tables for those three tanks.

Facility total tank emissions caps are being used because liquid throughputs and distribution to the various tanks might vary from the estimates used in ProMax. Consistent with previous NSR, Title V and GCP-OG permits, facility total caps are needed for the storage tank volatile organic compounds (VOC) and hydrogen sulfide (H2S) emissions.

The standby air compressor (driven by a gasoline engine) is a backup for the electric air compressor. It is being permitted to operate 8,760 hours per year (hr/yr).

Routine or predictable emissions during Startup, Shutdown and Maintenance (SSM): Provide an overview of how SSM emissions are accounted for in this Registration.

Ten tpy of SSM VOC emissions are being requested in this registration (since this is the maximum amount allowed by the NMAQB). Safety may require the venting of inactive equipment. It might also be necessary to vent equipment prior to maintenance.

Malfunction Emissions (M): Provide an overview of how malfunction emissions are accounted for in this Registration. The permit does not authorize combustion emissions for malfunctions.

Ten tpy malfunction VOC emissions are being requested in this registration (since this is the maximum amount allowed by the NMAQB). Combustion emissions are not included in this request.

The permit does not authorize emissions from SSM and Malfunction to be combined as 10 TPY VOC. However, they may be permitted separately. In the allowable emissions table in Section 2, these two events are separate line items and must be kept separate.

Allowable Operations: Check the appropriate box below:

☑ Facility operates continuously (8760 hours per year).
☐ The following regulated equipment will operate less than 8760 hours per year. Add additional rows as necessary. These units are subject to Condition A108.C of the Permit.

Table A – Equipment Operating Less Than 8760 hours per year

Unit #	Requested Annual Operating Hours
N/A	

Verification of Compliance with Stack Parameter Requirements:

Please use the Stack Calculator and Stack Requirements Explained Guidance on our website: All of the verification information below is required to be filled out.

www.env.nm.gov/air-quality/air-quality-oil-and-gas-gcp-application-forms/

Check the box for each type of equipment at this facility:

☑ Engine(s)
☐ Turbine(s)
☑ Flares(s)
☐ Enclosed Combustion Device (s)
☐ Heater(s)
☐ Reboiler(s)

For each type of equipment checked above, complete the applicable section below.

Engines

1. Calculate the pound per hour (lb/hr) NO_x emission rate according to GCP O&G Condition A202.I Step 1 on page 15 of the GCP O&G. Enter this value in the top row of the table below.

2. Based on the calculated facility total NO_x emission rate, determine the minimum stack parameter requirements for engines and heaters from Table 1: Engines (page 17) of the GCP O&G and enter the minimum parameters from Table 1 (page 17) of the GCP O&G in the bottom row of the table below.
3. Enter the stack parameters from each engine and heater in the blank rows of the table below. Add rows as necessary.

Table B: Engine/Generator/Heater/Reboiler Stack Parameter Verification:

Calculated Facility Total NOx Emission Rate: 0.28 lb/hr				
Engine/Generator/Heater/Reboiler Unit Number	**Height (ft)**	**Temperature (^{o}F)**	**Velocity (ft/s)**	**Diameter (ft)**
ENG-1	**9.20**	**1,150**	**40.08**	**0.30**
Table 1 Minimum Parameters: For verification, list the minimum parameters based on the NOx lb/hr emission rate from the GCP O&G Table 1.	**5.9**	**571**	**49.2**	**0.3**

4. Do all engines and heaters comply with the minimum stack parameters from Table 1 (page 17) of the GCP O&G?

☐ Yes. Skip step 5 below.
☑ No. Go to step 5 below.

5. For engines and heaters that do not comply with the minimum stack parameters in Table 1 of the GCP O&G, explain and demonstrate in detail how the engines and heaters will be authorized according to the steps on page 16 of the GCP O&G or Condition A203.C of the GCP O&G. Show all calculations.

Since the stack exit velocity is less than 49.2 ft/s, the stack height has been raised to 9.2 ft (5.9 + 3.3 = 9.2). This is acceptable since the temperature and velocity of the engine are greater than 206 °F and 26.2 ft/s.

<u>Turbines</u> – N/A, there are no turbines at the facility.

1. Calculate the pound per hour (lb/hr) NO_x emission rate according to GCP O&G Condition A202.I Step 1 on page 17 of the GCP O&G. Enter this value in the top row of the table below.
2. Based on the calculated facility total NO_x emission rate, determine the minimum stack parameter requirements for turbines and heaters from Table 2: Turbines (page 18) of the GCP O&G. Enter the minimum parameters from Table 2 (page 18) of the GCP O&G in the bottom row of the table below.
3. Enter the stack parameters from each turbine and heater in the blank rows of the table below. Add rows as necessary.

Table C: Turbine/Heater/Reboiler Stack Parameter Verification:

Calculated Facility Total NOx Emission Rate: ____ lb/hr				
Turbine/Heater/Reboiler Unit Number	**Height (ft)**	**Temperature (^{o}F)**	**Velocity (ft/s)**	**Diameter (ft)**
Table 2 Minimum Parameters: For verification, list the minimum parameters based on the NOx lb/hr emission rate from the GCP O&G Table 2.				

4. Do all turbines and heaters comply with the minimum stack parameters from Table 2 (page 18) of the GCP O&G?

☐ Yes. Skip step 5 below.
☐ No. Go to step 5 below.

5. For turbines and heaters that do not comply with the minimum stack parameters in Table 2 of the GCP O&G, explain and demonstrate in detail how the turbines and heaters will be authorized according to the steps on page 18 of the GCP O&G or Condition A203.C of the GCP O&G. Show all calculations.

Flares

1. Enter SO_2 emission rates (lb/hr) for each flare in the second column of the table below.
2. Based on the SO_2 emission rates, determine the minimum stack height requirements for flares from Table 3 (page 26) of the GCP O&G and enter the minimum stack height requirements for flares from Table 3 (page 26) of the GCP O&G in the last column of the table below.
3. Enter the stack height of each flare in the third column of the table below. Add rows as necessary.

Table D: Flare Stack Height Parameter Verification:

Flare Unit Number	**SO_2 Emission Rate (lb/hr)**	**Height (ft)**	**Table 3 Minimum Stack Height:** For verification, list the minimum height parameters based on the SO2 emission rate from the GCP O&G Table 3.
FL-1	**205.27**	**40**	**19.7**

4. Do all flares comply with minimum stack height requirements?

☑ Yes
☐ No

5. Does the flare gas contain 6% H_2S or less by volume (pre-combustion)?

☑ Yes. Skip step 6 below
☐ No. Go to step 6 below.

6. Explain in detail how assist gas will be added to reduce the gas composition to 6% H_2S or less by volume.

Enclosed Combustion Device(s) (ECD): - N/A, there are no enclosed combustion devices at the facility.

According to GCP O&G Condition A208.A, the facility must meet one of the following options if an ECD is installed at the facility:

Option 1:

1. Will the ECD(s) meet the SO_2 emission limit of 0.7 lb/hr and operate with a velocity of at least one (1) foot per second?

☐ Yes. Skip Option 2 below.
☐ No. Go to Option 2 below.

Option 2:

2. Will the ECD(s) meet the SO_2 emission limit of 0.9 lb/hr and operate with a velocity of at least two (2) feet per second?

☐ Yes
☐ No

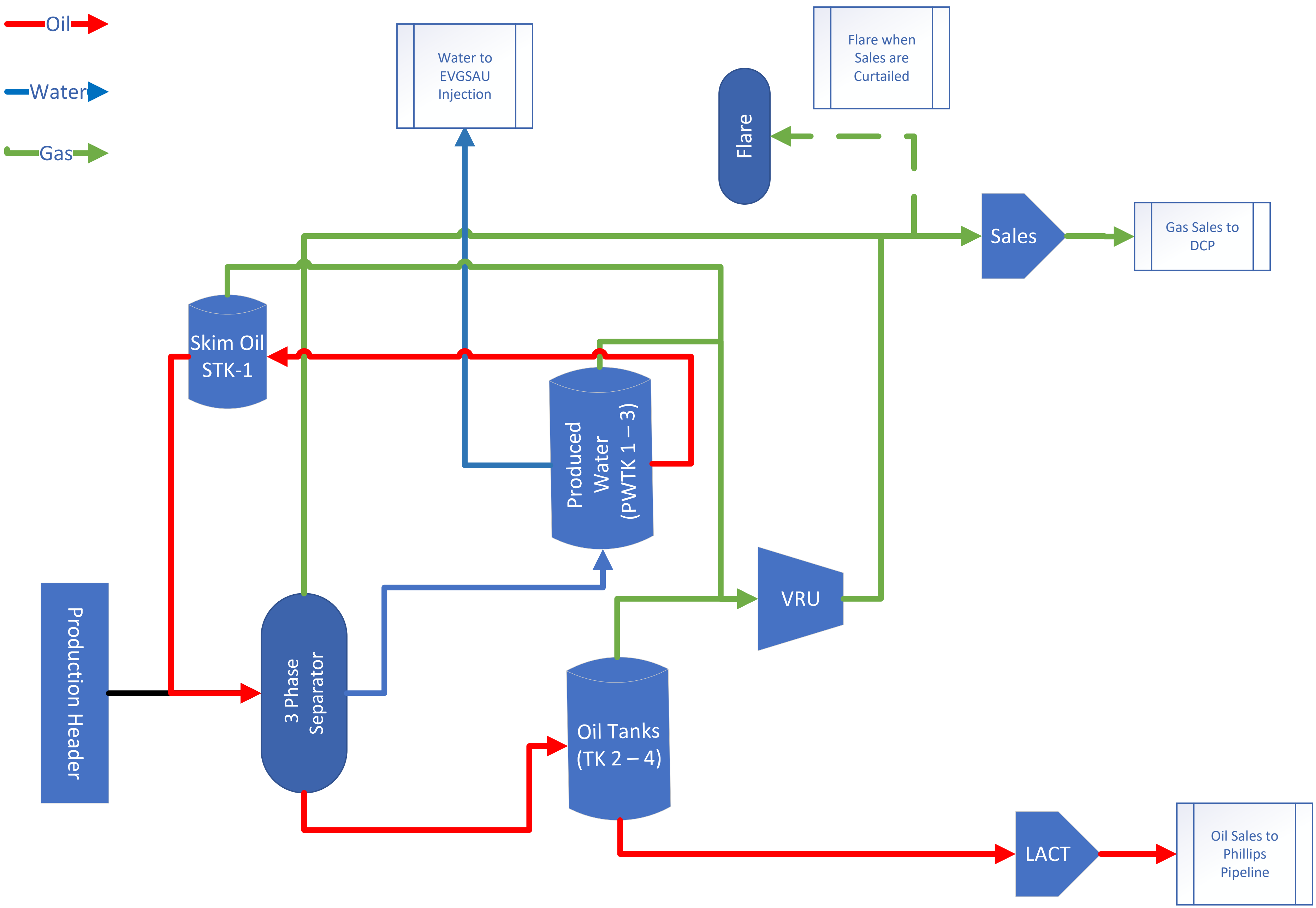
Section 4

Process Flow Sheet

Attach a **process flow sheet** indicating all individual equipment, all emission points, and types of control applied to those points. All units must be labeled, and the unit numbering system must be consistent throughout this Registration. Identify all sources of emissions with a vertical arrow. Label each of the different material streams (e.g. crude oil, gas, water). The process flow sheet must be a legible size.

A process flow diagram is provided in this section. Please see the following page.

VGEU West Tank Battery General Process Diagram



Section 5

Emissions Calculation Forms

The Department has developed the Air Emissions Calculation Tool (AECT), which is required to be used in the GCP-Oil and Gas Registration. If the AECT, for a piece of equipment is under development, provide alternate calculations. **Do not include alternative calculations unless there is an issue being resolved with the AECT. This will delay review of the application.** The AECT and this Registration Form may be updated as needed.

Tank Emissions Calculations: Provide the method used to estimate tank-flashing emissions, the input and output summary from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Pro-Max or Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation. **The inputs must match the gas analyses information submitted. Inputs that don't match may be grounds for denial of the application submittal.**

<u>**SSM Calculations**</u>: In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Table 2, and the rational for why the others are reported as zero (or left blank).

<u>**Control Devices:**</u> Report all control devices and list each pollutant controlled by the control device. Indicate in this section if you chose to not take credit for the reduction in emission rates. Only uncontrolled emission rates can be considered to determine applicability unless the state or federal acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

<u>**Calculation Details:**</u> The AECT is required for all emission calculations. If the AECT is not functioning, alternative calculations may be submitted only for the portions of the AECT with issues being resolved. Utilize this section to explain in detail, on an equipment-by-equipment basis, why alternative calculations are necessary.

Explain here:

<u>**General**</u>

The AECT was used to calculate criteria pollutant emissions from the facility. A copy of the completed AECT is provided in this section.

In addition, this section contains the calculations needed to provide inputs for the AECT (engine and flare parameters, crude oil storage tank emissions, skim oil storage tank emissions, produced water skim storage tank emissions, and produced water storage tank emissions) and Table 2-D (sales gas emissions). Where ProMax results were used, the referenced data is highlighted yellow in the ProMax output file found on the CD submitted with this registration.

Finally, this section contains HAP emissions calculations for the flare, SSM, malfunction, equipment leaks, and storage tanks. Again, where ProMax results were used, the referenced data is highlighted yellow in the ProMax output file found on the CD submitted with this registration.

Note: The notes section on the AECT VRU page does not allow a sufficient number of characters to explain why a process vs control determination is not required for the VRU at this facility. For that reason, the explanation is provided below:

> **A process vs control determination is not required. The crude oil storage tanks are subject to 20.2.38.109 & 112 NMAC. The tanks must be equipped with floating roofs, a vapor recovery system, or other device at least as effective. ConocoPhillips has elected to install a vapor recovery system (the VRU). The regulation (20.2.38.112 NMAC) requires it's use whether or not there is an economic benefit.**

The ProMax output file is lengthy and cannot be printed in a legible way without significant modification. For that reason, only the summary page and flowsheets are provided as paper copies in this section. To review the process stream data, please see the ProMax output file on the CD submitted with this registration.

ProMax 5.0 was used both to determine the composition of the various gas and liquid streams at the facility and to calculate VOC, H2S and HAP emissions from the facility. Inputs include a post separator crude oil extended analysis (measured oil stream mole %) and a production gas stream extended analysis (measured gas stream mole %). These compositions are identified in the ProMax output file using orange cells (see cells D7-D43 and E7-E43 on the Separations PStreams tab).

Engine

Engine emissions were calculated in the AECT using AP-42 emission factors. Note that AP-42 does not identify HAP emissions factors for gasoline engines.

The EPA certification indicates 40 CFR 90 is applicable to the engine. 40 CFR 90 only identifies emission rates for HC + NOx and CO. The EPA certification itself only identifies the HC + NOx emission rate.

Neither document identifies individual NOx and HC (VOC) emissions as is required by the AECT and the registration. For this reason, the AP-42 emission factors are preferred. Also, note that the HC + NOx emission rate on the EPA certification is 8.8 g/kW-hr (0.0145 lb/hp-hr). The combined NOx and VOC emission rates from AP-42 are 0.026 lb/hp-hr.

Flare

Flare criteria and H2S emissions were calculated using the AECT.

The composition of the gas vented to the flare was obtained from the ProMax 5.0 results, sales gas mole % (see the yellow cells between J7-J43 on the Separations PStreams tab). The composition of the pilot stream was obtained from a fuel gas extended analysis. Flare throughputs were based on the design capacity of the flare. The calculations needed to identify AECT inputs are included in this section. To simplify review of the AECT inputs, cell locations for those inputs are provided below (see the Flare tab in the calculations workbook provided on the CD submitted with this registration):

Hourly Gas Stream to Flare (Mscf/hr): Cell A9
Annual Gas Stream to Flare (MMscf/yr): Cell A13
Max. Heat Value of Gas (Btu/scf): Cell A10
Field Gas Mole Fraction (lbmol H2S/lbmol): Cell D171
Field Gas Sulfur Content (S grains/100 scf): Cell G201
Pilot Gas to Flare (Mscf/hr): Cell A17
Max. Heat Value of Pilot Gas (Btu/scf): Cell A18
Pilot Gas Sulfur Content (S grains/100 scf): Default
Gas MW (lb/lbmol): Cell F192
Gas Pressure (psia): Default
Gas Temperature (°F): Default
Field Gas H2S Wt. % to Flare: Cell G205
Flare Control Efficiency (%): Cell F36
Total VOC Wt % to Flare (%): Cell C205

Additional calculations for the flare HAP emissions (not included in the AECT) are included in this section.

SSM

Ten tpy of SSM VOC emissions are being requested in this registration.

Additional calculations for the SSM H2S and HAP emissions (not included in the AECT) are included in this section. Emissions were calculated using the production gas extended analysis. HAP emissions were estimated using the throughput required to produce 10 tons of VOC emissions per year.

Malfunction

Ten tpy of malfunction VOC emissions are being requested in this registration.

Additional calculations for the malfunction H2S and HAP emissions (not included in the AECT) are included in this section. Emissions were calculated using the production gas extended analysis. HAP emissions were estimated using the throughput required to produce 10 tons of VOC emissions per year.

Equipment Leaks

Equipment leaks VOC, total HAP, Benzene and H2S emissions were calculated using the AECT.

The production gas extended analysis and production oil extended analysis were used to calculate the gas and light oil emissions, respectively. The additional calculations were required both to determine the VOC and total HAP weight percent (for input into the AECT) and to calculate individual HAP emissions (required by Section 2, Table 2-I).

Storage Tanks

ProMax results were used to calculate flash, working, and breathing emissions from the storage tanks. ProMax was set up to determine emissions from each individual crude oil and skim tank. Since the produced water tanks are identical in size and are expected to receive, on average, the same amount of water each year, ProMax was set up to calculate the combined emissions from these tanks. The results were evenly distributed between the two tanks.

ProMax results were summed to determine the VOC and HAP emissions from each tank (see the additional calculations). Emissions (lb/hr) from each crude oil tank were identified using data from the Oil Tanks PStreams tab of the ProMax output file (see the yellow cells in columns D-L [rows 120-157]). Emissions (lb/hr) from the skim and produced water tanks were identified using data from the Separations PStreams tab of the ProMax output file (see the yellow cells in columns H-P [rows 120-157]).

Sales Gas

ProMax results were summed to determine uncontrolled VOC emissions from the venting of sales gas (see the additional calculations). Emissions (lb/hr) were identified using data from the Separations PStreams tab of the ProMax output file (see the yellow cells in column F [rows 120-157]).

Equipment Forms Submitted in this Section (add additional rows as necessary):

Equipment Type	Quantity	Check Box to Indicate Units that are Controlled	Enter Control Device Type and Pollutant Controlled
Engine	1	☐	
Turbine		☐	
Tanks	7	☐	VRU controls VOC, H2S and HAP
Generator		☐	
VRU	1	☐	
VRT		☐	
ULPS		☐	
Glycol Dehydrator		☐	
Flare	1	☐	Controls VOC, H2S & HAPs from sales gas
Amine Unit		☐	
Cryogenic Unit		☐	
Fugitive Emissions	1	☐	
Heater		☐	
Truck Loading		☐	
Enclosed Combustion Device (ECD)		☐	
Thermal Oxidizer (TO)		☐	
Other	1	☐	SSM

Other	1	☐	Malfunctions

For each scenario below, if there are more than one emissions unit, control device, or gas combustion scenario. Please copy and paste each applicable section and label the unit number(s) if the scenarios vary.

__Vapor Recovery Tower, Ultra Low-Pressure Separator, or Flash Tower Located Upstream of Storage Vessels:__ If the facility contains one of the following units located upstream of the storage vessels and is used to flash and capture flashing emissions, check the appropriate box.
Unit number: **N/A**

☐ Vapor Recovery Tower and VRU Compressor.
☐ ULPS and VRU Compressor.
☐ Flash Tower and VRU Compressor.

None of the facility separators, treaters, and scrubber are vapor recovery towers (with a VRU compressor), ultra-low-pressure separators, or flash towers.

__Vapor Recovery Unit (VRU) located upstream of Storage Vessels:__ Check the box below if the facility is using a VRU to capture flashing emissions prior to any storage vessels to limit the PTE of the storage vessels to below applicability thresholds of NSPS OOOO or NSPS OOOOa. A process vs control determination should be prepared for this type of VRU application.
Unit number: **N/A**

☐ VRU capturing emissions prior to any storage vessel and routing directly to the sales pipeline.

The VRU is not located upstream of the storage vessels.

__Vapor Recovery Unit (VRU) attached to Storage Vessels:__ Check the box below if this facility is using a VRU to reduce storage vessel emissions to limit the PTE to below NSPS OOOO or NSPS OOOOa applicability thresholds:
Unit number: **N/A**

☐ VRU controlling Storage Vessel emissions and the facility is subject to the requirements under NSPS OOOO, 40 CFR 60.5411.
☐ VRU controlling Storage Vessel emissions and the facility is subject to the requirements under NSPS OOOOa, 40 CFR 60.5411a.

Though the tanks are equipped with a VRU, it is not being used to limit the PTE below Subpart OOOO or OOOOa applicability thresholds.

__Gas Combustion Scenarios:__ Read through the scenarios below and check the boxes next to any appropriate facility operating scenarios. Flares shall assume a destruction efficiency of 95%, unless the facility is subject to requirements for flares under 40 CFR 60.18, or a higher destruction efficiency (up to 98%) is supported by a manufacturer specification sheet (MSS) for that unit. If so, include the MSS.

A flare, vapor combustion unit (VCU), enclosed combustion device (ECD), thermal oxidizer (TO):
Unit number: **N/A**

☐ Controls storage vessels in accordance with 40 CFR 60, Subpart OOOO or OOOOa.
☐ Provides a federally enforceable control for the storage vessels to limit the PTE to below applicability thresholds of 40 CFR 60, Subpart OOOO or OOOOa.
☐ Controls the glycol dehydrator.
☐ Controls the amine unit.
☐ Controls truck loading.
☐ Operates only during maintenance events, such as VRU downtime, check one below:
  - ☐ The emissions during VRU downtime are represented as uncontrolled VOC emissions from the compressor.
  - ☐ The combustion emissions during VRU downtime are represented as controlled emissions from the combustion device.

☐ Controls the facility during plant turnaround.

None of the above listed scenarios apply to the flare.

Amine Unit: Provide the following information for each amine unit.

N/A, the facility is not equipped with an amine unit.

Design Capacity in MMscf/day	
Rich Amine Flowrate in gal/min	
Lean Amine Flowrate in gal/min	
Mole Loading H_2S	
Sour Gas Input in MMscf/day	

Glycol Dehydration Unit(s): Provide the following information for each glycol dehydration unit:
Please include an extended gas analysis in Section 6 of this application.

N/A, the facility is not equipped with a dehydrator.

Unit #	**Glycol Pump Circulation Rate**

Voluntary Monitoring in Accordance with §40 CFR 60.5416(a): Check the box(s) to implement a program that meets the requirements of 40 CFR 60.5416(a). This monitoring program will be conducted in lieu of the monitoring requirements established in the GCP-Oil and Gas for individual equipment. Ceasing to implement this alternative monitoring must be reported in an updated Registration Form to the Department.

☐ Condition A205.B Control Device Options, Requirements, and Inspections for Tanks
☐ Condition A206.B Truck Loading Control Device Inspection
☐ Condition A206.C Vapor Balancing During Truck Loading
☐ Condition A209.A Vapor Recovery Unit or Department-approved Equivalent
☐ Condition A210.B Amine Unit Control Device Inspection

Fugitive H_2S Screening Threshold and Monitoring in accordance with Condition A212: Check the box that applies.

☐ Condition A212.A does not apply because the facility is below the fugitive H_2S screening threshold in Condition A212, or
☑ Condition A212.A applies. Because the facility is above the fugitive H_2S screening threshold in Condition A212, or the facility is voluntarily complying with Condition A212.A, and Condition A212.A applies

AIR EMISSIONS CALCULATION TOOL

Instructions for Completing the Equipment Calculation Forms

1. Click the **Start Button** below to reset the form to begin data entry.

2. The ***Air Emissions Calculation Tool*** initially loads with the **Core Data Information Form.** Once all information is entered on this form, the necessary equipment calculation pages will be created based on the information entered on the Core Data Information Form. The customized ***Air Emissions Calculation Tool*** should now be saved to your computer before entering any other information on the equipment calculation pages. **Warning,** every time you click on the **Start Button b**elow, the ***Air Emissions Calculation Tool*** will reset and all data entered will be lost.

3. Green/Blue colored information boxes require users to enter the required information for the subject facility. Default values may be changed if not appropriate for the facility.

4. Yellow colored boxes represent calculated values based on user information entered and may not be changed.

5. Yellow boxes with green/blue cross-hatching represent calculated values based on user information entered, however users may input data in these boxes, if necessary.

Start

Core Data Information

Mandatory - All appropriate Data Must Be Entered For All Boxes Below. This Data Will Automatically Create All Required Equipment Forms And Populate This Data In All Emissions Calculation Forms.

Date Field	Jun 30, 2020			Permit/NOI/NPR Number	8619
Company Name:	ConocoPhillips Company			Select Application Type	GCP-O&G
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery			AI# if Known	39319
Max. Facility Gas Production	150 (Mscf/d)	6.25 (Mscf/h)		Elevation (ft.)	3,980
Max. Facility Oil Production	550 (BOPD)	22.92 (BOPH)		Sour Gas Streams at This Site?	YES
Max. Facility Produced Water	15,500 (BWPD)	645.83 (BWPH)			

Enter The Quantity Of All Air Emissions Sources Located At The Facility
(Leave Blank For Each Equipment Type That Is Not Present)

Equipment	Quantity	Equipment	Quantity
Amine Unit(s)		Compressor Engine (s)	1
Dehydrator(s)		Enclosed Combustion Device(s) (ECD)	
Equipment Fugitives	✓	Flare(s)	1
Flash Tower/Ultra-Low Pressure Separator(s)^		Generator Engine (s)	
Gunbarrel Separator(s)/Tank(s)		Heater(s), Heater Treaters	
Number of Paved Haul Roads Segments		Number of Unpaved Haul Road Segments	
Low Pressure Compressor(s)* & Compressor(s)*		Oil/Condensate Storage Tank(s)	3
Oil/Condensate Truck Loading		Produced Water Storage Tank(s)	3
Produced Water Truck Loading		Pumpjack Engine(s)	
Reboilers(s) (Amine Units)		Placeholder for Future Use	
Reboilers(s) (Glycol, others)		Startup, Shutdown & Maintenance and Malfunction	✓
Skim Oil or Slop Oil Tank(s)	1	Thermal Oxidizer(s) (TO)	
Vapor Combustion Device(s) (VCU)		Vapor Recovery Unit(s) (VRU)^	1

Click Here to Generate Required Forms & Save to Your Computer

Complete all required forms that follow, for the equipment at the subject facility, based on the selections made above. Items with an * indicate an air emissions calculation form currently not required at this time and those with ^ indicate forms under construction at this time.

New Mexico Environment Department Air Quality Bureau Equipment Emissions Calculation Form

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Non-Emergency SI Rich Burn, Lean Burn & Clean Burn Natural Gas Fired Compressor Engines (100% Load) & Stationary & Non-Road Diesel (≤600hp & >600hp) & Gasoline Compressor Engines (≤600hp)

Enter data in green-shaded areas only! One engine per form unless like-kind engines

Emission Unit ID:	ENG 1
Engine Manufacturer:	Other
Engine Model:	Kohler CH 7455
Engine Serial #:	4017909001
Engine Manuf. Date:	Jun 28, 2010
Engine Type:	Gasoline ≤600 hp (Stationar
Factory HP Rating	25
Allowable HP Rating	25
Engine BSFC (Btu/(Hp*Hr))	12,714
Fuel Heat Value(MMBtu/gal	0.13
Fuel Sulfur (grains/dscf)	0.002
Hourly Fuel Flow Rate (gal/hr)	2.445
Annual Fuel Flow Rate (MMSCF/yr)	21,418.2
Maximum Engine RPM	3,600
Exhaust Temperature (ºF)	1,150
Exhaust Velocity (ft/sec)	40.08
Exhaust Flow (ACFM)	170
Stack Diameter (ft)	0.3
Stack Height (ft)	9.2

Quantity of Like-kind Engines:	1
Engine Description	Compressor Engine
Hours/year	8,760
Fuel Type:	Gasoline

Engine Deration

- (●) No Deration
- ( ) Stationary - Naturally Aspirated
- ( ) Stationary - Turbo Aspirated
- ( ) Portable - Naturally Aspirated
- ( ) Portable - Turbo Aspirated

No Deration.

Notes: This standby engine drives an air compressor.

Select Source of Emission Factors

- (●) AP-42 Emission Factors
- ( ) Manufacturer Specs (Enter Appropriate Emission Factors Below) or Diesel Tier 1, 2, 3 or 4
- ( ) NSPS JJJJ; Engine Manuf. Between July 1, 2007-June 30, 2010 & Engine HP≥500HP
- ( ) NSPS JJJJ; Engine Manuf. On or after July 1, 2010 & Engine HP≥500HP
- ( ) NSPS JJJJ; Engine Manuf. Between July 1, 2008-Dec. 31, 2010 & Engine HP 100≤HP<500
- ( ) NSPS JJJJ; Engine Manuf. on or after Jan.1, 2011 & Engine HP 100≤HP<500
- ( ) NSPS JJJJ; Eng. Manuf. Betw. Jan. 1, 2008-June 30, 2010 & LB Engine HP 500≤HP<1350
- ( ) NSPS JJJJ; Engine Manuf. on or after July 1, 2010 & LB Engine HP 500≤HP<1350
- ( ) NSPS JJJJ; Engines < 100HP (Enter Appropriate Emission Factors Below)
- ( ) NSPS IIII; Stationary Diesel Engines

Emission Factors, Catalyst Control Efficiency & Safety Factor						Uncontrolled Emissions		AP-42 Emissions		Controlled Emissions (includes SF)[1]	
Pollutant	Uncontrld. EF lb/hp-hr	% Control Efficiency	% Safety Factor	Contrld EF g/(hp-hr)	AP-42 EF lb/hp-hr	lb/hr	Tons/yr	lb/hr	Tons/yr	lb/hr	Tons/yr
NOx^	0.011	0	0	0.011	0.011	0.275	1.2045	0.275	1.2045	0.275	1.2045
CO	0.007	0	0	0.007	0.007	0.175	0.7665	0.175	0.7665	0.174	0.7621
VOC*	0.015	0	0	0.015	0.015	0.375	1.6425	0.375	1.6425	0.375	1.6425
Formaldehyde			0			0	0			0	0
TSP/PM10/PM2.5	0.0007	0	0	0.0007			0	0	0	0.018	0.0788
[2]SO_2	0.000591	0	0	0.000591	0.000591	0.014775	0.064715			0.014775	0.064715
AP-42 HAPs	lb/MMBtu										
Formaldehyde		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Acetaldehyde		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Acrolein		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Benzene		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Ethylbenzene		NA	NA	NA	NA	0	0	NA	NA	NA	NA
n-Hexane		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Toluene		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Xylene		NA	NA	NA	NA	0	0	NA	NA	NA	NA
Total HAPs	NA	NA	NA	NA	NA	0	0	NA	NA	0	0

* Uncontrolled & Controlled VOC emissions include aldehyde emissions. VOC Emissions for JJJJ do not include aldehyde emissions. [1] For NOI's & NPR, controlled emissions cannot be less than JJJJ emissions. [2] SO2 EF (grains/scf or ppm) except for AP-42 EF in g/hp-hr for SO2 & EF Values for NOx, CO, VOC, TSP/PM10/PM2.5 in lb/hp-hr for large gasoline & diesel engines. ^NOx+NMHC Emission Factors for diesel engines assume 75% NOx and 25% VOC

Calculation Tool for Non-Emergency SI Rich Burn, Lean Burn & Clean Burn Natural Gas Fired Compressor Engines (100% Load) & Large Stationary Diesel (≤600hp & >600hp) & Gasoline Compressor Engines (≤600hp) Emissions

AP-42 Gas-Fired Engine Emission factors based on AP-42, Tables 3.2-1, 3.2-2 & 3.2-3 (July 2000)
https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
40 CFR Part 60 Subpart JJJJ Emission Factors based on §60.4233 & Table 1
http://www.ecfr.gov/cgi-bin/text-idx?node=sp40.7.60.jjjj
AP-42 Diesel & Gasoline Fired Engine Emission factors based on AP-42, Tables 3.3-1, 3.2-2, 3.4-1, 3.4-2, 3.4-3 & 3.4-4
https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf
40 CFR Part 60 Subpart IIII Emission Factors based on §60.4233 & Table 1
http://www.ecfr.gov/cgi-bin/text-idx?node=sp40.7.60.iiii
EPA Tier 1-4 Nonroad Compression Ignition Emission Standards (EPA-42--B-16-022)
https://nepis.epa.gov/Exe/ZyNET.exe/P100OA05.txt?ZyActionD=ZyDocument&Client=EPA&Index=2011%20Thru%202015&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C11THRU15%5CTXT%5C00000019%5CP100OA05.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1

Emission factors for natural gas and field gas internal combustion engines may be based on AP-42, Tables 3.2-1, 3.2-2 or 3.2-3 or NSPS JJJJ emission standards or manufacturer specifications based on engine applicability.

NOx Sample Calculation Using AP-42 Emission Factors for a 500-HP 4-Stroke Rich Burn Engine

pph = NOx Emission Factor (EF) lb/MMBtu * Heat Value Btu/scf/1020 Btu/scf * Maximum Heat Input (MMBtu/hr) * Allowable HP * 1/1000000 MMBtu/Btu
= 2.21 lb/MMBtu * 1020 Btu/scf/1020Btu/scf * 7500 MMBtu/hr *500 hp * 1/1000000 MMBtu/Btu
=8.29 lb/hr

tpy =NOx Emission Factor (EF) lb/MMBtu * Heat Value Btu/scf/1020 Btu/scf * Maximum Heat Input (MMBtu/hr) * Allowable HP * 1/1000000 MMBtu/Btu * 8760 hrs/yr * 1/2000 tons/lbs
= 2.21 lb/MMBtu * 1020 Btu/scf/1020 Btu/scf * 0.5 MMBtu/hr * 1/1020 Btu/scf * 1000000/1 Btu/MMBtu * 8760 hrs/yr * 1ton/2000lbs
= 36.31 tpy

AP-42 SO_2 emissions based on 100% conversion of fuel sulfur to SO_2 and assumes sulfur content in natural gas of 2,000 grains/10^6 scf. The SO2 emission factor is converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf. For all other engines not using AP-42, The SO_2 emissions are based on grains S/scf. Fuel Heat values for Diesel = 0.137 MMBtu/gal; LPG = 0.0905 MMBtu/gal and Gasoline = 0.13 MMBtu/gal per AP-42 Appendix A, pg 5 & 6. SO2 emissions for all diesel engines not using AP-42, equals Gal Diesel/hr * diesel wt (lb)/gal * 15 ppm S * 64 lb SO2/32 lb S, where diesel weighs 7.1089 lb/gal.

NOx Sample Calculation Using NSPS JJJJ Emission Factors for a July 1, 2010 500-HP 4-Stroke Rich Burn Engine

pph = NOx Emission Factor (EF) g/hp-hr * 1/453.6 lbs/grams * Allowable HP
= 1 g/hp-hr * 1/453.6 lbs/grams * 500 hp
= 1.1 lb/hr

tpy =NOx Emission Factor (EF) g/hp-hr * 1/453.6 lbs/grams * Allowable HP * 8760 hrs/yr * 1/2000 tons/lbs
= 1 g/hp-hr * 1/453.6 lbs/grams * 500 hp * 8760 hrs/yr * 1ton/2000lbs
= 4.82 tpy

Technical Disclaimer
This document is intended to help you accurately determine stationary compressor engine emissions. It does not supersede or replace any state or federal law, rule, or regulation. This guidance reflects the current understanding of how these units work and how they generate emissions, how they are monitored or tested, and what data are available for emissions determination, may change over time as the AQB continue scientific studies and as new information becomes available. The AQB welcome any data, information, or feedback that may improve our understanding of stationary compressor engine emissions and thereby further improve determinations within the emissions inventory. The calculation methods represented are intended as an emissions calculation aid; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data. If you have a question regarding the acceptability of a given emissions determination method, contact the Permitting Section at 505-476-4300.

New Mexico Environment Department Air Quality Bureau Emissions Calculation Forms

Date: Jun 30, 2020
Company Name: ConocoPhillips Company
Facility Name: Vacuum Glorietta East Unit (VGEU) West Battery

Permit Number: 8619
AI# if Known: 39319
Elevation (ft.): 3,980

Total Requested Emissions For All Regulated Engines (GCP-O&G Request)

UnitID	NO_x		CO		VOC		SO_x		TSP		PM_{10}		$PM_{2.5}$		H_2S		Total HAP	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
ENG 1	0.28	1.2	0.17	0.76	0.38	1.64	0.01	0.06	0.02	0.08	0.02	0.08	0.02	0.08			0	0
ENG 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
ENG 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
GEN 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
PJENG 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
Page Totals	**0.28**	**1.2**	**0.17**	**0.76**	**0.38**	**1.64**	**0.01**	**0.06**	**0.02**	**0.08**	**0.02**	**0.08**	**0.02**	**0.08**			**0**	**0**

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vapor Recovery Unit Air Emissions Calculations Form Under Development

Please submit all required calculations and supporting documentation for all vapor recovery unit emissions.

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vapor Recovery Unit (VRU) Process vs Control Determination

Please complete the Process vs. Control determination below for the VRT/ULPS, which addresses the three criteria referenced in the EPA Nov. 27, 1995 Process Guidance memo and enter appropriate Information in all green boxes.

1. ***Is the primary purpose of the equipment to control air pollution? (Check appropriate box)***

☐ No, the primary purpose of the VRU equipment is to recover flash gas vapors and route them into an available gas sales line.

☐ Yes, the primary purpose of the VRULPS equipment is to control air pollution.

2. ***Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment? (Check appropriate box)***

☐ Yes, the benefit-cost analysis below demonstrates a positive return on investment. The benefit-cost analysis of the VRU equipment compared to the product recovered is shown below:

☐ No, the benefit- cost analysis below demonstrates a negative return on investment.

VRU-1	VRU-1 Benefit-Cost Analysis*		
Capital Cost of VRT/ULPS ($)		Oil Production (BOPD)	550
VRT/ULPS/LPC/VRU Rental Costs ($/mo)		VRT/ULPS Vapor Production (Mcf/d)	
Capital Cost of LPC/VRU ($)		Heating Value of Vapors (Btu/scf)	
Annual Maintenance & Service Costs ($/yr)		Natural Gas Price ($/MMBtu)	
Annual Electricity or Fuel Costs ($/yr)		VRT/ULPS/LPC/VRU Life Expectancy (Yrs)	
VRT/ULPS/LPC/VRU Lifetime Costs ($)		Lifetime VRT/ULPS/LPC/VRU Profit (Revenues-Costs) ($/yr)	$0.00
Annual VRT/ULPS/LPC/VRU Revenue ($/yr)	$0.00	Payback Period (Yrs)	
VRT/ULPS/LPC/VRU Lifetime Revenue ($)	$0.00	Lifetime Benefit-Cost Ratio	

3. ***Would the equipment be installed if no air quality regulations are in place? (Check appropriate box)***

☐ Yes, the VRU equipment would still be installed regardless of air quality regulations, due to the significant cost benefits of product recovery.

☐ No, the VRU equipment would not be installed if there were no air quality regulations in place.

Notes: This evaluation is not required. See the explanation at the beginning of this Section under Calculation Details.

Footnote: All estimates based on current dollars unless specified otherwise; Tank vapor estimates based on flash calculation method noted in Tanks form based on oil throughput noted in p2 of AECT (this can be changed by user); Gas price based on EIA Natural Gas Weekly Update. * The time value of money is not taken into account.

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vertical Fixed Roof (VFR) Oil/Condensate VOC Flash Emissions Calculations Form

Select Tanks Flash Emission Calculation Method

GOR	E & P Tanks	ProMax
Vasquez-Beggs	HYSYS	VMGSim

ProMax Oil Tanks Emission Calculations

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Tanks VOC Control Method			
Capture Efficiency	95	Represent Uncaptured/Uncollected VOC's at Tanks	NO
VOC Control Method[1]	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency[2]	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes			

Total VOC Flash Emissions From Oil/Condensate Storage Tanks Calculated with ProMax

Add/Remove Rows	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
Up To 10 Units		pph	tpy	pph*	tpy*	pph	tpy
+ -	TK-2	34.33	150.34	1.72	7.52		
+ -	TK-3	34.33	150.34	1.72	7.52		
+ -	TK-4	0.7	3.04	0.04	0.15		
	Totals	69.36	303.72	3.48	15.19		

Notes 1 & 2 See next page; * Emissions only represented at tanks if "Yes" is selected to represent emissions at tanks.

Calculation Tool for Tanks Flashing & Working & Standing Emissions for Oil & Gas Production Sites

All flash emissions based on flash calculation methodology selected;

1) The appropriate ECD, flare, TO, VCU or VRU form must also be completed.
2) Manufacturer documentation required to support % control selected. If using a VRU/LPC, calculations assume VRU/ULPC with a 100% control efficiency, but with 5% downtime;
3) Information included in calculation tool must be based on representative oil and gas analysis which must be submitted with application;
4) GOR and Vasquez-Beggs sample calculations outlined below; E & P Tanks, ProMax, HYSYS & VMG Sim flash emissions require submittal of computer simulation model emissions calculations print-outs;
5) Working & Standing emissions based on AP-42 Chpt. 7, tanks 4.09d computer simulation or ProMax, or VMG computer simulation models.

Sample Calculations

GOR Methodology

VOC pph = GOR (scf/bbl) * Facility Oil Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol)
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol
= 216.45 lbs/hr

VOC tpy = GOR (scf/bbl) * Facility Oil Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol) * 8760 hr/yr * 1/2000 lbs/ton
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol * 8760 hr/yr * 1/2000 lbs/ton
= 948.05 tpy

Vasquez-Beggs Methodology

INPUTS			Constraints			
API Gravity		API	16	<API>	58	^{0}API
Separator Pressure (psig)		P	50	<P+Patm>	5250	psia
Separator Temp. (^{0}F)		Ti	70	<Ti>	295	^{0}F
Separator Gas Gravity at Initial Condition		SGi	0.56	<SGi>	1.18	MW/28.97
Barrels of Oil/Day (BOPD)	183.33	Q	None	<Q>	None	BOPD
Tank Gas MW		MW	18	<MW>	125	lb/lb-mole
VOC Fraction of Tank Gas		VOC	0.5	<VOC>	1.00	Fraction
Atmospheric Pressure (psia)		Patm	20	<Rs>	2070	scf/bbl

Constants			
	^{0}API Gravity		
^{0}APTI	<30	≥30	Given^{0}API
C1	0.0362	0.0178	
C2	1.0937	1.187	
C3	25.724	23.931	

SGx = Dissolved gas gravity at Separator pressure = SGi [1.0+0.00005912*API*Ti*Log(Pi/114.7)]

Rs = (C1 * SGx * Pi^C2) exp ((C3 * API) / (Ti + 460)) for P + Patm

THC = Rs * Q * MW * 1/385 scf/lb-mole * 365 D/Yr * 1 ton/2000 lbs

VOC =THC * Frac. of C3+ in the Stock Tank Vapor

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vertical Fixed Roof (VFR) Oil/Condensate VOC Working & Standing Emissions Calculations Form

Select Tanks W & S Emission Calculation Method

AP-42 Chpt. 7 | EPA Tanks 4.09d | ProMax | E & P Tanks

ProMax Oil Tanks W & S Emission Calculations

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Tanks VOC Control Method			
Capture Efficiency	95	Represent Uncaptured and/or Controlled VOC's at Tanks	NO
VOC Control Method	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes			

Total VOC W & S Emissions From Oil/Condensate Storage Tanks Calculated with ProMax

Add/Remove Rows Up To 10 Units	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
		pph	tpy	pph*	tpy*	pph	tpy
+ -	TK-2	6.51	28.48	0.33	1.42		
+ -	TK-3	5.89	25.79	0.29	1.29		
+ -	TK-4	2.42	10.59	0.12	0.53		
	Totals	14.82	64.86	0.74	3.24		

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Slop Oil or Skim Oil Tanks VOC Flash Emissions Calculations Form

Select Flash Emission Calculation Method

GOR	E & P Tanks	ProMax
Vasquez-Beggs	HYSYS	VMGSim

ProMax Slop Oil or Skim Oil Tanks Emission Calculations

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Slop Oil or Skim Oil Tanks VOC Control Method			
Capture Efficiency	95	Represent Uncaptured/Uncollected VOC's at Tanks	NO
VOC Control Method[1]	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency[2]	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes	Since flashing occurs at PWTK-1 (upstream of STK-1), there are no flash emissions associated with STK-1.		

Total VOC Flash Emissions From Slop Oil or Skim Oil Tanks Calculated with ProMax							
Add/Remove Rows	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
Up To 10 Units		pph	tpy	pph*	tpy*	pph	tpy
+ -	STK-1	0	0	0	0		
	Totals	0	0	0	0		

Notes 1 & 2 See next page; * Emissions only represented at tanks if "Yes" is selected to represent emissions at tanks.

Calculation Tool for Tanks Flashing & Working & Standing Emissions for Oil & Gas Production Sites

All flash emissions based on flash calculation methodology selected;

1) The appropriate ECD, flare, TO, VCU or VRU form must also be completed.
2) Manufacturer documentation required to support % control selected. Assumes VRU/ULPC with a 100% control efficieny, but with 5% downtime;
3) Information included in calculation tool must be based on representative oil and gas analysis which must be submitted with application;
4) GOR and Vasquez-Beggs sample calculations outlined below; E & P Tanks, ProMax, HYSYS & VMG Sim flash emissions require submittal of computer simulation model emissions calculations print-outs;
5) Working & Standing emissions based on AP-42 Chpt. 7, tanks 4.09d computer simulation or ProMax, or VMG computer simulation models.

Sample Calculations

GOR Methodology

VOC pph = GOR (scf/bbl) * Facility Oil Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol)
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol
= 216.45 lbs/hr

VOC tpy = GOR (scf/bbl) * Facility Oil Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol) * 8760 hr/yr * 1/2000 lbs/ton
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol * 8760 hr/yr * 1/2000 lbs/ton
= 948.05 tpy

Vasquez-Beggs Methodology

INPUTS			Constraints			
API Gravity		API	16	<API>	58	^{0}API
Separator Pressure (psig)		P	50	<P+Patm>	5250	psia
Separator Temp. (^{0}F)		Ti	70	<Ti>	295	^{0}F
Separator Gas Gravity at Initial Condition		SGi	0.56	<SGi>	1.18	MW/28.97
Barrels of Oil/Day (BOPD)		Q	None	<Q>	None	BOPD
Tank Gas MW		MW	18	<MW>	125	lb/lb-mole
VOC Fraction of Tank Gas		VOC	0.5	<VOC>	1.00	Fraction
Atmospheric Pressure (psia)		Patm	20	<Rs>	2070	scf/bbl

Constants			
	^{0}API Gravity		
^{0}APTI	<30	≥30	Given^{0}API
C1	0.0362	0.0178	
C2	1.0937	1.187	
C3	25.724	23.931	

SGx = Dissolved gas gravity at Separator pressure = SGi [1.0+0.00005912*API*Ti*Log(Pi/114.7)]

Rs = (C1 * SGx * Pi^C2) exp ((C3 * API) / (Ti + 460)) for P + Patm

THC = Rs * Q * MW * 1/385 scf/lb-mole * 365 D/Yr * 1 ton/2000 lbs

VOC =THC * Frac. of C3+ in the Stock Tank Vapor

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vertical Fixed Roof (VFR) Slop Oil or Skim Oil VOC Working & Standing Emissions Calculations Form

Select Tanks W & S Emission Calculation Method

AP-42 Chpt. 7 | EPA Tanks 4.09d | ProMax | E & P Tanks

ProMax Slop Oil or Skim Oil Tanks W & S Emission Calculations

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Slop Oil or Skim Oil Tanks VOC Control Method			
Capture Efficiency	95	Represent Uncaptured and/or Controlled VOC's at Tanks	NO
VOC Control Method	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes			

Total VOC W & S Emissions From Slop Oil or Skim Oil Tanks Calculated with ProMax							
Add/Remove Rows Up To 10 Units	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
		pph	tpy	pph*	tpy*	pph	tpy
+ -	STK-1	0.29	1.25	0.01	0.06		
	Totals	0.29	1.25	0.01	0.06		

New Mexico Environment Department Air Quality Bureau Equipment Emissions Calculation Form

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Startup, Shutdown & Maintenance and Malfunction

- ○ No SSM emissions are expected from routine operations.
- ◉ Request up to 10 tpy of VOC SSM emissions.
- ○ Request site specific VOC & H2S SSM and enter information below.
- ○ Request site specific VOC & H2S SSM plus 10 tpy VOC and enter information below.
- ○ Request site specific combustion SSM and those emissions are included in Section 4 (attach calculations.)

- ◉ Request 10 tpy VOC Malfunction emissions for GCP-O&G, GCP-6 or NSR permitting actions only.

	Blowdowns			Engine Startups		
Unit Numbers						
Quantity of Like-kind Blowdown Units or Engines						
Total Volume of Each Blowdown or Engine Startup Vent (acf)						
Duration of Event (Minutes)						
Maximum Blowdowns or Startups/hr						
Frequency of Blowdowns or Engine Startups (Events/yr)						
Total Actual Volume of Gas Vented (acf/yr)						
Pressure of Gas Inside Unit Before Venting (psig)						
Final Pressure (psia)						
Gas Temperature Prior to Venting (°F)						
Vented Gas Molecular Weight (lb/lb-mol						
Vented Gas VOC wt %						
Vented Total HAP wt %						
Vented Gas Benzene wt %						
Vented Gas H_2S wt %						

Startup, Shutdown and Maintenance Emissions (SSM) and Malfunction Emissions

SSM	**VOC**		**Total HAP**		**Benzene**		**H_2S**	
	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY
SSM Blowdowns								
SSM Startups								
SSM Other (Attach Calculations)								
SSM Totals		**10**						
Malfunction Total		**10**						

Notes

Planned SSM Emissions

The venting emissions calculations herein should only be used when only gas (no liquids) is present in the unit. The calculation of the vented gas is based on the volume of the unit and assumes the unit is saturated with vapor at the pressure and temperature of the unit before venting occurs. If liquids are also present in the gas, please enter the calculated amounts in the SSM Other row only and submit separate calculations, since the calculations on this form do not account for the evaporation of liquids that may be present in the unit.

Calculations are based on the Ideal gas law: P(V) = n(R)(T)

VOC result = (((Pressure of Gas Inside the Unit Before Venting) * (Actual Volume of the Vented Unit)) / (Frequency of events) * (Molecular Weight) * VOC wt%)/(Ideal Gas Constant) * (Temperature of Gas Inside the Unit Before Venting)

Where the Ideal Gas Constant = 10.73159 (ft^3*psia)/R*lb-mol

For SSM combustion emissions, attach separate calculations.

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vertical Fixed Roof (VFR) Produced Water VOC Flash Emissions Calculations Form

Select Tanks Flash Emission Calculation Method

GWR	E & P Tanks	ProMax
Vasquez-Beggs	HYSIS	VMGSim

ProMax Produced Water Tanks Emission Calculations

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Tanks VOC Control Method			
Select % Oil in Water	1	VOC Uncontrolled emissions entered includes this percentage.	
Capture Efficiency	95	Represent Uncaptured and/or Controlled VOC's at Tanks	NO
VOC Control Method	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes	Since flashing occurs at PWTK-1 (upstream of PWTK-2 & 3), there are no flash emissions associated with PWTK-2 & 3.		

Total VOC Emissions From Produced Water Storage Tanks Calculated with ProMax

Add/Remove Rows Up To 10 Units	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
		pph	tpy	pph*	tpy*	pph	tpy
+ -	PWTK- 1	14.93	65.37	0.75	3.27		
+ -	PWTK- 2	0	0	0	0		
+ -	PWTK- 3	0	0	0	0		
	Totals	14.93	65.37	0.75	3.27		

Notes 1 & 2 See next page; * Emissions only represented at tanks if "Yes" is selected to represent emissions at tanks.

Calculation Tool for Tanks Flashing & Working & Standing Emissions for Oil & Gas Production Sites

All flash emissions based on flash calculation methodology selected ;

1) The appropriate ECD, flare, TO, VCU or VRU form must also be completed.
2) Manufacturer documentation required to support % control selected. Assumes VRU/ULPC with a 100% control efficieny, but with 5% downtime;
3) Information included in calculation tool must be based on representative oil and gas analysis which must be submitted with application;
4) GOR and Vasquez-Beggs sample calculations outlined below; E & P Tanks, ProMax, HYSYS & VMG Sim flash emissions require submittal of computer simulation model emissions calculations print-outs;
5) Working & Standing emissions based on AP-42 Chpt. 7, tanks 4.09d computer simulation or ProMax, or VMG computer simulation models.

Sample Calculations

GWR Methodology

VOC pph = GWR (scf/bbl) * Facility Water Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol) * Percent Oil in Water
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol * 1/100
= 2.16 lbs/hr

VOC tpy = GWR (scf/bbl) * Facility Water Throughput (BOPD) * 1/24 (Hours/Day * 1/Universal Gas Constant 385 scf/lb-mole @ 70^{O}F, 1 atm) * Molecular Weight of Tank Vapors (lb/lb-mol) * 8760 hr/yr * 1/2000 lbs/ton * Percent Oil in Water
= 40 (scf/bbl) * 1000 (BOPD)*1/24 (hrs/day) *1/385 scf/lb-mol * 50 lb/lb-mol * 8760 hr/yr * 1/2000 lbs/ton * 1/100
= 9.48 tpy

Vasquez-Beggs Methodology

INPUTS			Constraints			
API Gravity		API	16	<API>	58	^{0}API
Separator Pressure (psig)		P	50	<P+Patm>	5250	psia
Separator Temp. (^{0}F)		Ti	70	<Ti>	295	^{0}F
Separator Gas Gravity at Initial Condition		SGi	0.56	<SGi>	1.18	MW/28.97
Barrels of Water/Day (BOPD)	5,166.67	Q	None	<Q>	None	BOPD
Tank Gas MW		MW	18	<MW>	125	lb/lb-mole
VOC Fraction of Tank Gas		VOC	0.5	<VOC>	1.00	Fraction
Atmospheric Pressure (psia)		Patm	20	<Rs>	2070	scf/bbl

Constants			
	^{0}API Gravity		
^{0}APTI	<30	≥30	Given^{0}API
C1	0.0362	0.0178	
C2	1.0937	1.187	
C3	25.724	23.931	

SGx = Dissolved gas gravity at Separator pressure = SGi [1.0+0.00005912*API*Ti*Log(Pi/114.7)]

Rs = (C1 * SGx * Pi^C2) exp ((C3 * API) / (Ti + 460)) for P + Patm

THC = Rs * Q * MW * 1/385 scf/lb-mole * 365 D/Yr * 1 ton/2000 lbs

VOC = THC * Frac. of C3+ in the Stock Tank Vapor

Technical Disclaimer
This document is intended to help you accurately determine produced water storage tank flash, working and standing emissions. It does not supersede or replace any state or federal law, rule, or regulation. This guidance reflects the current understanding of how these units work and how they generate emissions, how they are monitored or tested, and what data are available for emissions determination, may change over time as the AQB continue scientific studies and as new information becomes available. The AQB welcome any data, information, or feedback that may improve our understanding of produced water storage tank flash, working and standing emissions and thereby further improve determinations within the emissions inventory. The calculation methods represented are intended as an emissions calculation aid; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data. If you have a question regarding the acceptability of a given emissions determination method, contact the Permitting Section at 505-476-4300.

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Vertical Fixed Roof (VFR) Water Tanks VOC Working & Standing Emissions Calculations Form

Select Tanks W & S Emission Calculation Method

AP-42 Chpt. 7 | EPA Tanks 4.09d | ProMax | E & P Tanks

ProMax Produced Water Tanks W & S Emission Calculations

(Assumes W & S emissions are 1% of the emissions calculated based on oil properties and entered as uncontrolled emissions)

Please attach the ProMAX printout with all input data provided along with the calculated emissions. Enter the uncontrolled VOC emissions below. If the tank vapors are routed to a flare, enclosed combustion device, vapor combustion unit, vapor recovery unit or thermal oxidizer select the appropriate VOC destruction method below along with selected VOC destruction efficiency supported by manufacturer specifications submitted with the application.

Tanks VOC Control Method			
Capture Efficiency	95	Represent Uncaptured and/or Controlled VOC's at Tanks	NO
VOC Control Method	Vapor Recovery Unit (VRU)	Represent VRU/ULPC Downtime Emissions at Tanks	YES
VOC Destruction Efficiency	0	Represent VOC Controlled Emissions at Tanks*	NO
Notes			

Total VOC W & S Emissions From Produced Water Storage Tanks Calculated with ProMax

Add/Remove Rows Up To 10 Units	Tank ID	VOC Uncontrolled Emissions		VOC Emissions after Control		VOC Emissions at the Tanks	
		pph	tpy	pph*	tpy*	pph	tpy
+ -	PWTK-1	25.71	112.6	1.29	5.63		
+ -	PWTK-2	4.48	19.63	0.22	0.98		
+ -	PWTK-3	4.48	19.63	0.22	0.98		
	Totals	34.67	151.86	1.73	7.59		

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Flare

Enter information in green boxes below changing default values as appropriate.

	Gas Stream 1	Gas Stream 2	Gas Stream 3		Gas Stream 1	Gas Stream 2	Gas Stream 3
Emission Unit ID	FL-1			Hourly Gas Routed to Flare (MMBtu/hr)	98.853125	0	0
Hourly Gas Stream to Flare (Mscf/hr)	62.5			Annual Gas Routed to Flare (MMBtu/yr)	88,967.8125		
Annual Gas Stream to Flare (MMscf/yr)	56.25			Pilot Gas Routed to Flare (MMBtu/hr)	0.011543	0	0
Max. Heat Value of Gas (Btu/scf)	1,581.65			Gas MW (lb/lbmol)	37.1		
Field Gas Mol Fraction (lbmol H2S/lb-mol)	2.016			Gas Pressure (psia)	14.7		
Field Gas Sulfur Content (S grains/100 scf)	1,192.07			Gas Temperature (°F)	70		
Pilot Gas to Flare (Mscf/hr)	0.012			Field Gas H2S Wt.% to Flare (%)	1.8512		
Max. Heat Value Pilot Gas (Btu/scf)	961.93			Flare Control Efficiency	98	95	95
Pilot Gas Sulfur Content (S grains/100 scf)	0.25			Total VOC wt.% to Flare (%)[1]	56.81		
Source of Flare Emission Factors	TCEQ Air or			Safety Factor Applied to Total Emissions (%)			
Use Highest NOx & CO Emission Factors From AP-42 or TCEQ	NO						

Total Emissions to Flare

Pollutant	NOx			CO			VOC			SO2			H2S		
Gas Streams to Flare	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Uncontrolled (pph)	0	0	0	0	0	0	3,404.71			0	0	0	110.9452	0	0
Uncontrolled (tpy)	0	0	0	0	0	0	1,532.12			0	0	0	49.9253	0	0
Field Gas (pph)	13.6417	0		27.234			68.09			205.2655			2.2189		
Field Gas (tpy)	6.1388	0	0	12.2553	0	0	30.64			92.3695	0	0	0.9985	0	0
Pilot Gas (pph)	0.0007			0.0063			0	0	0	0	0	0	0	0	0
Pilot Gas (tpy)	0.0032			0.0278			0	0	0	0	0	0	0	0	0
Subtotal Flare (pph)	13.6424	0	0	27.2403	0	0	68.09	0	0	205.2655	0	0	2.2189	0	0
Subtotal Flare (tpy)	6.142	0	0	12.2831	0	0	30.64	0	0	92.3695	0	0	0.9985	0	0
Total Flare (pph)	13.64			27.24			68.09			205.2655			2.2189		
Total Flare (tpy)	6.14			12.28			30.64			92.3695			0.9985		

See reverse side for calculation notes.

1) Based on representative gas analysis which must be submitted with application; 2) Assumes pilot gas has a negligible amount of VOC & 0.25 grains H2S/100scf; *) Emission factors for NOx, CO & VOC based on AP-42, Table 13.5-1, (Dec. 2015) or TCEQ RG-360A/11 (February 2012); #) Assumes H_2S is converted to SO_2 at selected control efficiency; SO2 emissions based on mass balance; +) Assumes H_2S Destruction Efficiency equals flare destruction efficiency;

Calculation Tool for Flare Emissions for Oil & Gas Production Sites

All emission factors based on AP-42, Emission factors for NOx, CO & VOC, Table 13.5-1, (December 2016); https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_12-13-16.pdf or https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg360/rg36011/rg-360a.pdf

1) Information included in calculation tool must be based on representative gas analysis which must be submitted with application;
2) Assumes pilot gas used has a negligible amount of VOC's and 0.25 grains H2S/100 scf;
3) SO_2 calculations assumes H_2S is converted to SO_2 at selected control efficiency; SO_2 emissions based on mass balance;
4) H_2S calculations assume H_2S Destruction Efficiency equals flare destruction efficiency;

Sample Calculations

NOx pph = hourly gas routed to flare (MMBtu/hr) * NOx Emission factor (lbs/MMBtu)
= 1(MMBtu/hr) * 0.068 (lbs/MMBtu)
= 0.068 lbs/hr

NOx tpy = annual gas routed to flare (MMBtu/yr) * NOx Emission factor (lbs/MMBtu) * 1/lbs/ton)
= 1000 (MMBtu/yr) * 0.068 (lb/MMBtu) * 1/2000 (lbs/ton)
= 0.034 tpy

SO_2 pph= Hourly Gas Stream to flare (MMScf/hr) * 1000000/1 (scf/MMScf) * Field Gas mol Fraction of H_2S (mol H_2S/lb-mol)/100 * 1/Universal Gas Constant 385 scf/lb-mole @ 60^{o}F, 1 atm * Conversion Rate of H_2S to SO_2 lb-mol SO_2/lb-mol H_2S * Molecular Weight of Sulfur Dioxide (64 lb SO_2/lb-mol SO_2)
= 1 MMScf/hr * 1000000/1 (Scf/MMScf) * 0.1 mol H_2S* 1/385 scf/lb-mole * 0.95 lb-mol SO_2/lb-mol H_2S * 64 lb/lb-mol

Residual
H_2S pph= Hourly Gas Stream to flare (MMScf/hr) * 1000000/1 (scf/MMScf) * Field Gas mol Fraction of H_2S (mol H_2S/lb-mol)/100 * 1/Universal Gas Constant 385 scf/lb-mole @ 60^{o}F, 1 atm * (100-(Flare Control Efficiency))/100) * Molecular Weight of Hydrogen Sulfide (34 lb H_2S/lb-mol H_2S)
= 1 MMScf/hr * 1000000/1 (Scf/MMScf) * 0.1 mol H_2S* 1/385 scf/lb-mole * (100-95%/100) * 34 lb/lb-mol

Flare, Vapor Combustion Devices & Enclosed Combustion Devices Emission Factors				
Contaminant	Assist Type	Waste Gas Stream Heat Value (Btu/scf)	AP-42 Emission Factor (lb/MMBtu)	TCEQ Emission Factor (lb/MMBtu)
NOx	Steam	≥1000	0.068	0.0485
	Steam	<1000	0.068	0.068
	Air or Unassisted	≥1000	0.068	0.138
	Air or Unassisted	<1000	0.068	0.0641
CO	Steam	≥1000	0.31	0.3503
	Steam	<1000	0.31	0.3465
	Air or Unassisted	≥1000	0.31	0.2755
	Air or Unassisted	<1000	0.31	0.5496
VOC	Air & Steam Assist	≥300	0.66	

New Mexico Environment Department Air Quality Bureau Equipment Emissions Calculation Form

Date:	Jun 30, 2020	**Permit Number:**	GCP-O&G-8619
Company Name:	ConocoPhillips Company	**AI# if Known:**	39319
Facility Name:	Vacuum Glorietta East Unit (VGEU) West Battery	**Elevation (ft.):**	3,980

Emission Unit ID: FUG-1 **Fill all green/blue boxes changing default values as appropriate.**

Fugitive Volatile Organic Compounds (VOC), Total HAPs (HAP), Benzene (CH6) & Hydrogen Sulfide (H_2S) Emissions

					Uncontrolled Total								Controlled Total							
					VOC		Total HAP		CH_6		H_2S		VOC		Total HAP		CH_6		H_2S	
Service	%VOC	%HAP	%CH_6	%H_2S	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY
Gas	52.01%	6.8	0.39	5.33	0.51	2.25	0.07	0.29	0.004	0.017	0.053	0.232	0	0	0	0	0	0	0.053	0.232
Heavy Oil	100%				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Oil	99.32%	8.35	1.24	0.02	0.62	2.73	0.05	0.23	0.008	0.034	0	0	0	0	0	0	0	0	0	0
Water/Oil	1%				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals					1.13	4.98	0.12	0.52	0.012	0.051	0.053	0.232	0	0	0	0	0	0	0.053	0.232

				Uncontrolled VOC, HAP & CH_6 Emissions							Controlled VOC, HAP & CH_6 Emissions					
Equipment Type	Service[a]	EF[b] PPH/Source	No. of Sources	VOC PPH	VOC TPY	HAP PPH	HAP TPY	CH_6 PPH	CH_6 TPY	Control Efficiency	VOC PPH	VOC TPY	HAP PPH	HAP TPY	CH_6 PPH	CH_6 TPY
Valves	Gas	0.0099207	68	0.3509	1.5369	0.0459	0.201	0.0026	0.0114	0%	0	0	0	0	0	0
	Heavy Oil	0.00001852	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.0055115	58	0.3175	1.3906	0.0267	0.1169	0.004	0.0175	0%	0	0	0	0	0	0
	Water/Oil	0.00021605	11	0	0	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.6684	2.9275	0.0726	0.3179	0.0066	0.0289		0	0	0	0	0	0
Pump Seals	Gas	0.00529104	0	0	0	0	0	0	0	0%	0	0	0	0		0
	Heavy Oil	0.0286598	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.0286598	4	0.1139	0.4989	0.0096	0.042	0.0014	0.0061	0%	0	0	0	0	0	0
	Water/Oil	0.00005291	4	0	0	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.1139	0.4989	0.0096	0.042	0.0014	0.0061		0	0	0	0	0	0
Connectors	Gas	0.00044092	204	0.0468	0.205	0.0061	0.0267	0.0004	0.0018	0%	0	0	0	0	0	0
	Heavy Oil	0.00001653	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.00046297	174	0.08	0.3504	0.0067	0.0293	0.001	0.0044	0%	0	0	0	0	0	0
	Water/Oil	0.00024251	33	0.0001	0.0004	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.1269	0.5558	0.0128	0.056	0.0014	0.0062		0	0	0	0	0	0
Flanges	Gas	0.00085979	68	0.0304	0.1332	0.004	0.0175	0.0002	0.0009	0%	0	0	0	0	0	0
	Heavy Oil	0.00000086	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.00024251	58	0.014	0.0613	0.0012	0.0053	0.0001	0.0004	0%	0	0	0	0	0	0
	Water/Oil	0.00000639	11	0	0	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.0444	0.1945	0.0052	0.0228	0.0003	0.0013		0	0	0	0	0	0
Open Ends	Gas	0.0044092	7	0.0161	0.0705	0.0021	0.0092	0.0001	0.0004	0%	0	0	0	0	0	0
	Heavy Oil	0.00030864	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.00308644	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Water/Oil	0.00055115	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.0161	0.0705	0.0021	0.0092	0.0001	0.0004		0	0	0	0	0	0
Other[c]	Gas	0.01940048	7	0.0706	0.3092	0.0092	0.0403	0.0005	0.0022	0%	0	0	0	0	0	0
	Heavy Oil	0.00007055	0	0	0	0	0	0	0	0%	0	0	0	0	0	0
	Light Oil	0.0165345	6	0.0985	0.4314	0.0083	0.0364	0.0012	0.0053	0%	0	0	0	0	0	0
	Water/Oil	0.0308644	2	0.0006	0.0026	0	0	0	0	0%	0	0	0	0	0	0
Subtotals				0.1697	0.7432	0.0175	0.0767	0.0017	0.0075		0	0	0	0	0	0

Based on: *1995 Protocol for Equipment Leak Emission Estimates*, Table 2.4 Version Date: 6/23/16; See next page for calculation notes.

Calculation Tool for Fugitive Emissions Oil & Gas Production

Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017), Table 2-4;
available at the EPA Web site at https://www3.epa.gov/ttn/chief/efdocs/equiplks.pdf

a) Service categories are defined as follows:

1) Gas/vapor - material in a gaseous state at operating conditions;
2) Light liquid - material in a liquid state in which the sum of the concentration of individual constituents with a vapor pressure over 0.3 kilopascals (kPa) at 200C is greater than or equal to 20 weight percent;
3) Heavy liquid - not in gas/vapor service or light liquid service.
4) Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

b) These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

c) The "other" equipment type was derived from compressors, diaphragms, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

d) Note that the average factors generally determine total hydrocarbon emissions. Therefore, you may need to multiply the calculated emission rates by the stream's weight percentage of VOC compounds to determine total VOC emissions. Please attach a copy of the appropriate gas and oil analysis with the stream's weight percentage of VOC compounds identified.

VOC Sample Calculation
For 10 Valves in Gas Service with a gas stream weight percentage of 25% VOC

Emission Factor (EF) lb/hr=0.0045 kg/hr * 2.2046 lbs/kg
Gas Valves Uncontrolled Emissions

pph	EF (Valves in Gas Service) * Number of Valves in Gas Service & VOC wt%
	0.0099207 lb/hr * 10 valves = 0.099207 lb/hr * 25%/100
tpy	EF (Valves in Gas Service) * Number of Valves in Gas Service * 8760 hrs/yr * 1ton/2000 lbs
	0.0099207 lb/hr * 10 valves * 8760 hrs/yr * 1/2000 ton/lbs = 0.4345 tons/yr * 25%/100

Total Uncontrolled Fugitive Emissions for all Service types in Gas Service

pph	(Uncontrolled pph Emissions for Valves + Pump Seals + Connectors + Flanges + Open Ends + Other) * VOC wt%/100
tpy	(Uncontrolled tpy Emissions for Valves + Pump Seals + Connectors + Flanges + Open Ends + Other) * VOC wt%/100

Technical Disclaimer
This document is intended to help you accurately determine equipment leak fugitive emissions. It does not supersede or replace any state or federal law, rule, or regulation. This guidance reflects the current understanding of how piping components work and how they generate emissions, how they are monitored or tested, and what data are available for emissions determination, may change over time as we continue our scientific studies and as new information becomes available. We welcome any data, information, or feedback that may improve our understanding of equipment leak fugitive emissions and thereby further improve determinations within the emissions inventory. The calculation methods represented are intended as an emissions calculation aid; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data. If you have a question regarding the acceptability of a given emissions determination method, contact the Permitting Section at 505-476-4300.

New Mexico Environment Department Air Quality Bureau Emissions Calculation Forms

Date: Jun 30, 2020
Company Name: ConocoPhillips Company
Facility Name: Vacuum Glorietta East Unit (VGEU) West Battery

Permit Number: 8619
AI# if Known: 39319
Elevation (ft.): 3,980

Total Requested Emissions For All Regulated Facility Equipment (GCP-O&G Request)

Emission Unit	NO_x		CO		VOC		SO_x		TSP		PM_{10}		$PM_{2.5}$		H_2S		Total HAP	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Engines	0.28	1.2	0.17	0.76	0.38	1.64	0.01	0.06	0.02	0.08	0.02	0.08	0.02	0.08	-	-	0	0
Heaters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-		
Oil Tanks Flash	-	-	-	-			-	-	-	-	-	-	-	-				
Oil Tanks W & S	-	-	-	-			-	-	-	-	-	-	-	-				
Water Tks Flash	-	-	-	-			-	-	-	-	-	-	-	-				
Water Tks W & S	-	-	-	-			-	-	-	-	-	-	-	-				
Skim or Slop Tank	-	-	-	-			-	-	-	-	-	-	-	-				
GBS	-	-	-	-			-	-	-	-	-	-	-	-				
ECD	0	0	0	0	0	0	0	0										
VCU	0	0	0	0	0	0	0	0										
TO	0	0	0	0	0	0	0	0										
Flares	13.64	6.14	27.24	12.28	68.09	30.64	205.27	92.37										
Fugitives	-	-	-	-	1.13	4.98									0.05	0.23	0.12	0.52
SSM						10												
Malf.	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Unpaved Haul Rds.	-	-	-	-	-	-	-	-	0	0	0	0	0	0	-	-	-	-
Paved Haul Rds.	-	-	-	-	-	-	-	-	0	0	0	0	0	0	-	-	0	0
Oil Load	-	-	-	-			-	-	-	-	-	-	-	-				
Water Loading	-	-	-	-			-	-	-	-	-	-	-	-				
Amine Unt	-	-	-	-	0	0	-	-	-	-	-	-	-	-	0	0	0	0
Amine Reb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-		
Dehy Unit	-	-	-	-			-	-	-	-	-	-	-	-				
Dehy Reb.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-		
Totals	**13.92**	**7.34**	**27.41**	**13.04**	**69.6**	**57.26**	**205.28**	**92.43**	**0.02**	**0.08**	**0.02**	**0.08**	**0.02**	**0.08**	**0.05**	**0.23**	**0.12**	**0.52**

A red-outlined cell indicates that the facility exceeds the allowable emission limits for that pollutant for the requested permitting action and the application cannot be approved as proposed.

Facility Total Projected Emissions (HAPs)

Company: ConocoPhillips Company
Facility: VGEU West Battery
Date/Rev: June 2020

Unit Number	Description	Total HAPs, pph	Total HAPs, tpy	Benzene, pph	Benzene, tpy	Ethylbenzene, pph	Ethylbenzene, tpy	n-Hexane, pph	n-Hexane, tpy	Isooctane, pph	Isooctane, tpy	Toluene, pph	Toluene, tpy	Xylenes, pph	Xylenes, tpy
ENG-1	Kohler CH 745S Engine														
FL-1	Flare	1.88	8.45E-01	5.27E-01	2.37E-01	2.25E-02	1.01E-02	8.03E-01	3.61E-01			4.46E-01	2.01E-01	7.97E-02	3.59E-02
SSM	Startup, Shutdown & Maintenance		2.83E-01		7.59E-02		1.17E-02		1.23E-01				5.86E-02		1.38E-02
MAL	Malfunctions		2.83E-01		7.59E-02		1.17E-02		1.23E-01				5.86E-02		1.38E-02
FUG-1	Equipment Leaks	6.69E-02	2.93E-01	1.17E-02	5.11E-02	3.67E-03	1.61E-02	1.42E-02	6.21E-02	1.45E-03	6.34E-03	2.31E-02	1.01E-01	1.28E-02	5.61E-02
TK-2	Crude Oil Storage Tank (Sales)	6.49E-02	2.84E-01	1.76E-02	7.71E-02	7.39E-04	3.24E-03	2.70E-02	1.18E-01	2.12E-03	9.30E-03	1.48E-02	6.48E-02	2.61E-03	1.14E-02
TK-3	Crude Oil Storage Tank (Sales)	6.37E-02	2.79E-01	1.73E-02	7.57E-02	7.26E-04	3.18E-03	2.65E-02	1.16E-01	2.09E-03	9.14E-03	1.45E-02	6.37E-02	2.57E-03	1.12E-02
TK-4	Crude Oil Storage Tank (Overflow)	6.99E-03	3.06E-02	1.90E-03	8.33E-03	7.87E-05	3.45E-04	2.92E-03	1.28E-02	2.29E-04	1.00E-03	1.59E-03	6.96E-03	2.78E-04	1.22E-03
STK-1	Crude Oil Storage Tank (Skim)	8.03E-04	3.52E-03	2.24E-04	9.80E-04	9.86E-06	4.32E-05	3.16E-04	1.38E-03	2.86E-05	1.25E-04	1.90E-04	8.33E-04	3.51E-05	1.54E-04
PWTK-1	Produced Water Storage Tank (Skim)	3.63E-01	1.59E+00	1.39E-01	6.07E-01	6.25E-03	2.74E-02	6.43E-02	2.82E-01	1.22E-02	5.33E-02	1.20E-01	5.25E-01	2.23E-02	9.78E-02
PWTK-2	Produced Water Storage Tank	1.34E-01	5.88E-01	6.46E-02	2.83E-01	2.90E-03	1.27E-02	1.95E-04	8.52E-04	1.63E-05	7.15E-05	5.60E-02	2.45E-01	1.05E-02	4.58E-02
PWTK-3	Produced Water Storage Tank	1.34E-01	5.88E-01	6.46E-02	2.83E-01	2.90E-03	1.27E-02	1.95E-04	8.52E-04	1.63E-05	7.15E-05	5.60E-02	2.45E-01	1.05E-02	4.58E-02
	Total	2.71	5.07	8.44E-01	1.78	3.98E-02	1.09E-01	9.39E-01	1.20	1.81E-02	7.93E-02	7.32E-01	1.57	1.41E-01	3.33E-01

Engine Exhaust Emissions Calculations

Unit Number: ENG-1
Description: Kohler CH 745S Gasoline Engine (Standby Air Compressor)

Horsepower Calculations

3,980	ft above MSL	Elevation	
25	hp	Nameplate hp	Mfg. data

Fuel Consumption

12,714	Btu/hp-hr	Brake specific fuel consumption	Estimated
130,000	Btu/gal	Field gas heating value	Nominal heat content
2.45	gal/hr	Hourly fuel consumption	Btu/hp-hr x hp / Btu/gal
8,760	hr/yr	Annual operating time	ConocoPhillips Company
21,418	gal/yr	Annual fuel consumption	gal/hr x hr/yr

Exhaust Parameters

1150	°F	Stack exit temperature	Mfg. data
170	acfm	Stack flowrate	Mfg. data
0.30	ft	Stack exit diameter	ConocoPhillips Company
0.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
40.08	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
9.20	ft	Stack height	ConocoPhillips Company

Flare Calculations

Unit Number: FL-1
Description: Unassisted, Smokeless Flare

Blowdown Gas Stream

62,500	scf/hr	Blowdown hourly flowrate (Q_{bd})	Flare King, Inc.
1,581.65	Btu/scf	Blowdown heat content (B_{bd})	Calculated (see table below)
98.85	MMBtu/hr	Blowdown hourly heat rate	Btu/scf x scf/hr / 1,000,000
900	hr/yr	Operating time	ConocoPhillips Company
56.25	MMscf/yr	Blowdown annual flowrate	scf/hr x hr/yr / 1,000000
88,967.86	MMBtu/yr	Blowdown annual heat rate	MMBtu/hr x hr/yr

Pilot Gas Stream

12	scf/hr	Pilot hourly flow rate	Flare King, Inc.
961.93	Btu/scf	Pilot heat content	Calculated (see table below)
0.012	MMBtu/hr	Pilot hourly heat rate	scf/hr x Btu/scf / 1,000,000
8,760	hr/yr	Operating time	ConocoPhillips Company
0.105	MMscf/yr	Pilot annual flowrate	scf/hr x hr/yr / 1,000000
101.12	MMBtu/yr	Pilot annual heat rate	MMBtu/hr x hr/yr

Combined Stream

62,512	scf/hr	Hourly flow rate	Blowdown + Pilot
98.86	MMBtu/hr	Hourly heat rate	Blowdown + Pilot
56.36	MMscf/yr	Annual flowrate	Blowdown + Pilot
89,068.98	MMBtu/yr	Annual heat rate	Blowdown + Pilot
1,581.53	Btu/scf	Heat content	Weighted average of Blowdown + Pilot

Steady-State Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled Emission Rates, pph	tpy	Control Efficiencies, %	Controlled Emission Rates, pph	tpy
Benzene	4.22E-04	26.36	11.86	98	5.27E-01	2.37E-01
Ethylbenzene	1.80E-05	1.13	0.51	98	2.25E-02	1.01E-02
n-Hexane	6.43E-04	40.16	18.07	98	8.03E-01	3.61E-01
Toluene	3.57E-04	22.28	10.03	98	4.46E-01	2.01E-01
Xylene	6.38E-05	3.99	1.79	98	7.97E-02	3.59E-02

Emission factors are calculated from the gas composition (see table below)
Uncontrolled Emission Rates (pph) = lb/scf x scf/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Control efficiencies taken from Texas Commission on Environmental Quality (TCEQ) January 2010 document "Technical Supplement 4: Flares"
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Exhaust Parameters

1,832	°F	Exhaust temperature	NMAQB
7.26	ft	Effective stack diameter	Calculated per NMAQB guidelines
65.62	fps	Stack velocity	NMAQB
40.00	ft	Stack height	Flare King, Inc.

Flare Effective Diameter

1041.87	scfm	Flowrate	scf/hr / 60 min/hr
1581.53	Btu/scf	Heat content	Throughput weighted average (see tables below)
6,920,530	cal/sec	Gross heat release	scfm x Btu/scf x 252 cal/Btu / 60 sec/min
37.10	lb/lb-mole	Molecular weight	Throughput weighted average (see tables below)
4,897,305	cal/sec	Effective heat release (q_n)	cal/sec x (1-(0.048 x (MW^0.5)))
2.21	meters	Effective stack diameter	(0.000001 x cal/sec[q_n])^0.5

Flare Calculations

Unit Number: FL-1
Description: Unassisted, Smokeless Flare

Blowdown Gas Stream Composition

Components	Mole Percents, %	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	1.830	0.00	0.00
Carbon dioxide	13.697	0.00	0.00
Hydrogen sulfide	2.016	586.80	11.83
Nitrogen	1.361	0.00	0.00
Methane	24.928	909.40	226.70
Ethane	15.285	1,618.70	247.42
Propane	26.929	2,314.90	623.39
IsoButane	2.583	3,000.40	77.50
n-Butane	6.658	3,010.80	200.45
IsoPentane	1.152	3,699.00	42.62
n-Pentane	1.098	3,706.90	40.72
Cyclopentane	0.020	3,513.20	0.69
n-Hexane	0.283	4,403.80	12.46
Cyclohexane	0.376	4,179.70	15.72
Other hexanes	0.767	4,403.80	33.79
Heptanes	0.268	5,100.00	13.69
Methylcyclohexane	0.181	4,863.60	8.78
Isooctane	0.017	5,796.10	0.99
Benzene	0.205	3,590.90	7.36
Toluene	0.147	4,273.60	6.28
Ethylbenzene	0.006	4,970.50	0.32
Xylenes	0.023	4,957.00	1.13
C8+ heavies	0.169	5,796.10	9.82
Total	100.000		1,581.65
VOC			

Gas stream composition obtained from ProMax 5.0 results (Sales Gas Stream)
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Flare Calculations

Unit Number: FL-1
Description: Unassisted, Smokeless Flare

Pilot Gas Composition

Components	Mole Percents, %	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	0.000	0.00	0.00
Carbon dioxide	0.000	0.00	0.00
Hydrogen sulfide	0.000	586.80	0.00
Nitrogen	2.683	0.00	0.00
Methane	87.534	909.40	796.03
Ethane	9.081	1,618.70	146.99
Propane	0.575	2,314.90	13.31
IsoButane	0.000	3,000.40	0.00
n-Butane	0.000	3,010.80	0.00
IsoPentane	0.000	3,699.00	0.00
n-Pentane	0.000	3,706.90	0.00
Cyclopentane	0.000	3,513.20	0.00
n-Hexane	0.000	4,403.80	0.00
Cyclohexane	0.000	4,179.70	0.00
Other hexanes	0.127	4,403.80	5.59
Heptanes	0.000	5,100.00	0.00
Methylcyclohexane	0.000	4,863.60	0.00
Isooctane	0.000	5,796.10	0.00
Benzene	0.000	3,590.90	0.00
Toluene	0.000	4,273.60	0.00
Ethylbenzene	0.000	4,970.50	0.00
Xylenes	0.000	4,957.00	0.00
C8+ heavies	0.000	5,796.10	0.00
Total	100.000		961.93
VOC			

Gas stream composition obtained from fuel gas analysis dated 05/05/2020
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Flare Calculations

Unit Number: FL-1
Description: Unassisted, Smokeless Flare

Blowdown + Pilot Gas Composition

	Blowdown Flow Rate, scf/hr	Pilot Flow Rate, scf/hr	Total Flow Rate, scf/hr
	62,500	12	62,512
Components	Mole Percent, %	Mole Percent, %	Mole Percent, %
Water	1.830	0.000	1.830
Carbon dioxide	13.697	0.000	13.694
Hydrogen sulfide	2.016	0.000	2.016
Nitrogen	1.361	2.683	1.361
Methane	24.928	87.534	24.940
Ethane	15.285	9.081	15.284
Propane	26.929	0.575	26.924
IsoButane	2.583	0.000	2.583
n-Butane	6.658	0.000	6.657
IsoPentane	1.152	0.000	1.152
n-Pentane	1.098	0.000	1.098
Cyclopentane	0.020	0.000	0.020
n-Hexane	0.283	0.000	0.283
Cyclohexane	0.376	0.000	0.376
Other hexanes	0.767	0.127	0.767
Heptanes	0.268	0.000	0.268
Methylcyclohexane	0.181	0.000	0.181
Isooctane	0.017	0.000	0.017
Benzene	0.205	0.000	0.205
Toluene	0.147	0.000	0.147
Ethylbenzene	0.006	0.000	0.006
Xylenes	0.023	0.000	0.023
C8+ heavies	0.169	0.000	0.169
Total	100.000	100.000	100.000

Flare Calculations

Unit Number: FL-1
Description: Unassisted, Smokeless Flare

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Emission Factors, lb/scf	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	1.830	18.02	0.3297	8.69E-04	0.00	0.00
Carbon dioxide	13.694	44.01	6.0268	1.59E-02	0.00	0.00
Hydrogen sulfide	2.016	34.07	0.6867	1.81E-03	586.80	11.83
Nitrogen	1.361	28.01	0.3812	1.00E-03	0.00	0.00
Methane	24.940	16.04	4.0004	1.05E-02	909.40	226.81
Ethane	15.284	30.07	4.5958	1.21E-02	1,618.70	247.40
Propane	26.924	44.09	11.8709	3.13E-02	2,314.90	623.27
IsoButane	2.583	58.12	1.5010	3.96E-03	3,000.40	77.49
n-Butane	6.657	58.12	3.8688	1.02E-02	3,010.80	200.41
IsoPentane	1.152	72.15	0.8311	2.19E-03	3,699.00	42.61
n-Pentane	1.098	72.15	0.7924	2.09E-03	3,706.90	40.71
Cyclopentane	0.020	70.14	0.0137	3.62E-05	3,513.20	0.69
n-Hexane	0.283	86.17	0.2438	6.43E-04	4,403.80	12.46
Cyclohexane	0.376	84.16	0.3165	8.34E-04	4,179.70	15.72
Other hexanes	0.767	86.18	0.6612	1.74E-03	4,403.80	33.79
Heptanes	0.268	100.20	0.2689	7.09E-04	5,100.00	13.68
Methylcyclohexane	0.181	98.19	0.1773	4.67E-04	4,863.60	8.78
Isooctane	0.017	100.21	0.0170	4.49E-05	5,796.10	0.99
Benzene	0.205	78.11	0.1600	4.22E-04	3,590.90	7.36
Toluene	0.147	92.14	0.1353	3.57E-04	4,273.60	6.27
Ethylbenzene	0.006	106.17	0.0068	1.80E-05	4,970.50	0.32
Xylenes	0.023	106.17	0.0242	6.38E-05	4,957.00	1.13
C8+ heavies	0.169	110.00	0.1864	4.91E-04	5,796.10	9.82
Total	100.000		37.10	9.78E-02		1,581.53
VOC				5.55E-02		

Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Emission Factors (lb/scf) = (% / 100) * Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Hydrogen:	1.0080	lb/lb-mole	Hydrogen sulfide:	0.0018	lb H2S/scf
Sulfur:	32.0600	lb/lb-mole	Sulfur:	0.0017	lb S/scf
Hydrogen sulfide:	34.0760	lb/lb-mole	Conversion:	7000	gr/lb
Sulfur fraction in H2S:	0.9408		Sulfur:	1192.07	gr S/100 scf
VOC Content:	0.0555	lb/scf	H2S Content:	0.0018	lb/scf
Total Mass:	0.0978	lb/scf	Total Mass:	0.0978	lb/scf
VOC Content:	56.8128	% by weight	H2S Content:	1.8512	% by weight
Sulfur:	32.0600	lb/lb-mole			
Oxygen:	15.9990	lb/lb-mole			
Sulfur dioxide:	64.0580	lb/lb-mole			

Facility Blowdown Emissions Calculations

Unit Number: SSM
Description: Facility Blowdowns

Throughput

380,050 scf/yr Annual gas loss Selected such that VOC emissions are 10 tpy

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	5.262E-02	10.00
Benzene	3.994E-04	7.59E-02
Ethylbenzene	6.156E-05	1.17E-02
n-Hexane	6.473E-04	1.23E-01
Hydrogen sulfide	5.398E-03	1.03
Isooctane	0.000E+00	0.00E+00
Toluene	3.084E-04	5.86E-02
Xylene	7.276E-05	1.38E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	20.007	44.01	2.321E-02
Hydrogen sulfide	6.011	34.07	5.398E-03
Nitrogen	1.305	28.01	9.634E-04
Methane	23.343	16.04	9.869E-03
Ethane	11.558	30.07	9.160E-03
Propane	22.958	44.09	2.668E-02
Isobutane	2.645	58.12	4.052E-03
n-Butane	6.742	58.12	1.033E-02
Isopentane	1.432	72.15	2.723E-03
n-Pentane	1.396	72.15	2.655E-03
Cyclopentane	0.187	70.14	3.457E-04
n-Hexane	0.285	86.17	6.473E-04
Cyclohexane	0.235	84.16	5.213E-04
Other hexanes	0.794	86.18	1.804E-03
Heptanes	0.196	100.20	5.176E-04
Methylcyclohexane	0.151	98.19	3.908E-04
Isooctane	0.000	100.21	0.000E+00
Benzene	0.194	78.11	3.994E-04
Toluene	0.127	92.14	3.084E-04
Ethylbenzene	0.022	106.17	6.156E-05
Xylenes	0.026	106.17	7.276E-05
C8+ Heavies	0.386	110.00	1.119E-03
Total	100.0000		
Total VOC			5.262E-02

Gas stream composition obtained from VGEU West Battery extended gas analysis sampled 10/18/2019
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Malfunction Emissions Data and Calculations

Unit Number: MAL
Description: Malfunctions

Throughput

380,050 scf/yr Annual gas loss Selected such that VOC emissions are 10 tpy

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	5.262E-02	10.00
Benzene	3.994E-04	7.59E-02
Ethylbenzene	6.156E-05	1.17E-02
n-Hexane	6.473E-04	1.23E-01
Hydrogen sulfide	5.398E-03	1.03
Isooctane	0.000E+00	0.00E+00
Toluene	3.084E-04	5.86E-02
Xylene	7.276E-05	1.38E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	20.007	44.01	2.321E-02
Hydrogen sulfide	6.011	34.07	5.398E-03
Nitrogen	1.305	28.01	9.634E-04
Methane	23.343	16.04	9.869E-03
Ethane	11.558	30.07	9.160E-03
Propane	22.958	44.09	2.668E-02
Isobutane	2.645	58.12	4.052E-03
n-Butane	6.742	58.12	1.033E-02
Isopentane	1.432	72.15	2.723E-03
n-Pentane	1.396	72.15	2.655E-03
Cyclopentane	0.187	70.14	3.457E-04
n-Hexane	0.285	86.17	6.473E-04
Cyclohexane	0.235	84.16	5.213E-04
Other hexanes	0.794	86.18	1.804E-03
Heptanes	0.196	100.20	5.176E-04
Methylcyclohexane	0.151	98.19	3.908E-04
Isooctane	0.000	100.21	0.000E+00
Benzene	0.194	78.11	3.994E-04
Toluene	0.127	92.14	3.084E-04
Ethylbenzene	0.022	106.17	6.156E-05
Xylenes	0.026	106.17	7.276E-05
C8+ Heavies	0.386	110.00	1.119E-03
Total	100.0000		
Total VOC			5.262E-02

Gas stream composition obtained from VGEU West Battery extended gas analysis sampled 10/18/2019
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Equipment Leaks Emissions Calculations (Gas)

Unit Number: FUG-1
Description: Valves, Connectors, Flanges, Open-Ended Lines, Etc. (Gas)

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Valves	68	0.0045	0.0099	6.73E-01	2.95
Pump Seals	0	0.0024	0.0053	0.00E+00	0.00E+00
Connectors	204	0.0002	0.0004	8.98E-02	3.93E-01
Flanges	68	0.0004	0.0009	5.83E-02	2.56E-01
Open-Ended Lines	7	0.0020	0.0044	3.08E-02	1.35E-01
Other	7	0.0088	0.0194	1.36E-01	5.94E-01
Total				**9.88E-01**	**4.33**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 8,760 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight, Percent %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Carbon dioxide	20.007	44.010	8.805	22.916	2.26E-01	9.91E-01
Hydrogen sulfide	6.011	34.070	2.048	5.330	5.26E-02	2.31E-01
Nitrogen	1.305	28.013	0.366	0.951	9.40E-03	4.12E-02
Methane	23.343	16.043	3.745	9.747	9.63E-02	4.22E-01
Ethane	11.558	30.070	3.475	9.045	8.93E-02	3.91E-01
Propane	22.958	44.097	10.124	26.348	2.60E-01	1.14E+00
Isobutane	2.645	58.123	1.537	4.001	3.95E-02	1.73E-01
n-Butane	6.742	58.123	3.919	10.199	1.01E-01	4.41E-01
Isopentane	1.432	72.150	1.033	2.689	2.66E-02	1.16E-01
n-Pentane	1.396	72.150	1.007	2.621	2.59E-02	1.13E-01
Cyclopentane	0.187	70.134	0.131	0.341	3.37E-03	1.48E-02
n-Hexane	0.285	86.177	0.246	0.639	6.31E-03	2.77E-02
Cyclohexane	0.235	84.161	0.198	0.515	5.08E-03	2.23E-02
Other hexanes	0.794	86.177	0.684	1.781	1.76E-02	7.70E-02
Heptanes	0.196	100.204	0.196	0.511	5.05E-03	2.21E-02
Methylcyclohexane	0.151	98.188	0.148	0.386	3.81E-03	1.67E-02
Isooctane	0.000	114.231	0.000	0.000	0.00E+00	0.00E+00
Benzene	0.194	78.114	0.152	0.394	3.90E-03	1.71E-02
Toluene	0.127	92.141	0.117	0.305	3.01E-03	1.32E-02
Ethylbenzene	0.022	106.167	0.023	0.061	6.00E-04	2.63E-03
Xylenes	0.026	106.167	0.028	0.072	7.10E-04	3.11E-03
C8+ Heavies	0.386	114.231	0.441	1.148	1.13E-02	4.96E-02
Total	100.000		38.423			
Total VOC				52.011	5.14E-01	2.25
Total HAP				6.801	6.72E-02	2.94E-01

Gas stream composition obtained from VGEU West Battery extended gas analysis sampled 10/18/2019
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled Emission Rate (from Table 1 above) (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled Emission Rate (from Table 1 above) (tpy) x (% / 100)

Equipment Leaks Emissions Calculations (Light Oil)

Unit Number: FUG-1
Description: Valves, Connectors, Flanges, Open-Ended Lines, Etc. (Gas)

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Valves	58	2.5E-03	5.5E-03	3.19E-01	1.40
Pump Seals	4	1.3E-02	2.9E-02	1.14E-01	5.01E-01
Connectors	174	2.1E-04	4.6E-04	8.04E-02	3.52E-01
Flanges	58	1.1E-04	2.4E-04	1.40E-02	6.15E-02
Open-Ended Lines	0	1.4E-03	3.1E-03	0.00E+00	0.00E+00
Other	6	7.5E-03	1.7E-02	9.90E-02	4.34E-01
Total				**6.27E-01**	**2.75**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 8,760 hr/yr / 2,000 lb/ton

Components	Weight, Percent %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Carbon dioxide	0.2915	1.83E-03	8.00E-03
Hydrogen sulfide	0.0177	1.11E-04	4.86E-04
Nitrogen	0.0000	0.00E+00	0.00E+00
Methane	0.0346	2.17E-04	9.50E-04
Ethane	0.3373	2.11E-03	9.26E-03
Propane	1.5268	9.57E-03	4.19E-02
Isobutane	0.4298	2.69E-03	1.18E-02
n-Butane	1.7464	1.09E-02	4.79E-02
Isopentane	0.9311	5.84E-03	2.56E-02
n-Pentane	1.2083	7.57E-03	3.32E-02
n-Hexane	1.2531	7.85E-03	3.44E-02
Other hexanes	5.2369	3.28E-02	1.44E-01
Heptanes	6.4951	4.07E-02	1.78E-01
Isooctane	0.2311	1.45E-03	6.34E-03
Benzene	1.2388	7.77E-03	3.40E-02
Toluene	3.2070	2.01E-02	8.80E-02
Ethylbenzene	0.4902	3.07E-03	1.35E-02
Xylenes	1.9289	1.21E-02	5.30E-02
Octanes	4.0933	2.57E-02	1.12E-01
Nonanes	5.4580	3.42E-02	1.50E-01
Decanes+	63.8441	4.00E-01	1.75E+00
Total	100.0000	6.27E-01	2.75
Total VOC	99.3189	6.23E-01	2.73
Total HAP	8.3491	5.23E-02	2.29E-01

Gas stream composition obtained from VGEU West Battery extended oil analysis dated 10/18/2019
Uncontrolled Emission Rates (pph) = Total Uncontrolled Emission Rate (from Table 1 above) (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled Emission Rate (from Table 1 above) (tpy) x (% / 100)

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-2
Description: Crude Oil Storage Tank (Sales)

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Rates, pph	tpy
Hydrogen sulfide	0.7571	3.3160	0.0379	0.1658
Propane	17.6508	77.3107	0.8825	3.8655
Isobutane	2.6274	11.5079	0.1314	0.5754
n-Butane	6.9686	30.5225	0.3484	1.5261
Isopentane	1.5440	6.7626	0.0772	0.3381
n-Pentane	1.4762	6.4660	0.0738	0.3233
Cyclopentane	0.0253	0.1108	0.0013	0.0055
n-Hexane	0.4479	1.9619	0.0224	0.0981
Cyclohexane	0.5785	2.5338	0.0289	0.1267
Other hexanes	1.2091	5.2958	0.0605	0.2648
Heptanes	0.4863	2.1301	0.0243	0.1065
Methylcyclohexane	0.3209	1.4053	0.0160	0.0703
Isooctane	0.0352	0.1543	0.0018	0.0077
Benzene	0.2919	1.2783	0.0146	0.0639
Toluene	0.2459	1.0768	0.0123	0.0538
Ethylbenzene	0.0123	0.0539	0.0006	0.0027
Xylenes	0.0435	0.1905	0.0022	0.0095
C8+ Heavies	0.3600	1.5768	0.0180	0.0788
Total VOC	34.3238	150.3382	1.7162	7.5169

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-2 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-2
Description: Crude Oil Storage Tank (Sales)

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	0.0964	0.0284	0.1248	0.5465	0.0062	0.0273
Propane	2.4331	0.7176	3.1507	13.7999	0.1575	0.6900
Isobutane	0.3943	0.1163	0.5106	2.2365	0.0255	0.1118
n-Butane	1.0714	0.3160	1.3874	6.0768	0.0694	0.3038
Isopentane	0.2445	0.0721	0.3167	1.3870	0.0158	0.0693
n-Pentane	0.2345	0.0692	0.3036	1.3298	0.0152	0.0665
Cyclopentane	0.0040	0.0012	0.0052	0.0229	0.0003	0.0011
n-Hexane	0.0712	0.0210	0.0922	0.4038	0.0046	0.0202
Cyclohexane	0.0921	0.0272	0.1192	0.5221	0.0060	0.0261
Other hexanes	0.1930	0.0569	0.2499	1.0944	0.0125	0.0547
Heptanes	0.0768	0.0226	0.0994	0.4354	0.0050	0.0218
Methylcyclohexane	0.0506	0.0149	0.0655	0.2869	0.0033	0.0143
Isooctane	0.0056	0.0016	0.0072	0.0317	0.0004	0.0016
Benzene	0.0464	0.0137	0.0601	0.2631	0.0030	0.0132
Toluene	0.0386	0.0114	0.0500	0.2190	0.0025	0.0109
Ethylbenzene	0.0019	0.0006	0.0025	0.0108	0.0001	0.0005
Xylenes	0.0067	0.0020	0.0087	0.0381	0.0004	0.0019
C8+ Heavies	0.0561	0.0166	0.0727	0.3183	0.0036	0.0159
Total VOC	5.0208	1.4642	6.5015	28.4766	0.3251	1.4238

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-2 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-3
Description: Crude Oil Storage Tank (Sales)

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Rates, pph	tpy
Hydrogen sulfide	0.7571	3.3160	0.0379	0.1658
Propane	17.6508	77.3107	0.8825	3.8655
Isobutane	2.6274	11.5079	0.1314	0.5754
n-Butane	6.9686	30.5225	0.3484	1.5261
Isopentane	1.5440	6.7626	0.0772	0.3381
n-Pentane	1.4762	6.4660	0.0738	0.3233
Cyclopentane	0.0253	0.1108	0.0013	0.0055
n-Hexane	0.4479	1.9619	0.0224	0.0981
Cyclohexane	0.5785	2.5338	0.0289	0.1267
Other hexanes	1.2091	5.2958	0.0605	0.2648
Heptanes	0.4863	2.1301	0.0243	0.1065
Methylcyclohexane	0.3209	1.4053	0.0160	0.0703
Isooctane	0.0352	0.1543	0.0018	0.0077
Benzene	0.2919	1.2783	0.0146	0.0639
Toluene	0.2459	1.0768	0.0123	0.0538
Ethylbenzene	0.0123	0.0539	0.0006	0.0027
Xylenes	0.0435	0.1905	0.0022	0.0095
C8+ Heavies	0.3600	1.5768	0.0180	0.0788
Total VOC	34.3238	150.3382	1.7162	7.5169

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-3 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-3
Description: Crude Oil Storage Tank (Sales)

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	0.0967	0.0170	0.1137	0.4981	0.0057	0.0249
Propane	2.4353	0.4278	2.8631	12.5403	0.1432	0.6270
Isobutane	0.3931	0.0691	0.4622	2.0243	0.0231	0.1012
n-Butane	1.0666	0.1874	1.2540	5.4926	0.0627	0.2746
Isopentane	0.2428	0.0427	0.2855	1.2504	0.0143	0.0625
n-Pentane	0.2326	0.0409	0.2735	1.1980	0.0137	0.0599
Cyclopentane	0.0040	0.0007	0.0047	0.0206	0.0002	0.0010
n-Hexane	0.0705	0.0124	0.0829	0.3629	0.0041	0.0181
Cyclohexane	0.0911	0.0160	0.1071	0.4692	0.0054	0.0235
Other hexanes	0.1911	0.0336	0.2247	0.9842	0.0112	0.0492
Heptanes	0.0759	0.0133	0.0892	0.3907	0.0045	0.0195
Methylcyclohexane	0.0500	0.0088	0.0588	0.2574	0.0029	0.0129
Isooctane	0.0055	0.0010	0.0065	0.0284	0.0003	0.0014
Benzene	0.0459	0.0081	0.0540	0.2364	0.0027	0.0118
Toluene	0.0382	0.0067	0.0449	0.1965	0.0022	0.0098
Ethylbenzene	0.0019	0.0003	0.0022	0.0097	0.0001	0.0005
Xylenes	0.0066	0.0012	0.0078	0.0342	0.0004	0.0017
C8+ Heavies	0.0554	0.0097	0.0651	0.2852	0.0033	0.0143
Total VOC	5.0066	0.8698	5.8861	25.7811	0.2943	1.2891

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-3 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-4
Description: Crude Oil Storage Tank (Emergency Overflow)

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Rates, pph	tpy
Hydrogen sulfide	0.0153	0.0670	0.0008	0.0033
Propane	0.3566	1.5618	0.0178	0.0781
Isobutane	0.0531	0.2325	0.0027	0.0116
n-Butane	0.1408	0.6166	0.0070	0.0308
Isopentane	0.0312	0.1366	0.0016	0.0068
n-Pentane	0.0298	0.1306	0.0015	0.0065
Cyclopentane	0.0005	0.0022	0.0000	0.0001
n-Hexane	0.0090	0.0396	0.0005	0.0020
Cyclohexane	0.0117	0.0512	0.0006	0.0026
Other hexanes	0.0244	0.1070	0.0012	0.0053
Heptanes	0.0098	0.0430	0.0005	0.0022
Methylcyclohexane	0.0065	0.0284	0.0003	0.0014
Isooctane	0.0007	0.0031	0.0000	0.0002
Benzene	0.0059	0.0258	0.0003	0.0013
Toluene	0.0050	0.0218	0.0002	0.0011
Ethylbenzene	0.0002	0.0011	0.0000	0.0001
Xylenes	0.0009	0.0038	0.0000	0.0002
C8+ Heavies	0.0073	0.0319	0.0004	0.0016
Total VOC	0.6934	3.0371	0.0347	0.1519

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-4 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Crude Oil Storage Tank Emissions Calculations

Unit Number: TK-4
Description: Crude Oil Storage Tank (Emergency Overflow)

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	0.0004	0.0119	0.0123	0.0539	0.0006	0.0027
Propane	0.0188	0.6168	0.6356	2.7839	0.0318	0.1392
Isobutane	0.0080	0.2621	0.2701	1.1831	0.0135	0.0592
n-Butane	0.0218	0.7137	0.7355	3.2215	0.0368	0.1611
Isopentane	0.0050	0.1635	0.1685	0.7382	0.0084	0.0369
n-Pentane	0.0048	0.1570	0.1618	0.7086	0.0081	0.0354
Cyclopentane	0.0001	0.0027	0.0028	0.0122	0.0001	0.0006
n-Hexane	0.0015	0.0479	0.0493	0.2160	0.0025	0.0108
Cyclohexane	0.0019	0.0619	0.0638	0.2793	0.0032	0.0140
Other hexanes	0.0040	0.1295	0.1335	0.5847	0.0067	0.0292
Heptanes	0.0016	0.0517	0.0533	0.2333	0.0027	0.0117
Methylcyclohexane	0.0010	0.0341	0.0351	0.1538	0.0018	0.0077
Isooctane	0.0001	0.0038	0.0039	0.0170	0.0002	0.0008
Benzene	0.0010	0.0312	0.0321	0.1407	0.0016	0.0070
Toluene	0.0008	0.0260	0.0268	0.1174	0.0013	0.0059
Ethylbenzene	0.0000	0.0013	0.0013	0.0058	0.0001	0.0003
Xylenes	0.0001	0.0045	0.0047	0.0205	0.0002	0.0010
C8+ Heavies	0.0012	0.0379	0.0390	0.1710	0.0020	0.0086
Total VOC	0.0716	2.3076	2.4171	10.5869	0.1209	0.5293

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Tk-4 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Skim Oil Storage Tank Emissions Calculations

Unit Number: STK-1
Description: Skim Oil Storage Tank

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
Hydrogen sulfide	0.0000	0.0000	0.0000	0.0000
Propane	0.0000	0.0000	0.0000	0.0000
Isobutane	0.0000	0.0000	0.0000	0.0000
n-Butane	0.0000	0.0000	0.0000	0.0000
Isopentane	0.0000	0.0000	0.0000	0.0000
n-Pentane	0.0000	0.0000	0.0000	0.0000
Cyclopentane	0.0000	0.0000	0.0000	0.0000
n-Hexane	0.0000	0.0000	0.0000	0.0000
Cyclohexane	0.0000	0.0000	0.0000	0.0000
Other hexanes	0.0000	0.0000	0.0000	0.0000
Heptanes	0.0000	0.0000	0.0000	0.0000
Methylcyclohexane	0.0000	0.0000	0.0000	0.0000
Isooctane	0.0000	0.0000	0.0000	0.0000
Benzene	0.0000	0.0000	0.0000	0.0000
Toluene	0.0000	0.0000	0.0000	0.0000
Ethylbenzene	0.0000	0.0000	0.0000	0.0000
Xylenes	0.0000	0.0000	0.0000	0.0000
C8+ Heavies	0.0000	0.0000	0.0000	0.0000
Total VOC	0.0000	0.0000	0.0000	0.0000

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (STK-1 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Note: Since flashing occurs at PWTK-1 (upstream of STK-1), there are no flash emissions associated with STK-1.

Skim Oil Storage Tank Emissions Calculations

Unit Number: STK-1
Description: Skim Oil Storage Tank

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	0.0065	0.0151	0.0216	0.0948	0.0011	0.0047
Propane	0.0383	0.0892	0.1275	0.5585	0.0064	0.0279
Isobutane	0.0048	0.0113	0.0161	0.0706	0.0008	0.0035
n-Butane	0.0155	0.0361	0.0516	0.2262	0.0026	0.0113
Isopentane	0.0043	0.0099	0.0142	0.0622	0.0007	0.0031
n-Pentane	0.0044	0.0102	0.0145	0.0636	0.0007	0.0032
Cyclopentane	0.0001	0.0002	0.0003	0.0014	0.0000	0.0001
n-Hexane	0.0019	0.0044	0.0063	0.0276	0.0003	0.0014
Cyclohexane	0.0026	0.0061	0.0087	0.0382	0.0004	0.0019
Other hexanes	0.0049	0.0115	0.0164	0.0717	0.0008	0.0036
Heptanes	0.0024	0.0055	0.0078	0.0343	0.0004	0.0017
Methylcyclohexane	0.0016	0.0037	0.0052	0.0230	0.0003	0.0011
Isooctane	0.0002	0.0004	0.0006	0.0025	0.0000	0.0001
Benzene	0.0013	0.0031	0.0045	0.0196	0.0002	0.0010
Toluene	0.0011	0.0027	0.0038	0.0167	0.0002	0.0008
Ethylbenzene	0.0001	0.0001	0.0002	0.0009	0.0000	0.0000
Xylenes	0.0002	0.0005	0.0007	0.0031	0.0000	0.0002
C8+ Heavies	0.0019	0.0043	0.0062	0.0271	0.0003	0.0014
Total VOC	0.0855	0.1949	0.2847	1.2471	0.0142	0.0624

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (STK-1 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Produced Water Storage Tank Emissions Calculations

Unit Number: PWTK-1
Description: Produced Water Storage Tank (Skim)

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
Hydrogen sulfide	1.1430	5.0062	0.0571	0.2503
Propane	6.6170	28.9824	0.3308	1.4491
Isobutane	0.8341	3.6533	0.0417	0.1827
n-Butane	2.6784	11.7314	0.1339	0.5866
Isopentane	0.7440	3.2587	0.0372	0.1629
n-Pentane	0.7648	3.3499	0.0382	0.1675
Cyclopentane	0.0172	0.0755	0.0009	0.0038
n-Hexane	0.3391	1.4854	0.0170	0.0743
Cyclohexane	0.4685	2.0522	0.0234	0.1026
Other hexanes	0.8731	3.8243	0.0437	0.1912
Heptanes	0.4273	1.8714	0.0214	0.0936
Methylcyclohexane	0.2864	1.2543	0.0143	0.0627
Isooctane	0.0310	0.1359	0.0016	0.0068
Benzene	0.2404	1.0530	0.0120	0.0526
Toluene	0.2083	0.9125	0.0104	0.0456
Ethylbenzene	0.0110	0.0483	0.0006	0.0024
Xylenes	0.0392	0.1719	0.0020	0.0086
C8+ Heavies	0.3433	1.5038	0.0172	0.0752
Total VOC	14.923	65.3641	0.7462	3.2682

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (PWTK-1 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Produced Water Storage Tank Emissions Calculations

Unit Number: PWTK-1
Description: Produced Water Storage Tank (Skim)

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	12.5043	0.0669	12.5712	55.0620	0.6286	2.7531
Propane	2.1230	0.0114	2.1343	9.3483	0.1067	0.4674
Isobutane	0.2577	0.0014	0.2591	1.1347	0.0130	0.0567
n-Butane	1.2383	0.0066	1.2449	5.4528	0.0622	0.2726
Isopentane	0.5368	0.0029	0.5397	2.3638	0.0270	0.1182
n-Pentane	0.6270	0.0034	0.6304	2.7610	0.0315	0.1381
Cyclopentane	0.0411	0.0002	0.0414	0.1812	0.0021	0.0091
n-Hexane	0.9418	0.0050	0.9468	4.1471	0.0473	0.2074
Cyclohexane	2.4947	0.0134	2.5080	10.9852	0.1254	0.5493
Other hexanes	2.2233	0.0119	2.2352	9.7900	0.1118	0.4895
Heptanes	3.2413	0.0174	3.2587	14.2729	0.1629	0.7136
Methylcyclohexane	2.8976	0.0155	2.9131	12.7595	0.1457	0.6380
Isooctane	0.2112	0.0011	0.2123	0.9301	0.0106	0.0465
Benzene	2.5166	0.0135	2.5301	11.0817	0.1265	0.5541
Toluene	2.1782	0.0117	2.1899	9.5918	0.1095	0.4796
Ethylbenzene	0.1133	0.0006	0.1139	0.4990	0.0057	0.0250
Xylenes	0.4053	0.0022	0.4074	1.7846	0.0204	0.0892
C8+ Heavies	3.5229	0.0189	3.5417	15.5128	0.1771	0.7756
Total VOC	25.5700	0.1180	25.7069	112.5964	1.2853	5.6298

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (PWTK-1 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Produced Water Storage Tank Emissions Calculations

Unit Number: PWTK-2 & PWTK-3
Description: Produced Water Storage Tanks

Input Data

8,760	hr/yr	Operating time	ConocoPhillips Company
95	%	Control efficiency	ConocoPhillips Company

Emission Rates (Flash)

Components	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
Hydrogen sulfide	0.0000	0.0000	0.0000	0.0000
Propane	0.0000	0.0000	0.0000	0.0000
Isobutane	0.0000	0.0000	0.0000	0.0000
n-Butane	0.0000	0.0000	0.0000	0.0000
Isopentane	0.0000	0.0000	0.0000	0.0000
n-Pentane	0.0000	0.0000	0.0000	0.0000
Cyclopentane	0.0000	0.0000	0.0000	0.0000
n-Hexane	0.0000	0.0000	0.0000	0.0000
Cyclohexane	0.0000	0.0000	0.0000	0.0000
Other hexanes	0.0000	0.0000	0.0000	0.0000
Heptanes	0.0000	0.0000	0.0000	0.0000
Methylcyclohexane	0.0000	0.0000	0.0000	0.0000
Isooctane	0.0000	0.0000	0.0000	0.0000
Benzene	0.0000	0.0000	0.0000	0.0000
Toluene	0.0000	0.0000	0.0000	0.0000
Ethylbenzene	0.0000	0.0000	0.0000	0.0000
Xylenes	0.0000	0.0000	0.0000	0.0000
C8+ Heavies	0.0000	0.0000	0.0000	0.0000
Total VOC	0.000	0.0000	0.0000	0.0000

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (PWTK-2 & 3 Flash Stream)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Note: Since flashing occurs at PWTK-1 (upstream of PWTK-2 & 3), there are no flash emissions associated with PWTK-2 & 3.

Produced Water Storage Tank Emissions Calculations

Unit Number: PWTK-2 & PWTK-3
Description: Produced Water Storage Tanks

Emission Rates (Working/Breathing)

Components	Uncontrolled Emission Rates				Controlled Emission Rates,	
	Working Losses, pph	Breathing Losses, pph	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy	Working/ Breathing Losses, pph	Working/ Breathing Losses, tpy
Hydrogen sulfide	12.7665	0.1518	12.9183	56.5822	0.6459	2.8291
Propane	1.7798	0.0212	1.8009	7.8881	0.0900	0.3944
Isobutane	0.1297	0.0015	0.1312	0.5748	0.0066	0.0287
n-Butane	0.6474	0.0077	0.6551	2.8692	0.0328	0.1435
Isopentane	0.1078	0.0013	0.1091	0.4777	0.0055	0.0239
n-Pentane	0.0334	0.0004	0.0338	0.1482	0.0017	0.0074
Cyclopentane	0.0193	0.0002	0.0195	0.0856	0.0010	0.0043
n-Hexane	0.0077	0.0001	0.0078	0.0341	0.0004	0.0017
Cyclohexane	0.4909	0.0058	0.4968	2.1758	0.0248	0.1088
Other hexanes	0.1862	0.0022	0.1884	0.8254	0.0094	0.0413
Heptanes	0.0322	0.0004	0.0325	0.1425	0.0016	0.0071
Methylcyclohexane	0.1131	0.0013	0.1144	0.5011	0.0057	0.0251
Isooctane	0.0006	0.0000	0.0007	0.0029	0.0000	0.0001
Benzene	2.5552	0.0304	2.5856	11.3249	0.1293	0.5662
Toluene	2.2145	0.0263	2.2408	9.8148	0.1120	0.4907
Ethylbenzene	0.1148	0.0014	0.1161	0.5087	0.0058	0.0254
Xylenes	0.4136	0.0049	0.4186	1.8333	0.0209	0.0917
C8+ Heavies	0.0099	0.0001	0.0100	0.0438	0.0005	0.0022
Total VOC	8.8561	0.1052	8.9614	39.2509	0.4481	1.9625

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (PWTK-2 & 3 Working & Breathing Streams)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Sales Gas Venting Emissions Calculations

Input Data

900 hr/yr Operating time ConocoPhillips Company

Emission Rates

Components	Uncontrolled Emission Rates, pph	tpy
Hydrogen sulfide	11.4008	5.1303
Propane	197.0362	88.6663
Isobutane	24.9124	11.2106
n-Butane	64.2094	28.8942
Isopentane	13.7925	6.2066
n-Pentane	13.1501	5.9175
Cyclopentane	0.2276	0.1024
n-Hexane	4.0466	1.8210
Cyclohexane	5.2531	2.3639
Other hexanes	10.8891	4.9001
Heptanes	4.4539	2.0043
Methylcyclohexane	2.9425	1.3241
Isooctane	0.3225	0.1451
Benzene	2.6554	1.1949
Toluene	2.2450	1.0103
Ethylbenzene	0.1135	0.0511
Xylenes	0.4016	0.1807
C8+ Heavies	3.3340	1.5003
Total VOC	349.986	157.4935

Uncontrolled emission rates (pph) obtained from ProMax 5.0 results (Sales Gas Stream)

Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Bryan Research & Engineering, LLC

ProMax® 5.0

Simulation Report

Project: VGEU West Bty Simplified Model (Revised Production).pmx

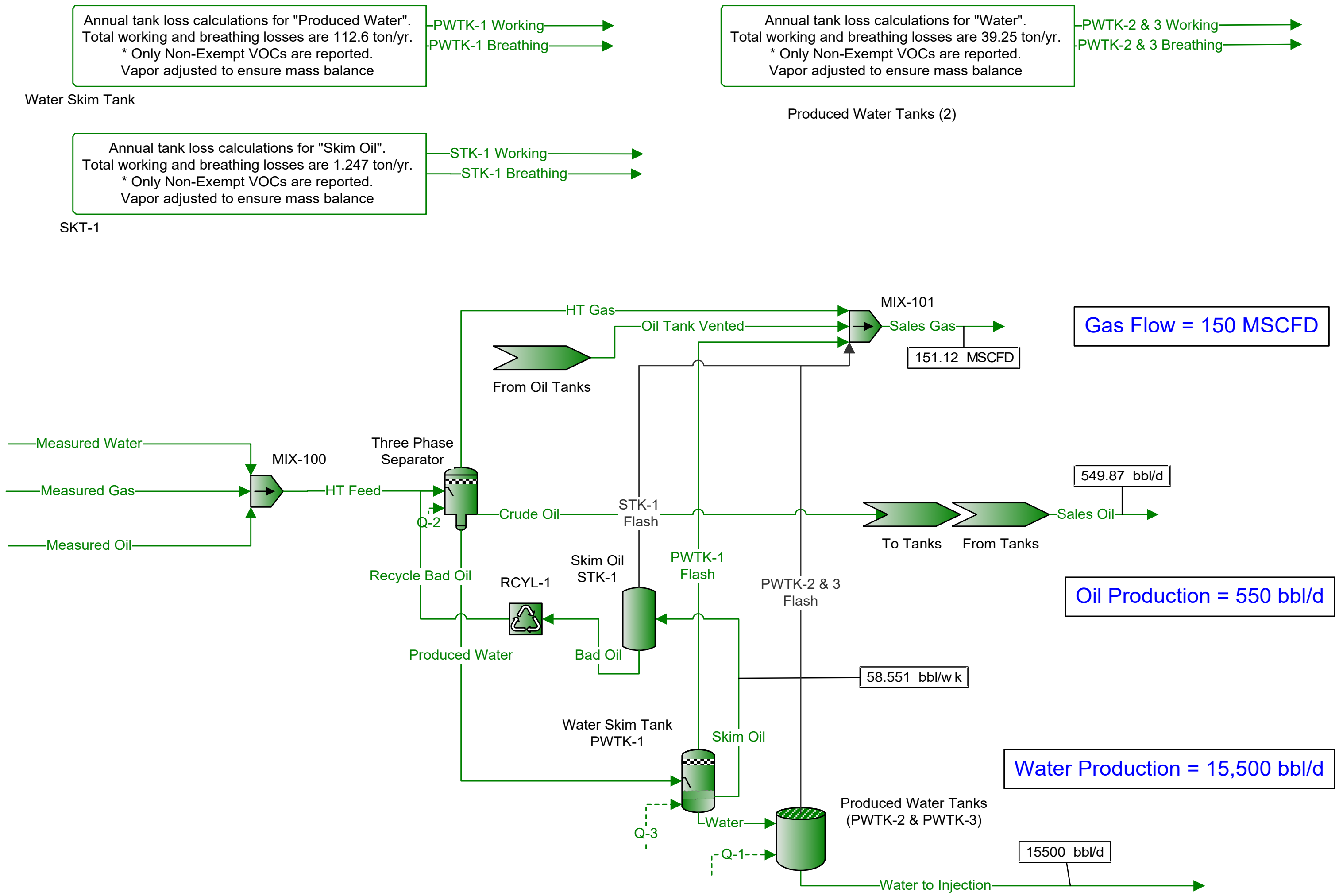
Licensed to ConocoPhillips Company and Affiliates

Client Name: ConocoPhillips
Location: VGEU West Battery
Job: Revised Production Tank Emissions

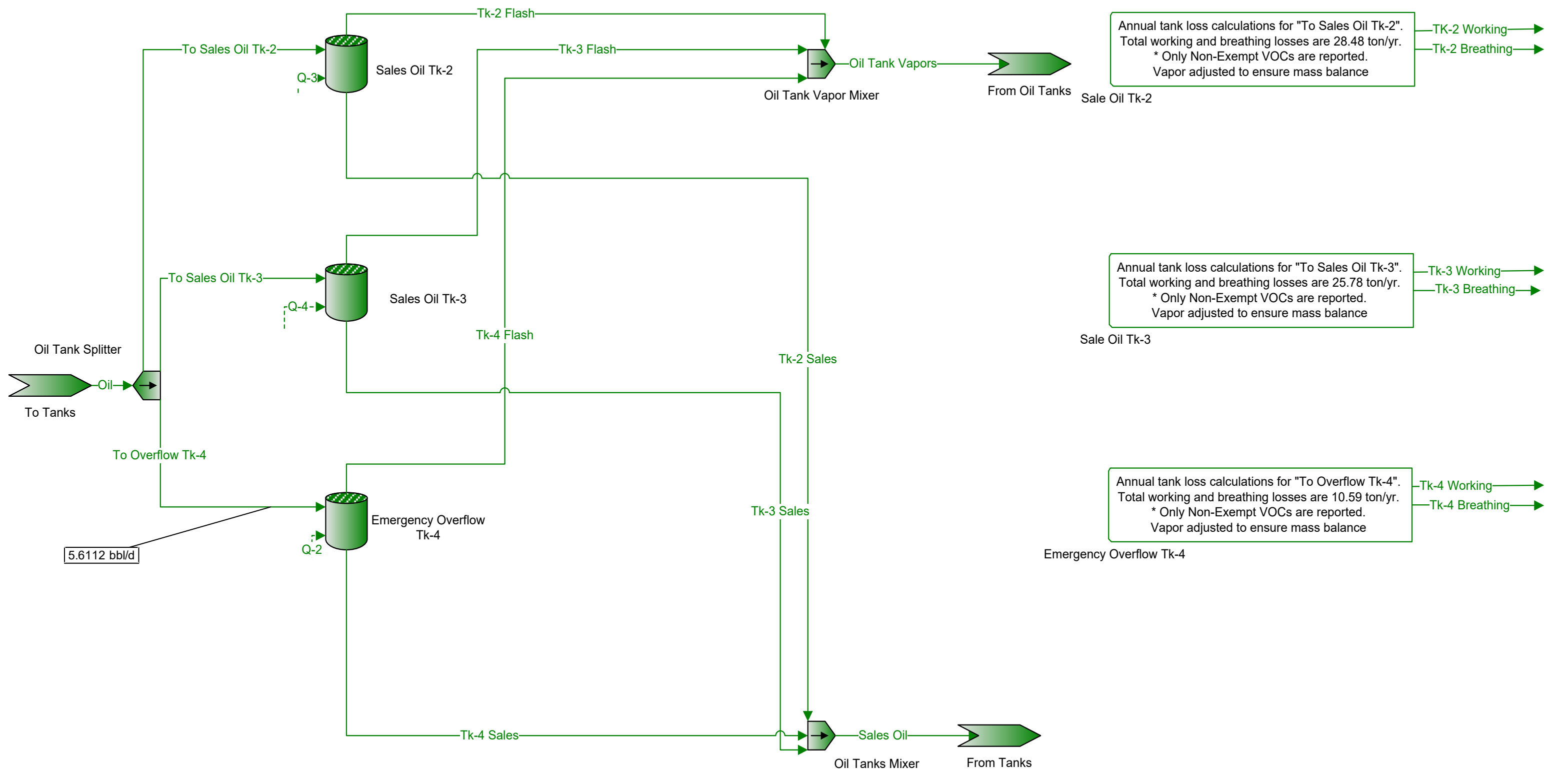
ProMax Filename: C:\Users\lanemk\OneDrive - ConocoPhillips\GPBU-S\VGEU West Revised\Revised Emissions Model\VGEU West Bty Simplified Model (Revised Production).pmx
ProMax Version: 5.0.19263.0
Simulation Initiated: 6/24/2020 1:55:51 PM

Bryan Research & Engineering, LLC
Chemical Engineering Consultants
P.O. Box 4747 Bryan, Texas 77805
Office: (979) 776-5220
FAX: (979) 776-4818
mailto:sales@bre.com
http://www.bre.com/

Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.



Annual tank loss calculations for "Produced Water".
Total working and breathing losses are 112.6 ton/yr.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance
PWTK-1 Working
PWTK-1 Breathing
Water Skim Tank
Annual tank loss calculations for "Water".
Total working and breathing losses are 39.25 ton/yr.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance
PWTK-2 & 3 Working
PWTK-2 & 3 Breathing
Produced Water Tanks (2)
Annual tank loss calculations for "Skim Oil".
Total working and breathing losses are 1.247 ton/yr.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance
STK-1 Working
STK-1 Breathing
SKT-1
HT Gas
MIX-101
Oil Tank Vented
Sales Gas
151.12 MSCFD
Gas Flow = 150 MSCFD
From Oil Tanks
Measured Water
MIX-100
Three Phase Separator
Measured Gas
HT Feed
Crude Oil
STK-1 Flash
549.87 bbl/d
Sales Oil
Q-2
To Tanks
From Tanks
Measured Oil
Recycle Bad Oil
RCYL-1
Skim Oil STK-1
PWTK-1 Flash
PWTK-2 & 3 Flash
Oil Production = 550 bbl/d
Produced Water
Bad Oil
58.551 bbl/wk
Water Skim Tank PWTK-1
Skim Oil
Water Production = 15,500 bbl/d
Produced Water Tanks (PWTK-2 & PWTK-3)
Q-3
Water
Q-1
15500 bbl/d
Water to Injection



Tk-2 Flash
To Sales Oil Tk-2
Tk-3 Flash
Oil Tank Vapors
Sales Oil Tk-2
Q-3
Oil Tank Vapor Mixer
From Oil Tanks
Annual tank loss calculations for "To Sales Oil Tk-2". Total working and breathing losses are 28.48 ton/yr. * Only Non-Exempt VOCs are reported. Vapor adjusted to ensure mass balance
TK-2 Working
Tk-2 Breathing
Sale Oil Tk-2
To Sales Oil Tk-3
Sales Oil Tk-3
Q-4
Annual tank loss calculations for "To Sales Oil Tk-3". Total working and breathing losses are 25.78 ton/yr. * Only Non-Exempt VOCs are reported. Vapor adjusted to ensure mass balance
Tk-3 Working
Tk-3 Breathing
Sale Oil Tk-3
Tk-4 Flash
Tk-2 Sales
Oil Tank Splitter
Oil
To Tanks
To Overflow Tk-4
Tk-3 Sales
Emergency Overflow Tk-4
Q-2
5.6112 bbl/d
Annual tank loss calculations for "To Overflow Tk-4". Total working and breathing losses are 10.59 ton/yr. * Only Non-Exempt VOCs are reported. Vapor adjusted to ensure mass balance
Tk-4 Working
Tk-4 Breathing
Emergency Overflow Tk-4
Tk-4 Sales
Sales Oil
Oil Tanks Mixer
From Tanks

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Section 6

Information Used to Determine Emissions

Check the box for each type of information submitted. This documentation is required. If applicable to the facility.

Failure to include applicable supporting documentation may result in application denial.

- ☐ Specifications for control equipment, including control efficiency specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ Engine or Generator Manufacturer specifications.
- ☐ Catalyst Manufacturer specifications (If a catalyst is being utilized to reduce emissions, the catalyst manufacturer emission factors must be used in all emission calculations. A 25% safety factor may be applied to each pollutant.
- ☐ NSPS JJJJ emission factors **may not** be utilized in lieu of catalyst manufacture specifications when a catalyst is installed, and the catalysts manufacturer achieves higher control efficiency.
- ☑ Flare Manufacturer specifications.
- ☐ Oil/Liquid Analysis: This data is required to match the inputs in all applicable emission calculations. For facilities that have not been constructed and a representative analysis is used it cannot be older than 1 year. For existing facilities, the gas analyses required by Condition A201.A (must be 1 year old or less).
- ☑ Gas Analysis (must be 1 year old or less) This data is required to match the inputs in all applicable emission calculations.
- ☑ Extended Gas Analysis (must be 1 year old or less) This data is required to match the inputs in all applicable emission calculations.
- ☐ If requesting to use a representative gas sample, include a discussion of why the sample is representative for this facility and an explanation of how it is representative (e.g., same reservoir, same similar API gravity, similar composition).
- ☐ If test data are used, to support emissions calculations or to establish allowable emission limits, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☐ Fuel specifications sheet.
- ☐ If computer models are used to estimate emissions, include an input summary and a detailed report, and a disk containing the input file used to run the model.
- ☐ For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, accuracy of the model, the **input and output** summary from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

Representative Gas Analysis Justification: **N/A**


KOHLER
IMPORTANT ENGINE INFORMATION
THIS ENGINE MEETS U.S. EPA PH2 AND EC
STAGE II (SN:4) EMISSION REGS FOR SI SORE
NOT FOR SALE IN CALIFORNIA UNLESS
PREEMPT PER SEC. 209(e)(1) OF CAA
FAMILY AKHXS.7252PC
TYPE APP e11*97/68SA*2002/88*0281*00
DISPL (CC) 725
MODEL NO. CH745S
SPEC NO. CH745 – 0010
SERIAL NO. 4017909001
BUILD DATE 06/28/2010
EMISSION COMPLIANCE PERIOD:
EPA:CATEGORY A
CERTIFIED ON: UNLEADED GASOLINE
OWNER'S MANUAL FOR HP RATING,
ANCE AND ADJUSTMENTS
-544-2444 KohlerEngines.com
CO. KOHLER WISCONSIN USA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TRANSPORTATION AND AIR QUALITY
WASHINGTON, DC 20460

CERTIFICATE OF CONFORMITY
2010 MODEL YEAR

Manufacturer:	**KOHLER CO.**
Engine Family:	**AKHXS.7252PC**
Certificate Number:	**KHX-NRSI-10-16**
Category:	**STATIONARY/MOBILE**
FELs: g/kW-hr	HC+NOx: **8.8**
Effective Date:	**10/20/2009**
Date Issued:	**10/20/2009**

Karl J. Simon, Director
Compliance and Innovative Strategies Division
Office of Transportation and Air Quality

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547), 40 CFR 90 and 40 CFR 60 (stationary only and combined stationary and mobile), and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued for the following small nonroad engine family, more fully described in the documentation required by 40 CFR 90 and produced in the stated model year. This certificate of conformity covers only those new small nonroad engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 90 and which are produced during the model year stated on this certificate. This certificate of conformity does not cover small nonroad engines imported prior to the effective date of the certificate.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking, and trading provisions of 40 CFR Part 90, Subpart C both during and after model year production. Failure to comply with these provisions may render this certificate void ab initio.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 90.126 and 90.506 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 90. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 90.

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

FLARE KING, INC.

Customer: Conoco Phillips
Job: Buckeye VGWU East HP
Date: 6/12/2015 13:56

DATA ENTRY SECTION:

Relief Fluid Data:

Component	Mol %		
		Duty(mmscfd):	1.500
H_2S	1.3800		
N_2	2.4390	**Temp.** °F	70
O_2	0.0000		
H_2	0.0000	**Inlet Pres** psi	3
H_2O	0.0000		
CO_2	31.6230	**Pilot**	X
Methane - C_1	19.8310		
Ethane - C_2	14.2420	**Sparker**	
Propane - C_3	14.7800		
isoButane - iC_4	2.1610	**Retrackable**	X
neoButane - nC_4	6.4780		
isoPentane - iC_5	1.8460	**Guyed**	X
neoPentane - nC_5	2.0380		
Hexane - C_6	1.9092	**Free Standing**	
Heptane - C_7	0.9546		
Octane - C_8	0.3182	**Solar**	
Ethylene	0.0000		
Propylene	0.0000	**Enclosed**	
Benzene	0.0000		
Toluene	0.0000		
Ethylbenzene	0.0000		
m-Xylene	0.0000		
Total:	100.0		

Gas Assist Target LHV		btu/scf
Assist Air:		scfm

Radiation Criteria:

Max Rad@Base:	1500	btu/hr.ft^2
Emissivity:	0.303	
Atm. Temp:	70	°F
Relative Humidity:	50	%
Wind velocity:	29.3	fps
Flare Tip ϕ:	4.0	in
Flare Height(oah):	40	ft
Tip Press.	13.2	psia
Altitude	3000	ft
Rad Factor:		

CALCULATED DATA:

Relief Fluid Data:

Total Flow	1.500	mmscfd
MW/SG:	39.84	1.375
Density:	0.1051	lb/scf
LHV:	1316.0	btu/scf
LHV:	12522.3	btu/lb
k (Cp/Cv):	1.211	
Z Compressibility:	0.9867	
Viscosity	0.011	cp
C:H ratio:	0.335	
Flow:	6561.4	lb/hr
Duty:	82.16	mmBTU/hr
Flow:	19.720	acfs
Air Req'd:	14182.5	scfm
Air Req'd(ft^{3}air / ft^{3}gas):	13.62	

Flare Data:

Calc'd Emissivity:	0.303	
Tip ΔP:	25.55	in H_2O
Tip Velocity:	228.3	fps
Sonic Velocity:	895.1	fps
Mach Number:	0.25	
Flame Length (less assist air):	30.8	ft
Min. Flare Height:	26.9	ft @base
H2S Flare Height:	45.0	ft
# Pilots Req'd	1	ea
U_{wind}/U_{exit}:	0.13	
Δx:	27.1	ft
Δy:	13.7	ft
Sound level	112.6	db
Vmax=	400.0	ft/s
Air Assit Vmax=	140.2	ft/s

Dist, horiz.(ft)	**Radiation**(btu/hr.ft^2)	Rad Factor
0.0	718.9	0.86
15.0	780.5	0.87
30.0	693.1	0.86
50.0	479.6	0.85
75.0	278.3	0.84
100.0	169.3	0.83
150.0	76.8	0.81
200.0	42.5	0.79

Rev. A

FLARE KING, INC.

TECHNICAL DATA

DESCRIPTION: 4" UTILITY TIP WITH RETRACKTABLE PILOT ON 40' OAH GUYED STACK

CUSTOMER: Conoco Phillips

DESIGN PARAMETERS:

FLOW RATE:	1.500	mmscfd
TEMPERATURE:	70	°F
MOLECULAR WEIGHT:	39.8	lb/lb-mol
TIP PRESSURE DROP:	0.92	psig
EXIT VELOCITY:	228.3	fps
MACH NO.:	0.25	

UTILITIES:

PURGE GAS (w/seal):	N/A
PURGE GAS (w/o seal):	N/A
ASSIST GAS:	N/A
PILOT GAS:	8-12 cfh @ 10 psig

ELECTRIC:

IGNITION:	3 amps @ 120V-1Ph-60Hz
CONTROLS:	3 amps @ 120V-1Ph-60Hz
BLOWER:	N/A

ENVIRONMENTAL:

RADIATION ON GRADE @DESIGN FLOW RATE, Btu/SF/Hr:

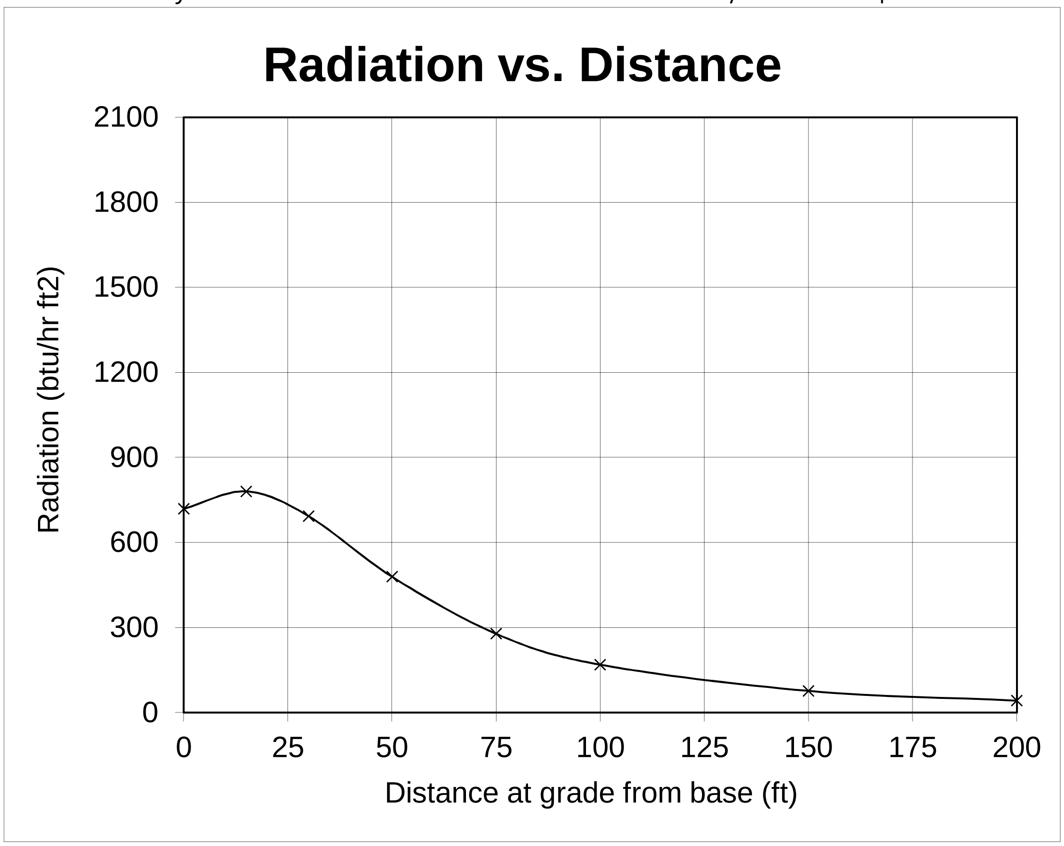
(@Distance from base, ft) Wind@ 20.0 mph.

@ BASE	15	30	50	75	100	150	200
718.9	780.5	693.1	479.6	278.3	169.3	76.8	42.5

NOTE: Radiation does not include solar radiation (approx. 250 btu/hr).

DESTRUCTION EFFICIENCY: 98%

Customer: Conoco Phillips
Job: Buckeye VGWU East HP Wind Velocity: 20.0 mph



NOTE: Radiation does not include solar radiation (approx. 250 btu/hr).

Recommended Design Total Radiation (from API RP-521)

Permissible Design Level (K) (BTU/hr·ft2)	Conditions
5000	Heat intensity on structures and in areas where operators are not likely to be performing duties and where shelter from radiant heat is available (for example, behind equipment).
3000	Value of K at design flare release at any location to which people have access (for example, at grade below the flare or a service platform of a nearby tower); exposure should be limited to a few seconds, sufficient for escape only.
2000	Heat intensity in areas where emergency actions lasting up to 1 minute may be required by personnel without shielding but with appropriate clothing.
1500	Heat intensity in areas where emergency actions lasting several minutes may be required by personnel without shielding but with appropriate clothing.
500	Value of K at any location where personnel with appropriate clothing may be continuously exposed.

LABORATORY SERVICES
Natural Gas Analysis

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EXTENDED GAS REPORT
SUMMARY OF CHROMATOGRAPHIC ANALYSIS

Sample Name:	Separator VGEU West Battery	**For:**	8359G
Sample Date:	10/18/2019	**Cyl. Ident.:**	2019023512
Sampled By:	0	**Company:**	COPC
Time Sampled:	10:50	**Analysis Date:**	10/29/2019
Sample Temp:	85.0 F	**Analysis By:**	BH
Sample Press:	36.0	**Data File:**	LS_5387.D

H_2S (PPM) = 60107.0

Component	**Mole%**	**GPM REAL**	**GPM IDEAL**
H_2S	6.011		
Nitrogen	1.305		
Methane	23.343		
CO2	20.007		
Ethane	11.558	3.090	3.083
Propane	22.958	6.323	6.309
Isobutane	2.645	0.865	0.863
N-Butane	6.742	2.125	2.120
Isopentane	1.432	0.524	0.522
N-Pentane	1.396	0.506	0.505
Hexanes+	2.603	1.062	1.060
Total	100.000	14.495	14.462

CALCULATED PARAMETERS

TOTAL ANALYSIS SUMMARY

MOLE WT:	38.487
VAPOR PRESS PSIA:	1308.9
SPECIFIC GRAVITY	
AIR = 1 (REAL):	1.2694
AIR = 1 (IDEAL):	1.2578
H2O = 1 (IDEAL):	0.506
REPORTED BASIS:	14.73
Unnormalized Total:	100.692

HEATING VALUE

BTU/CUFT (DRY)	1586.6
BTU/CUFT (WET)	1559.8

BTEX SUMMARY

WT% BENZENE	7.845
WT% TOLUENE	4.921
WT% E BENZENE	0.962
WT% XYLENES	1.137

LAB MANAGER

Constants: GPA 2145
Method(s): GPA 2286.m ; GPA 2172.m

Report Rev 18-05.16
Template: eC6+ Gas

LABORATORY SERVICES
Natural Gas Analysis

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Sample Name: Separator VGEU West Battery
Company: COPC
Data File: LS_5387.D

*ANALYSIS OF HEXANES PLUS

Component	MOLE%	WT%
2,2 DIMETHYL BUTANE	0.117	0.261
CYCLOPENTANE	0.187	0.379
2-METHYLPENTANE	0.249	0.558
3-METHYLPENTANE	0.153	0.343
HEXANE (C6)	0.285	0.635
DIMETHYLPENTANES	0.019	0.051
METHYLCYCLOPENTANE	0.201	0.440
2,2,3 TRIMETHYLBUTANE	0.001	0.002
BENZENE	0.194	0.393
CYCLOHEXANE	0.235	0.514
2-METHYLHEXANE	0.034	0.088
3-METHYLHEXANE	0.062	0.161
DIMETHYCYCLOPENTANES	0.024	0.061
HEPTANE (C7)	0.080	0.207
METHYLCYCLOHEXANE	0.151	0.388
2,5 DIMETHYLHEXANE	0.003	0.008
TOLUENE	0.127	0.305
2-METHYLHEPTANE	0.024	0.070
OTHER OCTANES	0.078	0.225
OCTANE (C8)	0.024	0.070
ETHYLCYCLOHEXANE	0.015	0.043
ETHYL BENZENE	0.022	0.060
M,P-XYLENE	0.018	0.050
O-XYLENE	0.008	0.021
OTHER NONANES	0.125	0.415
NONANE (C-9)	0.011	0.038
IC3 BENZENE	0.006	0.017
CYCLOOCTANE	0.001	0.004
NC3 BENZENE	0.002	0.005
TM BENZENE(S)	0.002	0.007
IC4 BENZENE	0.000	0.001
NC4 BENZENE	0.001	0.002
DECANES + (C10+)	0.081	0.312

*HEXANES PLUS SUMMARY

AVG MOLE WT	93.289
VAPOR PRESS PSIA	9.860
API GRAVITY @ 60F	62.9
SPECIFIC GRAVITY	
AIR = 1 (IDEAL):	2.975
H2O = 1 (IDEAL):	0.728

COMPONENT RATIOS

HEXANES	(C6)	MOLE%	38.007
HEPTANES	(C7)	MOLE%	35.052
OCTANES	(C8)	MOLE%	15.614
NONANES	(C9)	MOLE%	7.652
DECANES+	(C10+)	MOLE%	3.675

HEXANES	(C6)	WT%	34.495
HEPTANES	(C7)	WT%	33.176
OCTANES	(C8)	WT%	16.876
NONANES	(C9)	WT%	9.929
DECANES+	(C10+)	WT%	5.524

Remarks: gas/spot

* Hexane+ portion calculated by Allocation Process

LABORATORY SERVICES
Natural Gas Analysis

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Crude Oil Study

COPC

VGEU West Battery
1910036-03

LABORATORY SERVICES
Natural Gas Analysis

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SUMMARY OF CHROMATOGRAPHIC ANALYSIS

COMPANY:	COPC	JOB #:	1910036
SAMPLE ID:	PRESSURIZED SEPARATOR CRUDE OIL	SAMPLE #:	1910036-03PC
SAMPLE TYPE:	SPOT	DATE ON:	10/18/2019
STATION:	VGEU WEST BATTERY	DATE OFF:	10/18/2019
SAMPLE PRESS.,psig:	36	TIME ON:	10:45
SAMPLE TEMPERATURE, F	85	TIME OFF:	10:45
ANALYSIS DATE:	10/28/2019	SAMPLED BY:	D L A
ANALYSIS COMMENTS:		ANALYST:	J. R. PRITCHARD

COMPONENT	MOLE %	WEIGHT %	VOLUME %	CALCULATED PARAMETERS	
HYDROGEN SULFIDE	0.0750	0.0177	0.0167	TOTAL ANALYSIS SUMMARY	
NITROGEN	0.0000	0.0000	0.0000		
OXYGEN	0.0000	0.0000	0.0000	AVE MOLE WT	144.1067
METHANE	0.3104	0.0346	0.0872	SP GRAV, 60F/60	0.7851
CARBON DIOXIDE	0.9545	0.2915	0.2681	API GRAVITY	48.7
ETHANE	1.6167	0.3373	0.7154	REL DENS, AIR=1	4.9755
PROPANE	4.9897	1.5268	2.2748	VAPOR PRESS PSIA	42.46
ISO-BUTANE	1.0657	0.4298	0.5772		
N-BUTANE	4.3301	1.7464	2.2603	HEXANES PLUS SUMMARY	
ISO-PENTANE	1.8598	0.9311	1.1269		
N-PENTANE (C-5)	2.4133	1.2083	1.4473	AVE MOLE WT	163.5080
2,2 DIMETHYL BUTANE	0.0004	0.0002	0.0002	SP GRAV, 60F/60	0.8333
CYCLOPENTANE	0.0078	0.0038	0.0038	API GRAVITY	38.3
2-METHYLPENTANE	1.8183	1.0874	1.2497	LBS/GAL	6.667
3-METHYLPENTANE	0.9416	0.5631	0.6364	REL DENS, AIR=1	5.6453
N-HEXANE (C-6)	2.0954	1.2531	1.4271	VAPOR PRESS PSIA	1.04
METHYLCYCLOPENTANES	2.0194	1.1794	1.1825		
BENZENE	2.2854	1.2388	1.0607	BTEX SUMMARY	
CYCLOHEXANE	4.1147	2.4030	2.3186		
2-METHYLHEXANE	0.3021	0.2101	0.2328	WT % BENZENE	1.2388
3-METHYLHEXANE	1.0405	0.7235	0.7895	WT % TOLUENE	3.2070
DIMETHYLCYCLOPENTANES	0.5656	0.3854	0.3853	WT % E BENZENE	0.4902
HEPTANES	1.1804	0.8208	0.9016	WT % XYLENES	1.9289
N-HEPTANE (C-7)	1.9458	1.3529	1.4860		
METHYLCYCLOHEXANE	4.4989	3.0024	2.9297	DECANES PLUS SUMMARY	
2-2-4 TRIMETHYLPENTANE	0.2916	0.2311	0.2255		
TOLUENE	5.0157	3.2070	2.7730	AVE MOLE WT	231.8553
OCTANES	3.5058	2.7790	2.9717	SP GRAV, 60F/60	0.9058
N-OCTANE (C-8)	1.6580	1.3143	1.4054	API GRAVITY	24.7
ETHYL BENZENE	0.6654	0.4902	0.4238	LBS/GAL	7.247
P-M-XYLENE	1.8340	1.3512	1.1767	REL DENS, AIR=1	8.0051
O-XYLENE	0.7841	0.5777	0.4936	VAPOR PRESS PSIA	0.01
NONANES	4.6578	4.1456	4.3417		
N-NONANE (C-9)	1.4746	1.3124	1.3745		

CONTINUED ON NEXT PAGE

COPC
VGEU WEST BATTERY
PRESSURIZED SEPARATOR CRUDE OIL

COMPONENT	MOLE %	WEIGHT %	VOLUME %
DECANES	3.9078	3.8583	3.9728
N-DECANE (C-10)	1.4733	1.4546	1.4978
UNDECANES	2.7480	2.9807	3.0266
N-UNDECANE (C-11)	0.9374	1.0168	1.0325
DODECANES	1.9699	2.3285	2.3384
N-DODECANE (C-12)	0.6464	0.7641	0.7673
TRIDECANES	1.9578	2.5047	2.4856
N-TRIDECANE (C-13)	0.5591	0.7153	0.7099
TETRADECANES	1.7717	2.4391	2.4156
N-TETRADECANE (C-14)	0.5335	0.7345	0.7274
PENTADECANES	1.6141	2.3793	2.3293
N-PENTADECANE (C-15)	0.4162	0.6135	0.6006
HEXADECANES	1.1481	1.8041	1.7547
N-HEXADECANE (C-16)	0.3179	0.4995	0.4858
HEPTADECANES	0.7277	1.2143	1.1774
N-HEPTADECANE (C-17)	0.2554	0.4262	0.4133
OCTADECANES	0.4537	0.8013	0.7747
N-OCTADECANE (C-18)	0.1820	0.3214	0.3107
NONADECANES	0.2225	0.4146	0.3983
N-NONADECANE (C-19)	0.1869	0.3483	0.3346
EICOSANES	0.2111	0.4139	0.3954
N-EICOSANES (C-20)	0.1392	0.2729	0.2607
HENEICOSANE + (C-21+)	17.3018	35.5382	33.2269
TOTALS	100.0000	100.0000	100.0000

CRUDE OIL FINGERPRINT
C-n/C-13 RATIO SUMMARY

C-n	C-n/C-13
10.0	2.034
11.0	1.422
12.0	1.068
13.0	1.000
14.0	1.027
15.0	0.858
16.0	0.698
17.0	0.596
18.0	0.449
19.0	0.487
20.0	0.382

BIO-MARKER SUMMARY

Farnesane/C-14	0.178
Pristane/C-17	0.675
Phytane/C-18	0.677
Weight % Sulfur	0.6170
Gravity, API @ 60 F	38.5

LABORATORY SERVICES
Natural Gas Analysis

www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

SUMMARY OF CHROMATOGRAPHIC ANALYSIS

COMPANY:	COPC	**JOB #:**	1910036
SAMPLE ID:	PRESSURIZED SEPARATOR CRUDE OIL	**SAMPLE #:**	1910036-03PC
SAMPLE TYPE:	SPOT	**DATE ON:**	10/18/2019
STATION:	VGEU WEST BATTERY	**DATE OFF:**	10/18/2019
SAMPLE PRESS.,psig:	36	**TIME ON:**	10:45
SAMPLE TEMPERATURE, F	85	**TIME OFF:**	10:45
ANALYSIS DATE:	10/28/2019	**SAMPLED BY:**	D L A
ANALYSIS COMMENTS:		**ANALYST:**	J. R. PRITCHARD

TANKS DATA INPUT REPORT

COMPONENT	MOLE %	WEIGHT %	VOLUME %
HYDROGEN SULFIDE	0.0750	0.0177	0.0167
CARBON DIOXIDE	0.9545	0.2915	0.2681
NITROGEN	0.0000	0.0000	0.0000
METHANE	0.3104	0.0346	0.0872
ETHANE	1.6167	0.3373	0.7154
PROPANE	4.9897	1.5268	2.2748
ISO-BUTANE	1.0657	0.4298	0.5772
N-BUTANE	4.3301	1.7464	2.2603
ISO-PENTANE	1.8598	0.9311	1.1269
N-PENTANE	2.4133	1.2083	1.4473
N-HEXANE	2.0954	1.2531	1.4271
OTHER HEXANES	8.9022	5.2369	5.3912
HEPTANES	9.5333	6.4951	6.7249
OCTANES	5.1638	4.0933	4.3771
NONANES	6.1324	5.4580	5.7162
BENZENE	2.2854	1.2388	1.0607
TOLUENE	5.0157	3.2070	2.7730
ETHYLBENZENE	0.6654	0.4902	0.4238
XYLENES	2.6181	1.9289	1.6703
2,2,4 TRIMETHYLPENTANE	0.2916	0.2311	0.2255
DECANES PLUS	39.6815	63.8441	61.4363
TOTAL	100.0000	100.0000	100.0000

CALCULATED PARAMETERS

TOTAL ANALYSIS SUMMARY

AVE MOLE WT	144.1067
SP GRAV, 60F/60	0.7851
API GRAVITY	48.7
REL DENS, AIR=1	4.9755
VAPOR PRESS PSIA	42.46
CU FT VAPOR/GAL	20.26

DECANES PLUS SUMMARY

AVE MOLE WT	231.8553
SP GRAV, 60F/60	0.9058
API GRAVITY	24.7
LBS/GAL	7.2470
REL DENS, AIR=1	8.0051
VAPOR PRESS PSIA	0.01

CHARACTERISTICS OF STOCK TANK OIL

API GRAVITY @ 60 F (ASTM D287)	38.5
REID VAPOR PRESSURE, psia (ASTM D323)	6.76
WEIGHT % SULFUR (ASTM D4294)	0.6170

C6+ Gas Analysis Report

Sample Point Code	Sample Point Name	Sample Point Location
1000G	09279-00	EVLRP Fuel Gas

Source Laboratory	Lab File No	Container Identity	Sampler
Laboratory Services	2020031976	0470	D Jett - Spot

District	Area Name	Field Name	Facility Name
USA	USA	USA	Default

Date Sampled	Date Effective	Date Received	Date Reported
May 5, 2020 12:45		May 5, 2020 14:53	May 6, 2020

Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
73.00		Torrance	225 @ 73

Operator	Lab Source Description
Conoco Phillips	NG

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	0.0000	0	
Nitrogen (N2)	2.6830	2.683	
CO2 (CO2)	0.0000	0	
Methane (C1)	87.5340	87.534	
Ethane (C2)	9.0810	9.081	2.4280
Propane (C3)	0.5750	0.575	0.1580
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1270	0.127	0.0550
TOTAL	100.0000	100.0000	2.6410

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	May 1, 2020

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 °F Dry	14.696 PSI @ 60.00 °F Saturated	14.73 PSI @ 60.00 °F Dry	14.73 PSI @ 60.00 °F Saturated
1,069.5	1,052.2	1,072.0000	1,054.6

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
0.6192	0.6180

Molecular Weight
17.8967

C6+ Group Properties

Assumed Composition

C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S
0 PPM

PROTREND STATUS:
Passed By Validator on May 7, 2020

DATA SOURCE:
Imported

PASSED BY VALIDATOR REASON:
Close enough to be considered reasonable.

VALIDATOR:
Dustin Armstrong

VALIDATOR COMMENTS:
OK

TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

Section 7

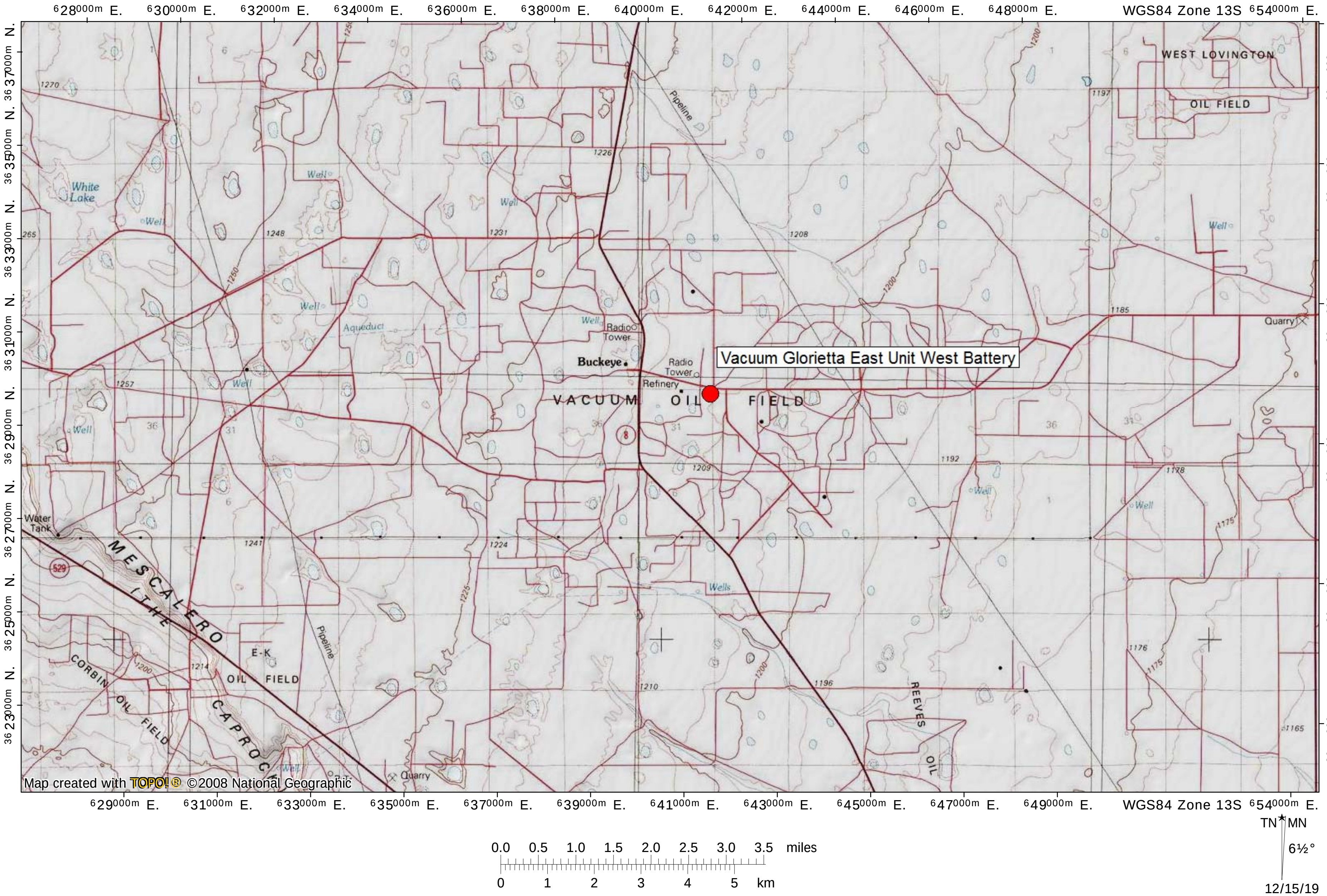
Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	A graphical scale

A topographic map is provided in this section. Please see the following page.

CONOCOPHILLIPS - VACUUM GLORIETTA EAST UNIT WEST BATTERY - Lea County, NM T 17 S, R 35 E, Section 31-32



Section 8A

Applicable State & Federal Regulations

Provide a discussion demonstrating compliance with each applicable state & federal regulation. All input cells should be filled in, even if the response is 'No' or 'N/A'.

In the "Justification" column, identify the criteria that are critical to the applicability determination, numbering each. For each unit listed in the "Applies to Unit No(s)" column, after each listed unit, include the lowest level citation of the applicable regulation. For each unit, list the information necessary to verify the applicability of the regulation, including date of manufacture, date of construction, size (hp), and combustion type. Doing so will provide the applicability criteria for each unit.

Applicable STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Federally Enforceable	Overview of Regulation	Unit(s) or Facility	Applies? (Yes or No)	**JUSTIFICATION:** Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m^3, 3. VOL)
20.2.1 NMAC	General Provisions	Yes	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.	Facility	Yes	Although this regulation is applicable to the facility, it does not impose any specific requirements.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of Sulfur Compounds, Carbon Monoxide, and Nitrogen Dioxide.	Facility	Yes	Although this regulation is applicable to the facility, it does not impose any specific requirements on the operation of the facility as described in the construction permit.
20.2.7 NMAC	Excess Emissions	Yes	If your entire facility or individual pieces of equipment are subject to emissions limits in a permit or numerical emissions standards in a federal or state regulation, this regulation applies.	Facility	Yes	This regulation is applicable because it prohibits excess emissions and proscribes notification procedures in the event of excess emissions.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	Establishes requirements for hydrocarbon tanks containing hydrogen sulfide and tank batteries with capacities greater than 65,000 gallons. Affected facility is required to minimize hydrocarbon and hydrogen sulfide losses to the atmosphere.	TK-2 thru TK-4 & STK-1	Yes	This regulation is applicable both because the facility is equipped with a tank battery with a capacity greater than 65,000 gallons and because the facility is equipped with hydrocarbon storage tanks containing hydrogen sulfide, with capacities greater than 20,000 gallons, and with throughputs greater than 30,000 gallons per week (see 20.2.38.109 NMAC).
20.2.61.109 NMAC	Smoke & Visible Emissions	No	Limits visible emissions from stationary combustion equipment to less than 20 percent opacity.	ENG-1 & FL-1	Yes	This regulation is applicable because the facility is equipped with an engine and flare; they are stationary combustion sources. Emissions from these combustion sources are limited to less than 20% opacity (see 20.2.61.109 NMAC).

STATE REGU-LATIONS CITATION	Title	Federally Enforceable	Overview of Regulation	Unit(s) or Facility	Applies? (Yes or No)	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m^3, 3. VOL)
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	NOIs apply to all facilities emitting over 10 TPY of any regulated air contaminate. Thus, permitted facilities are also subject to this rule. This GCP-O&G registration also serves the purpose of meeting 20.2.73 the NMAC notification requirements. Facilities registering under the GCP must submit emission inventories upon request by the department per 20.2.73.300.B(4) NMAC.	Facility	Yes	This regulation is applicable. The facility is a minor source that must submit an emission inventory upon request by the NMED (see 20.2.73.300.B(1) & (2)).
20.2.77 NMAC	New Source Performance	Yes	This regulation applies to all sources which are subject to the requirements of 40 CFR Part 60, as amended on the date of certification.	ENG-1	Yes	This regulation is applicable because it adopts by reference the federal NSPS codified in 40 CFR 60 (see 20.2.77.6 NMAC). The engine is subject to 40 CFR 60, Subparts A & JJJJ.
20.2.78 NMAC	Emission Standards for HAPS	Yes	This regulation applies to all sources which are subject to the requirements of 40 CFR Part 61, as amended on the date of certification.	N/A	No	This regulation is not applicable because it incorporates by reference the NESHAPs codified under 40 CFR 61 (see 20.2.78.6 NMAC). The facility is not subject to 40 CFR 61.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63, as amended on the date of certification.	ENG-1	Yes	This regulation is applicable because it adopts by reference the federal MACT Standards for source categories codified in 40 CFR 63 (see 20.2.82.6 NMAC). The facility is equipped with an engine subject to 40 CFR 63, Subparts A & ZZZZ.

Applicable FEDERAL REGULATIONS:

FEDERAL REGULATIONS CITATION	Title	Overview of Regulation	Units(s) or Facility	Applies? (Yes or No)	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m3, 3. VOL)
40 CFR 50	NAAQS	This regulation establishes national ambient air quality standards.	Facility	Yes	This regulation applies to all sources operating within the State of New Mexico.
40 CFR 60, Subpart A	General Provisions	Applies if any other NSPS subpart applies.	ENG-1	Yes	This regulation applies because the engine is subject to 40 CFR 63, Subpart JJJJ (see §60.1(a)).
NSPS 40 CFR 60, Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction,	This regulation establishes requirements for petroleum storage vessels.	N/A	No	This regulation is not applicable because the petroleum liquids storage tanks at the facility were installed in 1994.

FEDERAL REGULATIONS CITATION	Title	Overview of Regulation	Units(s) or Facility	Applies? (Yes or No)	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m3, 3. VOL)
	Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978				
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	This regulation establishes requirements for petroleum storage vessels.	N/A	No	This regulation is not applicable because the petroleum liquids storage tanks at the facility were installed in 1994.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	This regulation establishes requirements for volatile organic liquid storage vessels.	N/A	No	This regulation is not applicable because all storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 75 cubic meters (19,812 gallons), and/or contain oil prior to custody transfer (§60.110b(a) & §60.110b(d)(4)). For tank capacities, installation dates and contents, see Table 2-L in section 2 of this application.
40 CFR 60, Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	See 40 CFR 60.4200(a) 1 through 4 to determine applicable category and state engine size, fuel type, and date of manufacture.	N/A	No	This regulation is not applicable because the facility is not equipped with a compression ignition engine (see §60.4200(a)).
40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	See 40 CFR 60.4230(a), 1 through 5 to determine applicable category and state engine size, fuel type, and date of manufacture.	ENG-1	Yes	This regulation is applicable because the engine was constructed after June 12, 2006 and manufactured after July 12, 2008. ENG-1 has a rating of 25 hp, was constructed in 2010, was manufactured on 06/28/2010, and burns gasoline. The engine must be certified in accordance with § 60.4231(a) (see § 60.4233(a)).
40 CFR 60, Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction,	This regulation establishes standards for: gas wells (60.5375); centrifugal compressors (60.5380); reciprocating compressors (60.5385): controllers (60.5390); storage vessels (60.5395); equipment leaks (60.5400); and sweetening units (60.5405).	N/A	No	This regulation does not apply. • The facility is not equipped with a gas well. • The facility is not equipped with centrifugal compressors. • The reciprocating compressor

FEDERAL REGULATIONS CITATION	Title	Overview of Regulation	Units(s) or Facility	Applies? (Yes or No)	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m3, 3. VOL)
	Modification or Reconstruction Commenced After August 23, 2011, and on or before September 18, 2015				compresses air. • The facility is not equipped with continuous bleed pneumatic controllers with natural gas bleed rates greater than 6 scfh. • The storage tanks were installed prior to August 24, 2011 and have not been modified or reconstructed. • The equipment (leaks) is not located at a natural gas processing plant. • The facility is not equipped with sweetening units. The changes proposed in this registration are not modifications as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
40 CFR 60, Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	This regulation establishes standards for: gas wells (60.5375a); centrifugal compressors (60.5380a); reciprocating compressors (60.5385a): controllers (60.5390a); storage vessels (60.5395a); fugitive emissions at well sites and compressor stations (60.5397a); equipment leaks at gas plants (60.5400a); sweetening units (60.5405a).	N/A	No	This regulation does not apply. • The facility is not equipped with a gas well. • The facility is not equipped with centrifugal compressors. • The reciprocating compressor compresses air. • The facility is not equipped with continuous bleed pneumatic controllers with natural gas bleed rates greater than 6 scfh. • The storage tanks were installed prior to September 18, 2015 and have not been modified or reconstructed. • The facility is not a well site or compressor station. • The equipment (leaks) is not located at a natural gas processing plant. • The facility is not equipped with sweetening units. The changes proposed in this registration are not modifications

FEDERAL REGULATIONS CITATION	Title	Overview of Regulation	Units(s) or Facility	Applies? (Yes or No)	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m3, 3. VOL)
					as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
40 CFR 63, Subpart A	General Provisions	This regulation establishes requirements only applicable if other 40 CFR 63 subparts apply.	ENG-1	Yes	This regulation is applicable because the engine must comply with 40 CFR 63, Subpart ZZZZ (see §63.1(b)).
40 CFR 63, Subpart HH	NESHAP From Oil and Natural Gas Production Facilities	This regulation establishes requirements for dehydrators, storage vessels with flash emissions and ancillary equipment in volatile HAP service.	N/A	No	This regulation is not applicable because the facility is an area HAP source (see §63.761) and is not equipped with dehydrators (see §63.760(b)).
40 CFR 63, Subpart ZZZZ	NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Facilities are subject to this subpart if they own or operate a stationary RICE, except stationary RICE is being tested at a stationary RICE test cell/stand (see §63.6590(a)).	ENG-1	Yes	This regulation is applicable because the facility is equipped with a stationary RICE (see §63.6585). The facility is an area HAP source (see §63.6585(a) & (b)) and the engine is a new source constructed after June 12, 2006 (see §63.6590(a)(2)(iii)). The engine must meet requirements of Subpart ZZZZ by meeting the requirements of Subpart JJJJ (see §63.6590(c)(1)).

Section 8B

Compliance Test History

To evaluate the requirement for compliance tests, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
ENG-1	**N/A**	**N/A**

Section 9

Proof of Public Notice

General Posting of Notice

I, Michael K Lane, the undersigned, certify that on Jun-30-2020, I posted a true and correct copy of the attached Public Notice in a publicly accessible and conspicuous place, visible from the nearest public road, at the entrance of the property on which the facility is, or is proposed to be, located.

Signed this ________ day of Jun-30-2020, __________

DocuSigned by:
Michael K Lane
9C64CE08203F455...

Signature

Jun-30-2020

Date

Michael K Lane

Printed Name

Sr. Environmental Coordinator

Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Newspaper Publication of Notice

☐ An original or copy of the actual newspaper advertisement posted in a newspaper in general circulation in the applicable county is attached. The original or copy of the advertisement includes the header showing the date and newspaper or publication title.

OR

☒ An affidavit from the newspaper or publication in general circulation in the applicable county stating that the advertisement was published is attached. The affidavit includes the date of the advertisement's publication, and a legible photocopy of the entire ad.

James W. Newby

Signature

06/30/2020

Date

James W. Newby

Printed Name

Consultant

Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Certificate Of Completion

Envelope Id: 3145302DCDF0442691F1B874BC4DAC3F		Status: Completed

Subject: Please DocuSign: ConocoPhillips - West Battery - June 2020 - GCP-OG - Public Notice Certificati...

Source Envelope:

Document Pages: 1	Signatures: 1	Envelope Originator:
Certificate Pages: 5	Initials: 0	Myke Lane
AutoNav: Disabled		935 N Eldridge Pkwy
EnvelopeId Stamping: Disabled		Houston, TX 77079
Time Zone: (UTC-06:00) Central Time (US & Canada)		Myke.K.Lane@conocophillips.com
		IP Address: 138.32.32.166

Record Tracking

Status: Original 6/24/2020 10:05:49 AM	Holder: Myke Lane Myke.K.Lane@conocophillips.com	Location: DocuSign

Signer Events	Signature	Timestamp
Michael K Lane myke.k.lane@conocophillips.com Sr. Environmental Coordinator ConocoPhillips Security Level: Email, Account Authentication (None)	DocuSigned by: Michael K Lane 9C64CE08203F455... Signature Adoption: Pre-selected Style Using IP Address: 24.54.188.226	Sent: 6/24/2020 10:06:26 AM Viewed: 6/24/2020 10:06:51 AM Signed: 6/30/2020 5:14:47 AM Freeform Signing

Electronic Record and Signature Disclosure:
Accepted: 4/1/2020 12:40:18 PM
ID: e6e0cca0-24fe-4932-875e-62b9b4a72a13

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
James Newby jnewby@cirrusllc.com Security Level: Email, Account Authentication (None)	COPIED	Sent: 6/30/2020 5:14:48 AM Viewed: 6/30/2020 9:22:30 AM

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	6/30/2020 5:14:48 AM
Certified Delivered	Security Checked	6/24/2020 10:06:51 AM
Signing Complete	Security Checked	6/30/2020 5:14:48 AM
Completed	Security Checked	6/30/2020 5:14:48 AM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, ConocoPhillips (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to this Electronic Record and Signature Disclosure (ERSD), please confirm your agreement by selecting the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

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Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. Further, you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact ConocoPhillips:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: DocuSign.Admin@conocophillips.com

To advise ConocoPhillips of your new email address

To let us know of a change in your email address where we should send notices and disclosures electronically to you, you must send an email message to us at DocuSign.Admin@conocophillips.com and in the body of such request you must state: your previous email address, your new email address. We do not require any other information from you to change your email address.

If you created a DocuSign account, you may update it with your new email address through your account preferences.

To request paper copies from ConocoPhillips

To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an email to DocuSign.Admin@conocophillips.com and in the body of such request you must state your email address, full name, mailing address, and telephone number. We will bill you for any fees at that time, if any.

To withdraw your consent with ConocoPhillips

To inform us that you no longer wish to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your signing session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an email to DocuSign.Admin@conocophillips.com and in the body of such request you must state your email, full name, mailing address, and telephone number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

The minimum system requirements for using the DocuSign system may change over time. The current system requirements are found here: https://support.docusign.com/guides/signer-guide-signing-system-requirements.

Acknowledging your access and consent to receive and sign documents electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please confirm that you have read this ERSD, and (i) that you are able to print on paper or electronically save this ERSD for your future reference and access; or (ii) that you are able to email this ERSD to an email address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format as described herein, then select the check-box next to ‘I agree to use electronic records and signatures’ before clicking ‘CONTINUE’ within the DocuSign system.

By selecting the check-box next to ‘I agree to use electronic records and signatures’, you confirm that:

- You can access and read this Electronic Record and Signature Disclosure; and
- You can print on paper this Electronic Record and Signature Disclosure, or save or send this Electronic Record and Disclosure to a location where you can print it, for future reference and access; and
- Until or unless you notify ConocoPhillips as described above, you consent to receive exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you by ConocoPhillips during the course of your relationship with ConocoPhillips.

NOTICE

ConocoPhillips Company announces its intent to apply to the New Mexico Environment Department for an air quality General Construction Permit, (GCP-Oil and Gas). The name of this facility is VGEU West Battery. The expected date of the submittal of our Registration for an air quality permit to the Air Quality Bureau is June 30, 2020. This notice is a requirement according to New Mexico air quality regulations.

The exact initial location of the facility is/will be 641,485 UTM meters Easting, 3,629,853 UTM meters Northing, UTM Zone 13. The approximate location of this site is 13.0 miles southwest of Lovington, Lea County, New Mexico. The standard operating schedule of this facility will be continuous.

Air emissions of any regulated air contaminant will be less than or equal to:

	Pollutant	Tons per year (TPY)
1.	Nitrogen Oxides (NO_x)	95
2.	Carbon Monoxide (CO)	95
3.	Volatile Organic Compounds (VOC) (stack)	95
4.	Particulate Matter (PM10)	25
5.	Particulate Matter (PM2.5)	25
6.	Sulfur Dioxide (SO_2)	95
7.	Hydrogen Sulfide (H2S)	25
8.	Any one (1) Hazardous Air Pollutant (HAP)	<10
9.	Sum of all Hazardous Air Pollutants (HAPs)	<25

The owner and/or operator of the facility is:

ConocoPhillips
935 North Eldridge Parkway, SP2
Houston, Texas 77074

If you have any questions or comments about construction or operation of above facility, and want your comments to be made as a part of the permit review process, you must submit your comments in writing to the address below:

New Mexico Environment Department
Air Quality Bureau Permit Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505
Phone (505) 476-4300
Fax (505) 476-4375

Other comments and questions may be submitted verbally.

Please refer to the company name and site name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit Registration at the time of this notice.

Attención

Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

jobs

Place help wanted ads 24/7 at classifieds@hobbsnews.com

Display ads starting as low as $32

For assistance call **Kayla** at **575-391-5417** or call **Bonnie** at **575-391-5414**

EXTRA! EXTRA! LOVINGTON! LOVINGTON!

CARRIERS NEEDED!

Earn extra money!
Great 2nd Job! Early morning hours!

Lovington routes available now!

Call 391-5448 or come by 201 N. Thorp to submit an application to be an independent carrier.

News-Sun 575-393-2123
Office open Monday - Friday 9 a.m. to 5 p.m.

Nor-Lea Hospital District is searching for quality people to fill the following positions

Apply at www.nor-lea.org/careers

Mental Health Licensed Therapist

Great Pay and Excellent Benefits

Nor-Lea Hospital District

Quickcuts NOW HIRING

Manager- Lovington Location
Up to $20 plus travel expenses and $1000 sign on bonus!

Stylists needed $12-$17
Hobbs/Lovington Locations
Call 575-602-2610 or 393-9730

CITY OF HOBBS
EMPLOYMENT OPPORTUNITIES

Police Department Positions
[illegible]

Fire Department Positions
[illegible]

Hobbs

Regular Full-Time Positions
[illegible]

Seasonal Positions
[illegible]

The City of Hobbs is an Equal Opportunity Employer and a drug and smoke free workplace.
Apply Online at: [illegible]

GEO Secure Services

Lea County Correctional Facility
Hobbs, NM

COME JOIN OUR TEAM!

We are an ESSENTIAL EMPLOYER & WE ARE HIRING!

We are hiring for the following positions:

- Mental Health Provider
- Vocational Instructors
- Substance Abuse Counselors
- Academics Instructor

To see a complete list of open positions please visit jobs.geogroup.com

Great Benefits Offered! Full Time Positions!
- Medical/ Dental/ Vision Insurance
- Paid Time Off (PTO)
- 401K Retirement
- Basic Life Insurance
- Tuition Reimbursement
- Paid Holidays...And many more!

Apply online www.jobs.geogroup.com

Equal Opportunity Employer

Lea County New Mexico

Team Up With Lea County!

Lea County is an employer of choice offering competitive salaries and benefits to bright and energetic people who want to join our team.

Open Positions	Department	Application Deadline
Detention Officer	Detention Center	Open until filled
Equipment Operator	Road	Open until filled
Court Compliance Officer	DWI/Compliance	Open until filled
Preventionist	DWI/Compliance	Open until filled

Complete job descriptions, qualification requirements, and how to apply available at www.leacounty.net

Lea County is an Equal Opportunity Employer

043 MOBILE HOMES FOR RENT OR FURNISHED

2 bedroom, 2 bath, appliances, washer/ dryer. $[illegible] month/$[illegible] deposit. No pets. Call 575-[illegible]

069 WORK WANTED

Carpet Problems? Call Jean. Small jobs, [illegible] and repairs. 575-[illegible]

Extreme fire danger. Mowing before the 4th of July is important. Grassy and cooperate. Call 301 300-1246?

Need lawn service? Call Josh. 575-942-3730

072 GENERAL HELP WANTED

Dirt Works Services is seeking backhoe and dump truck operators and vacuum truck drivers. Must have class A CDL and must be able to pass drug screen. Pay depending on experience. Must have valid driver's license. For more information come by 2630 W. Marland from 6 to 8 a.m.

Eagle 3 Theater is now taking applications for future openings. Must be 16 years or older. Apply in person Monday-Friday 9 a.m.-noon.

The Hobbs News-Sun has a part-time opening on our [illegible] team. Candidates must be willing to work nights and weekends and be able to stand for extended periods. Pick up an application at our office located at 201 N. Thorp St.

Local weed and pest control company seeking **spray technician.** Must have good driving record and valid driver's license. We will train. Call for an appointment: 575-393-8373. Serious inquiries only.

Looking for a caregiver. Good pay. For more information, 575-318-[illegible], leave message.

$ $ $ $ $ $
Are YOU looking for an exciting career in sales? Unlimited growth opportunities with [illegible] dealer in [illegible]. Call Billy Joe Sizemore, 575-318-4311 for details.
$ $ $ $ $ $

Lea County State Bank

Are you the one?

Currently seeking individuals looking for a career

Mortgage Loan Processor
Major duties: Processing of Conventional, FHA, USDA, and VA Mortgage Loans

Apply online at www.[illegible]

On-the-job training provided along with great benefits!

NMLS #[illegible]
EOE
M/F/D/V

SUNCOT WAREHOUSE, LLC in Denver City is searching for an **OFFICE SECRETARY**. Job experience, bookkeeping, computer skills. Send resume to suncotgin@gmail.com

CLASSIFIEDS HAS IT ALL

QUICKCUTS now hiring licensed stylists for Hobbs and Lovington. Sunday and one day a week off. Hourly wage, plus paid vacation, holidays and birthday. Pick up application at 2400 N. Grimes, Ste. G24 or call 575-602-2610.

STOP!!!!
Don't shop till you drop. Try shopping through the Classifieds
BUY • SELL • TRADE

VISIT THE Hobbs News-Sun CLASSIFIED DEPARTMENT 201 N. Thorp

FIND WHAT YOUR LOOKING FOR IN THE CLASSIFIEDS

READING NEWSPAPERS IS A QUEST LIKE NO OTHER

TAKE A PEEK into the Classifieds

The J.F. Maddox? Community Bank in both Hobbs and Eunice is looking for bright and eager-to-learn individuals willing to make a positive contribution to our team! The successful candidates will be detail-oriented, comfortable with technology, and willing to work hard. Bring a resume and apply in person at 1101 Joe Harvey or email your resume to [illegible].com. Full-time and part-time positions available for the right candidates.

087 GARAGE SALES

[illegible] Friday through Sunday, 7-2. Many items, end tables, clothes, electronics and misc. Please make sure to wear face mask.

LOOK NO FURTHER!

028 UNFURNISHED APARTMENTS

Good Samaritan Society

THE CEDARS BUENA VISTA SENIOR LIVING

Affordable Housing
Efficiency
One Bedroom [illegible]
Utilities
Accessible Units

GOOD SAMARITAN Affordable Housing 397-6330

031 FURNISHED HOMES

2 bed, 2 bath. Furnished W/D. $1250/month. Utilities paid except electric. No smoking, no pets. 575-441-4561

Unfurnished one bedroom. No smokers/ pets. 575-605-4432

034 UNFURNISHED HOMES

2 bed and 1 bedroom central system, 2 bath, garage storage, washer/dryer. No pets. 575-631-6089

507 E. Mesa, 3 bed, 2 bath, $1500 month, $1000 deposit. Call Oscar, 575-397-5033

Newly Remodeled 3 bedroom 1 bath 1307 N Llano Dr. 575-441-0626

Nice country home for rent north of Hobbs. Acreage. 3/2/1. Call 575-602-3668

039 RV SPACES FOR RENT

EAGLE RV PARK
Monthly spaces available. Full hookups, cable TV, WiFi included. Near Kmart. 1101 W. Cl[illegible] Lane 575-393-7297

Jim's RV Park
615 N. Marland Blvd. Near high school, Hobbs. Monthly spaces for rent, full hookup, DirecTV and WiFi (included) 575-397-2951

KOUNTRYTIME RV PARK County Road 200-F, off Hwy 180. RV spaces for rent. Utilities furnished. $[illegible] mo. 575-631-0270 or 575-390-9546

EL PATIO RV PARK
1911 N. First St., Lovington
Paved drive, ample parking, wifi & On site laundry. 575-390-5431
Office at 206 W. Gum

087 GARAGE SALES

11. 2805 E. Rose Road, Friday, Saturday, Sunday, 8-4. Musical instruments, furniture, patio decor, lots of clothes and household items. All priced to sell.

106 MISCELLANEOUS

3 burial plots at Memory Gardens. Side by side. 575-318-3606

123 FREE PETS

FREE Kittens to a good home! Call 575-631-2081

127 AUTOMOBILES FOR SALE

2002 Ford F-150 supercrew 4X2 one owner 200,200 miles, new tires and battery, bed cover, running boards, very good condition. $4750. Call 575-390-8640

Permian Toyota will buy your car. No strings attached! Call Billy Joe Sizemore at 575-318-4311.

133 RVS & CAMPERS

5th wheel space for rent 1300 E. Ash 505-471-7056

Four Winds 2010 32 ft. RV with about 10,450 miles. 575-393-8582 or 575-392-5458

LEGAL LEGAL LEGAL

LEGAL NOTICE
June 28, 2020

ConocoPhillips Company announces its intent to apply to the New Mexico Environment Department for two air quality General Construction Permits (GCP-Oil and Gas). The names of the facilities to be permitted are the Warren Unit Blinebry Tubb Battery #1 and the VGEU West Battery. The expected date of submittal of the Registrations for an air quality permit to the Air Quality Bureau is June 30, 2020. This notice is a requirement according to New Mexico air quality regulations.

The exact location of the Warren Unit Blinebry Tubb Battery #1 facility is 674,000 UTM meters Easting, 3,600,700 UTM meters Northing, UTM Zone 13. The approximate location of this facility is 6.0 miles north of Eunice, Lea County, New Mexico.

The exact location of the VGEU West Battery facility is 641,405 UTM meters Easting, 3,629,653 UTM meters Northing, UTM Zone 13. The approximate location of this facility is 13.0 miles southwest of Lovington, Lea County, New Mexico.

The standard operating schedule for both facilities will be continuous.

Air emissions from each facility for any regulated air contaminant will be less than or equal to:

Pollutant	Tons per year (TPY)
1. Nitrogen Oxides (NOx)	95
2. Carbon Monoxide (CO)	95
3. Volatile Organic Compounds (VOC) (stack)	95
4. Particulate Matter (PM10)	25
5. Particulate Matter (PM2.5)	25
6. Sulfur Dioxide (SO2)	95
7. Hydrogen Sulfide (H2S)	25
8. Any one (1) Hazardous Air Pollutant (HAP)	<10
9. Sum of all Hazardous Air Pollutants (HAPs)	<25

The owner and/or operator of each facility is:

ConocoPhillips Company
925 North Eldridge Parkway, SP2
Houston, Texas 77079

If you have any questions or comments about construction or operation of the above facilities, and want your comments to be made as a part of the permit review process, you must submit your comments in writing to the address below:

New Mexico Environment Department
Air Quality Bureau Permit Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505
Phone (505) 476-4300
Fax (505) 476-4375

Other comments and questions may be submitted verbally.

Please refer to the company name and site name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit Registrations at the time of this notice.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.
#35814

LEGAL NOTICE
June 28, 2020

ConocoPhillips Company announces its intent to apply to the New Mexico Environment Department for two air quality General Construction Permits, (GCP-Oil and Gas). The names of the facilities to be permitted are the Warren Unit Blinebry Tubb Battery #1 and the VGEU West Battery. The expected date of submittal of the Registrations for an air quality permit to the Air Quality Bureau is June 30, 2020. This notice is a requirement according to New Mexico air quality regulations.

The exact location of the Warren Unit Blinebry Tubb Battery #1 facility is 674,036 UTM meters Easting, 3,600,733 UTM meters Northing, UTM Zone 13. The approximate location of this facility is 6.6 miles north of Eunice, Lea County, New Mexico.

The exact location of the VGEU West Battery facility is 641,485 UTM meters Easting, 3,629,853 UTM meters Northing, UTM Zone 13. The approximate location of this facility is 13.0 miles southwest of Lovington, Lea County, New Mexico.

The standard operating schedule for both facilities will be continuous.

Air emissions from each facility for any regulated air contaminant will be less than or equal to:

Pollutant	Tons per year (TPY)
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5. Particulate Matter (PM2.5)	25
6. Sulfur Dioxide (SO2)	95
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The owner and/or operator of each facility is:

ConocoPhillips Company
935 North Eldridge Parkway, SP2
Houston, Texas 77074

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New Mexico Environment Department
Air Quality Bureau Permit Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505
Phone (505) 476-4300
Fax (505) 476-4375

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#35614

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Section 10

Certification

Company Name: ConocoPhillips Company

I, Michael K Lane, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience. Signed this _____ day of Jun-25-2020, __________, upon my oath or affirmation, before a notary of the State of Texas.

DocuSigned by:
Michael K Lane
113C9D0B96DE40A...

*Signature

Jun-25-2020

Date

Michael K Lane

Printed Name

Sr.Environmental Coordinator

Title

Scribed and sworn before me on this _____ day of Jun-25-2020, __________.

My authorization as a notary of the State of Texas expires on the _____ day of 12/23/2020, __________.

DocuSigned by:
Lisa Marie Cobena
338902463241408...

Notary's Signature

Jun-25-2020

Date

Lisa Marie Cobena

Notary's Printed Name

NOTARY PUBLIC STATE OF TEXAS
LISA MARIE COBENA
Notary ID
3943255
My Commission Expires
12/23/2020

Certificate Of Completion

Envelope Id: D09EFAF91EC340049AEAC1251B669EF0 — Status: Completed

Subject: Please DocuSign: ConocoPhillips - West Battery - June 2020 - GCP-OG - Registration Certificatio...

Source Envelope:

Document Pages: 1	Signatures: 2	Envelope Originator:
Certificate Pages: 5	Initials: 0	Myke Lane
AutoNav: Enabled		935 N Eldridge Pkwy
EnvelopeId Stamping: Disabled		Houston, TX 77079
Time Zone: (UTC-06:00) Central Time (US & Canada)		Myke.K.Lane@conocophillips.com
		IP Address: 138.32.32.166

Record Tracking

Status: Original 6/24/2020 10:10:16 AM	Holder: Myke Lane Myke.K.Lane@conocophillips.com	Location: DocuSign

Signer Events	Signature	Timestamp
Myke Lane myke.k.lane@conocophillips.com Sr.Environmental Coordinator Security Level: Notarized Signing (Notary: Lisa Marie Cobena), Account Authentication (None)	DocuSigned by: Michael K Lane 113C9D0B96DE40A... Signature Adoption: Pre-selected Style Using IP Address: 138.32.80.20	Sent: 6/24/2020 10:11:46 AM Resent: 6/24/2020 10:13:29 AM Viewed: 6/25/2020 10:07:37 AM Signed: 6/25/2020 10:09:23 AM Freeform Signing

Electronic Record and Signature Disclosure:
Accepted: 6/25/2020 10:07:37 AM
ID: 91cfe9d5-0876-42e8-a2b1-fec3241998c5

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp
Notary Name: Lisa M. Cobena Notary Email: Lisa.M.Cobena@conocophillips.com Notary Address: 16930 Park Row Drive Houston 77084 Notary Signer: Myke Lane Notary Designated By: Myke Lane Security Level: Email, Account Authentication (None)	 DocuSigned by: Lisa Marie Cobena 338902463241408... Using IP Address: 138.32.80.20	Sent: 6/24/2020 10:11:46 AM Resent: 6/24/2020 10:13:29 AM Viewed: 6/25/2020 10:10:26 AM Signed: 6/25/2020 10:11:44 AM Freeform Signing

Electronic Record and Signature Disclosure:
Accepted: 4/1/2020 1:57:12 PM
ID: 0288e7b7-e7d1-4724-932f-2acf5436f9d0

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	6/24/2020 10:13:29 AM
Certified Delivered	Security Checked	6/25/2020 10:10:26 AM
Signing Complete	Security Checked	6/25/2020 10:11:44 AM
Completed	Security Checked	6/25/2020 10:11:44 AM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, ConocoPhillips (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to this Electronic Record and Signature Disclosure (ERSD), please confirm your agreement by selecting the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. You will have the ability to download and print documents we send to you through the DocuSign system during and immediately after the signing session and, if you elect to create a DocuSign account, you may access the documents for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. Further, you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

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To contact us by email send messages to: DocuSign.Admin@conocophillips.com

To advise ConocoPhillips of your new email address

To let us know of a change in your email address where we should send notices and disclosures electronically to you, you must send an email message to us at DocuSign.Admin@conocophillips.com and in the body of such request you must state: your previous email address, your new email address. We do not require any other information from you to change your email address.

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