



**EOG Resources, Inc.**  
600 Seventeenth Street  
Suite 1000N  
Denver, CO 80202  
Main: 303-572-9000  
Fax: 303-824-5400

August 3, 2015

Attn: O&G Production Facilities  
Wyoming Department of Environmental Quality  
Air Quality Division  
Herschler Building, 2-E  
122 West 25th Street  
Cheyenne, Wyoming 82002

**RE: EOG Resources, Inc.**  
**Air Permit Application – Ballista 14-13H**  
**Campbell County, Wyoming**

Dear WDEQ:

EOG Resources, Inc. (EOG) is submitting the enclosed Chapter 6 Section 2 (C6 S2) air permit application using the IMPACT Data System Forms. The air permit application is being submitted for Ballista 14-13H which is a single well sweet crude oil and natural gas production facility.

Well Name	API Number	First Date of Production	Natural Gas Rate <sup>1</sup> (MMSCFD)	Crude Oil Rate <sup>1</sup> (BPD)
Ballista 14-13H	49-005-61930	5/9/2015	0.661	228.9

<sup>1</sup> Based on first 30 days production, after 0.6 decline factor.

The Ballista 14-13H well pad consists of the following sources of emissions:

- Four (4) Crude Oil Storage Tanks (400 bbl capacity each);
- One (1) Produced Water Storage Tank (400 bbl capacity);
- One (1) Emergency Storage Tank (400 bbl capacity);
- One (1) Heater Treater (0.375 MMBtu/hr heater capacity);
- One (1) Trace Line Heater (0.375 MMBtu/hr heater capacity);
- One (1) Vapor Recovery Tower (VRT);
- Three (3) Pneumatic Pumps (tank combustor scrubber, VRT combustor scrubber, and recycle);
- Two (2) Electric Pumps (recycle and trace);
- Various Gas Dryers/Scrubbers (gas buster, sales gas, fuel gas, VRT vent line, tank vent line)
- One (1) Steffes Tri-Tip Flare;
- Truck Loading Operation;
- Controllers are all non-bleed;
- Fugitive Components;
- Two (2) 500-gallon propane tanks.

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Attachments A and B contain a flow diagram/plot plan of the emissions unit and facility process description, while Attachment C contains the current production rates for the well. Gas/oil analyses are contained in Attachment D, and detailed emission calculations and supporting documentation are provided in Attachment E.

We trust the attached permit application package will meet your expectations and that you will not hesitate to call me at (303) 262-9946 or Mark Smith at (307) 823-6208 if you have any questions or need additional information. We appreciate your prompt attention to this most important project.

Sincerely,



*for*  
Curtis Rice  
EOG Environmental – Denver Division

cc: File – Well  
Attachments: As stated



**STATE OF WYOMING**  
 Department of Environmental Quality - Air Quality Division  
 Oil and Gas Production Facilities C6 S2 Permit Application



**Equipment List**

Company Name \_\_\_\_\_ EOG Resources, Inc. \_\_\_\_\_  
 Facility Name \_\_\_\_\_ Ballista 14-13H \_\_\_\_\_

List all production equipment at the site including all pressurized vessels with the potential for flash emissions, all hydrocarbon liquids and produced water storage tanks, all dehydration units, all pneumatic pumps, all natural gas-fired burners and heaters and all emission control equipment and devices. Pressurized vessels with the potential for flash emissions are all vessels that vent vapors to the atmosphere during times other than upset or emergency conditions (water knockouts, 2-phase and 3-phase separators, heater treaters, gun barrels, scrubber pots, etc). Provide design ratings for dehyds (MMCFD), process heaters, burners and pilots (MMBtu/hr, SCFH). Provide size of production & water storage tanks (BPD). For dehydration units indicate if the unit includes a glycol flash separator and/or reboiler still vent condenser. For emission control combustors/flares indicate design rating (MMBtu/hr, SCFD) and combustor/flare height (ft). Provide pneumatic pump motive gas usage (SCFH).

If more space is required, continue on page 2 of this sheet.

**PROVIDE INSTALLATION DATES OF ALL EMISSION CONTROL EQUIPMENT & MONITORING DEVICES/SYSTEMS !!!**

- four (4) 400-barrel (bbl) oil storage tanks (routed to Steffes flare)
- one (1) 400-bbl produced water storage tank (routed to Steffes flare)
- one (1) 400-bbl emergency storage tank
- one (1) heater treater w/ 0.375 MMBtu/hr heater
- one (1) 0.375 MMBtu/hr trace line heater
- one (1) 15' Steffes Smokeless Tri-Tip flare with continuous pilot and thermocouple monitored through Cygnet (controls VRT, produced water storage tank, oil storage tanks, and pneumatic pump emissions,) installed prior to first date of production
- one (1) Vapor Recovery Tower (VRT) (routed to Steffes flare)
- three (3) pneumatic pumps (tank combustor scrubber, VRT combustor scrubber, and recycle. 214 scf/hr each, routed to Steffes flare)
- two (2) electric pumps (recycle and trace)
- various gas scrubbers/liquids knockouts (VRT vent line, tank vent line, sales gas line, fuel gas, etc)
- controllers are all non-bleed
- truck loading
- fugitives
- two (2) 500-gallon propane tanks

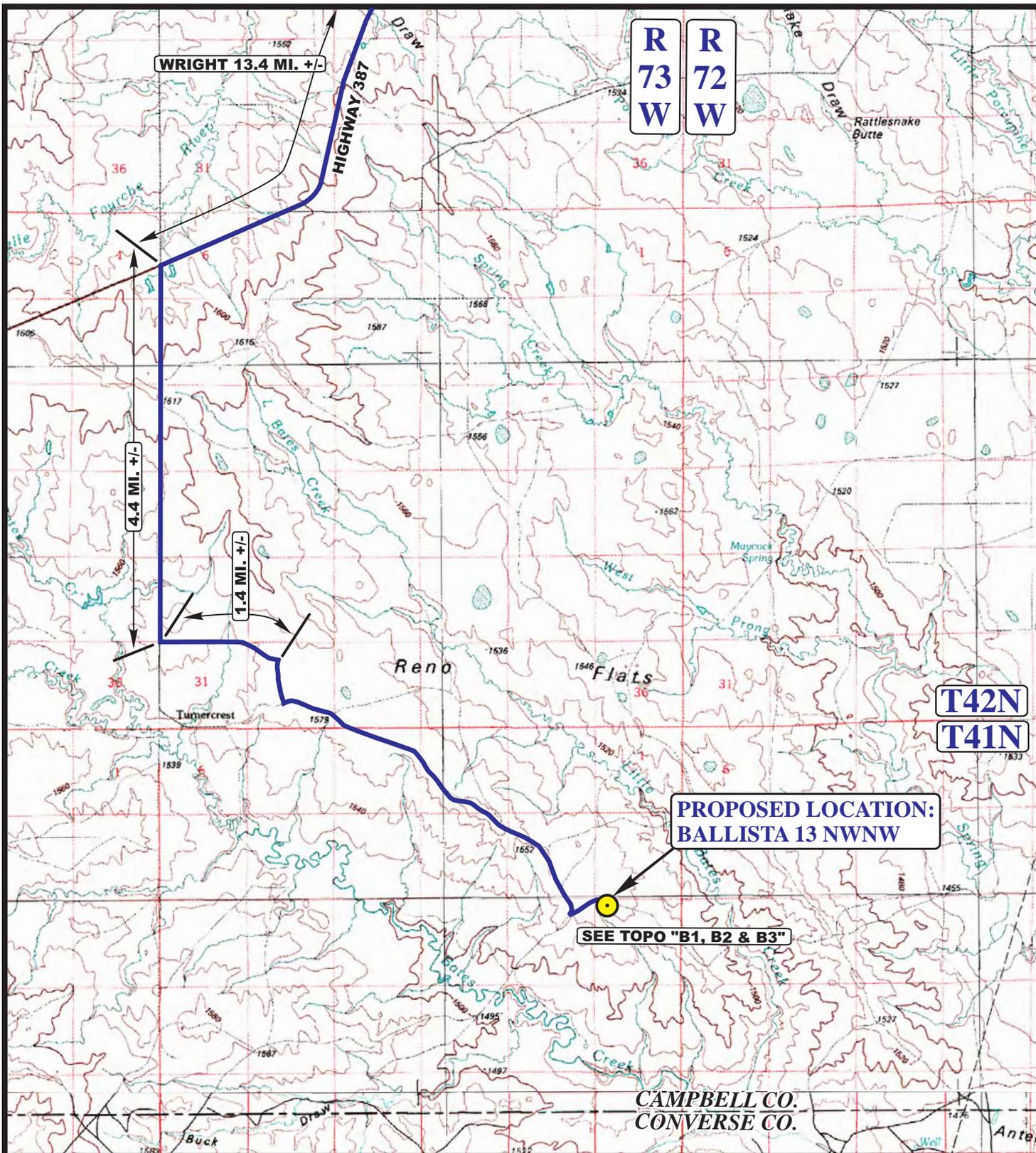
Example:

- 1 2-phase high pressure separator (unheated)
- 1 3-phase low pressure separator w/ 0.5 MMBtu/hr heater
- 2 0.5 MMBtu/hr line heaters
- 1 5 MMCFD TEG dehydration unit w/ 0.5 MMBtu/hr reboiler heater, glycol flash separator(0.5 MMBtu/hr heater) and overheads condenser
- 2 400-bbl condensate tanks
- 1 400-bbl produced water tank
- 1 30-ft enclosed combustor (3.0 MMBtu/hr, 5 MCFD) for flashing & reboiler vent/glycol flash separator emissions control **installed 1/1/2007**

EOG RESOURCES, INC.  
BALLISTA 13 NWNW  
SECTION 13, T41N, R73W, 6<sup>th</sup> P.M.

PROCEED IN A SOUTHWESTERLY DIRECTION FROM WRIGHT, WYOMING ALONG HIGHWAY 387 APPROXIMATELY 13.4 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 4.4 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 1.4 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING 2-TRACK TO THE SOUTHWEST; TURN RIGHT AND PROCEED IN A SOUTHWESTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 2,762' TO THE JUNCTION OF THIS ROAD AND TURNERCREST ROAD TO THE NORTHEAST; TURN LEFT AND PROCEED IN A NORTHEASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 4.4 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE NORTHEAST; TURN LEFT AND PROCEED IN A NORTHEASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 0.5 MILES TO THE BEGINNING OF THE PROPOSED ACCESS TO THE SOUTH; FOLLOW ROAD FLAGS IN A SOUTHERLY DIRECTION APPROXIMATELY 13' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM WRIGHT, WYOMING TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 24.6 MILES.



**LEGEND:**

 PROPOSED LOCATION



**EOG RESOURCES, INC.**

**BALLISTA 13 NWNW**  
**SECTION 13, T41N, R73W, 6th P.M.**  
**NW 1/4 NW 1/4**

**UELS**  
**Uintah Engineering & Land Surveying**  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

**ACCESS ROAD**  
**MAP**

<b>04</b> MONTH	<b>25</b> DAY	<b>12</b> YEAR
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SCALE: 1:100,000 | DRAWN BY: J.L.H. | REV: 06-25-14 J.D.J. | **TOPO**

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**Attachment A – Flow Diagram and Plot Plan of Emission Units  
and/or Facility**



# Site Facility Diagram

**Well Name: Ballista 14-13H**  
**1/4 1/4: NW/NW Sec: 13 T: 41N R: 73W**  
**Latitude: 43.531708 Longitude: -105.581764**  
**County: Campbell State: WY**  
**Lease: WYW145547, FEE Unit :**  
**CA: TBD PA:**  
**Type of well: Oil**

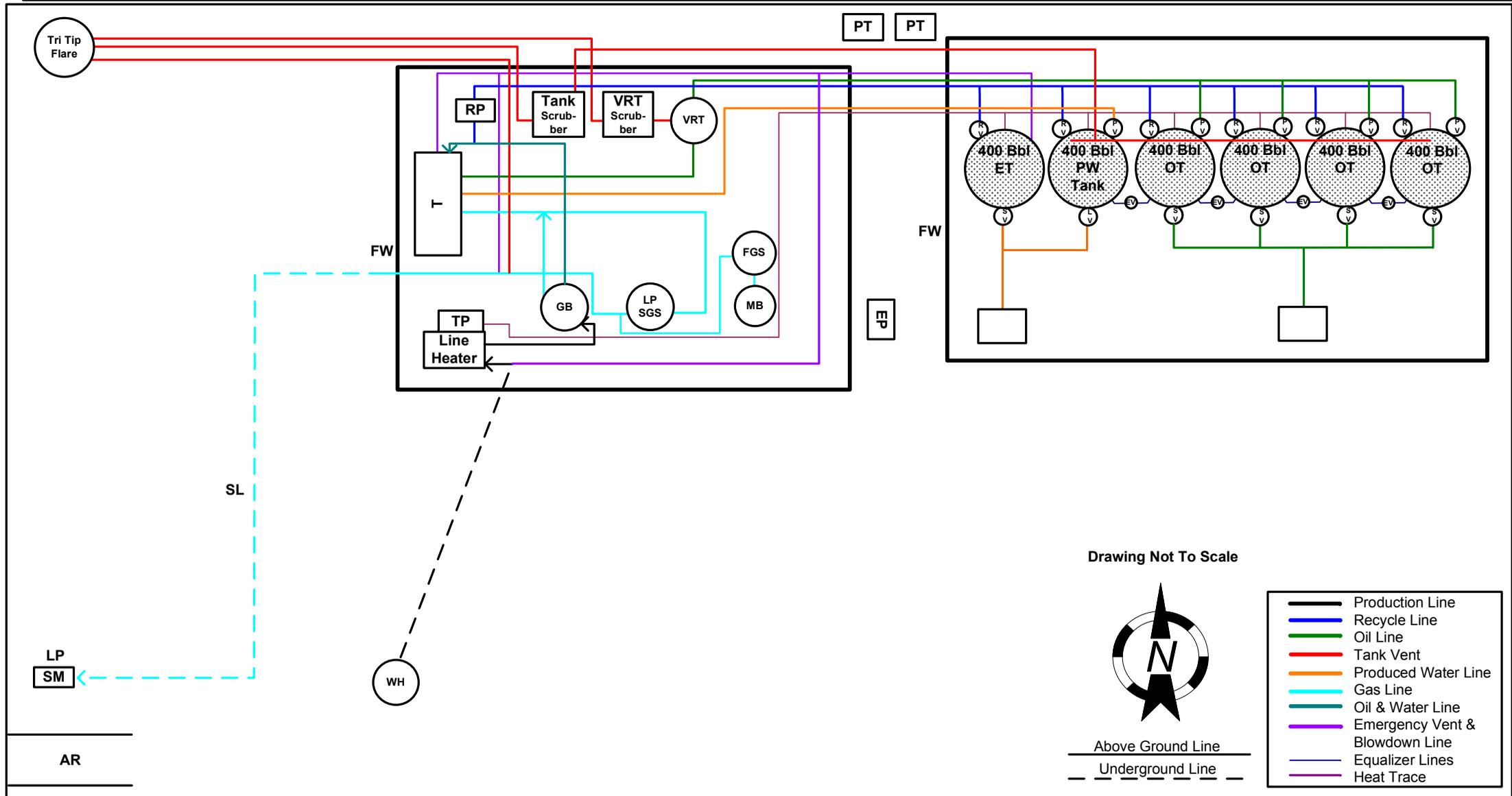
EOG Resources, Inc. site facility diagrams & site security plans are available electronically at all EOG Resources, Inc. offices. Normal business hours are 7:00am to 4:30pm MST.

Revised: 07/31/2015

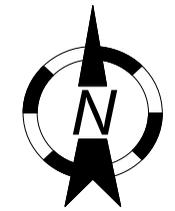
Valve	Production Phase	Sales Phase	Water Drain
PV	SO	SC	SC
SV	SC	SO	SC
EV	SO	SC	SC
LV	SC	SO	SC
RV	SC	SC	SC

## Abbreviations

- AM= Allocation Meter
- AR = Access Road
- CHP = Chemical Pump
- CHT = Chemical Tank
- COM = Combuster
- COMP = Compressor
- COMT = Composite Treater
- CONT = Containment Tub
- CP = Charge Pump
- CT = Condensate Tank
- DH = Dehydrator
- DL = Dump Line
- EP = Electrical Panel
- ET = Emergency Tank
- EV = Equalizer Valve
- FE = Fire Extinguisher
- FGS = Fuel Gas Scrubber
- FT = Fiberglass Tub
- FW = Firewall (dimensions feet)
- FWKO = Free Water Knockout
- GB = Gas Buster
- GEN = Generator
- LACT = LACT Unit
- LH = Line Heater
- LP = Lact Pump
- LV = Load Valve
- MAN = Manifold
- MB = Methanol Bath
- MBT = Methanol Bulk Tank
- MP = Methanol Pump
- OT = Oil Tank
- PIGL = Pig Launcher
- PIGR = Pig Receiver
- PL = Production Line
- POC = Pump Off Controller
- PP = Power Pole
- PRT = Product Tank
- PT = Propane Tank
- PU = Pumping Unit
- PV = Production Valve
- PW = Produced Water
- RL = Recycle Line
- RP = Recycle Pump
- RV = Recycle Valve
- SC = Sealed Closed
- SGS = Sales Gas Scrubber
- SL = Sales Line
- SM = Sales Meter
- SO = Sealed Open
- SP = Separator
- SUMP = Sump Pump
- SV = Sales Valve
- T= Treater
- TM = Test Meter
- TP = Trace Pump
- TRFP = Transfer Pump
- TT = Test Treater
- VM = Vent Meter
- VRT = Vapro Recovery Tower
- UNP = Unload Pump
- WDP = Water Disposal Pump
- WD = Water Drain
- WFP = Water Flood Pump
- WH = Wellhead



Drawing Not To Scale



— Above Ground Line —  
 - - - - - Underground Line - - - - -

—	Production Line
—	Recycle Line
—	Oil Line
—	Tank Vent
—	Produced Water Line
—	Gas Line
—	Oil & Water Line
—	Emergency Vent & Blowdown Line
—	Equalizer Lines
—	Heat Trace

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## **Attachment B – Process Description**

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## Process Description

### Ballista 14-13H single well oil & gas production facility

Ballista 14-13H is a single well oil and gas production facility located in Campbell County, Wyoming that receives production from one well. The well produces both crude oil and natural gas.

#### The Ballista 14-13H well equipment consists of the following sources of emissions:

- Four (4) Crude Oil Storage Tanks (400 bbl capacity each);
- One (1) Produced Water Storage Tank (400 bbl capacity);
- One (1) Emergency Storage Tank (400 bbl capacity);
- One (1) Heater Treater (0.375 MMBtu/hr heater capacity);
- One (1) Trace Line Heater (0.375 MMBtu/hr heater capacity);
- One (1) Vapor Recovery Tower (VRT);
- Three (3) Pneumatic Pumps (tank combustor scrubber, VRT combustor scrubber, and recycle);
- Two (2) Electric Pumps (recycle and trace);
- Various Gas Dryers/Scrubbers (gas buster, sales gas, fuel gas, VRT vent line, tank vent line)
- One (1) Steffes Tri-Tip Flare;
- Truck Loading Operation;
- Controllers are all non-bleed;
- Fugitive Components;
- Two (2) 500-gallon propane tanks.

Gas and liquids rise to the surface through the well head. The gas/liquid mixture enters the heater treater to separate the natural gas, crude oil, and produced water. The natural gas stream is tied into a pipeline. In the event of pipeline shut-in, the gas from the heater treater can be flared. Crude oil from the heater treater is sent to a VRT. Water is sent to the produced water tank. Oil from the VRT is sent to production oil tanks and the flashed gas from the VRT and the tanks is sent to the flare. The crude oil is produced in four storage tanks and hauled away by truck. The water is produced in one storage tank and also hauled away by truck as necessary. The tank vapors from the well's crude and produced water tanks are controlled and routed to the flare that has a destruction efficiency of 98%.

The Ballista 14-13H is located in the NW¼ NW¼ of Section 13, T41N, R73W approximately twelve (12) miles east-southeast of Pine Tree Jct, in Campbell County, Wyoming. (Lat: 43.531708, Long: -105.581764)

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## **Attachment D – Production Rate Information**

Selected Item	Date	Gas Prod	Oil Prod	Water Prod
BALLISTA 14-13H	4/24/2015	0	0	0
BALLISTA 14-13H	4/25/2015	0	0	0
BALLISTA 14-13H	4/26/2015	0	0	0
BALLISTA 14-13H	4/27/2015	0	0	0
BALLISTA 14-13H	4/28/2015	0	0	0
BALLISTA 14-13H	4/29/2015	0	0	0
BALLISTA 14-13H	4/30/2015	0	0	0
BALLISTA 14-13H	5/1/2015	0	0	0
BALLISTA 14-13H	5/2/2015	0	0	0
BALLISTA 14-13H	5/3/2015	0	0	0
BALLISTA 14-13H	5/4/2015	0	0	0
BALLISTA 14-13H	5/5/2015	0	0	0
BALLISTA 14-13H	5/6/2015	0	0	0
BALLISTA 14-13H	5/7/2015	0	0	0
BALLISTA 14-13H	5/8/2015	0	0	0
BALLISTA 14-13H	5/9/2015	0	317	0
BALLISTA 14-13H	5/10/2015	0	156	0
BALLISTA 14-13H	5/11/2015	143	246	0
BALLISTA 14-13H	5/12/2015	820	490	500
BALLISTA 14-13H	5/13/2015	1,123	622	1,015
BALLISTA 14-13H	5/14/2015	1,229	574	857
BALLISTA 14-13H	5/15/2015	1,275	542	965
BALLISTA 14-13H	5/16/2015	1,350	575	935
BALLISTA 14-13H	5/17/2015	1,433	542	845
BALLISTA 14-13H	5/18/2015	1,331	486	758
BALLISTA 14-13H	5/19/2015	1,271	477	700
BALLISTA 14-13H	5/20/2015	1,507	484	586
BALLISTA 14-13H	5/21/2015	1,485	457	332
BALLISTA 14-13H	5/22/2015	1,478	448	526
BALLISTA 14-13H	5/23/2015	1,440	428	495
BALLISTA 14-13H	5/24/2015	1,427	392	446
BALLISTA 14-13H	5/25/2015	1,341	579	417
BALLISTA 14-13H	5/26/2015	1,194	418	430
BALLISTA 14-13H	5/27/2015	1,469	305	415
BALLISTA 14-13H	5/28/2015	9	1	0
BALLISTA 14-13H	5/29/2015	9	0	0
BALLISTA 14-13H	5/30/2015	9	0	0
BALLISTA 14-13H	5/31/2015	9	0	0
BALLISTA 14-13H	6/1/2015	9	0	0
BALLISTA 14-13H	6/2/2015	9	0	0
BALLISTA 14-13H	6/3/2015	9	0	0
BALLISTA 14-13H	6/4/2015	9	0	0
BALLISTA 14-13H	6/5/2015	9	0	0
BALLISTA 14-13H	6/6/2015	9	0	0
BALLISTA 14-13H	6/7/2015	9	0	0
BALLISTA 14-13H	6/8/2015	1,080	490	38
BALLISTA 14-13H	6/9/2015	1,018	419	28
BALLISTA 14-13H	6/10/2015	1,071	462	65
BALLISTA 14-13H	6/11/2015	1,016	421	70
BALLISTA 14-13H	6/12/2015	1,032	419	78
BALLISTA 14-13H	6/13/2015	997	407	85
BALLISTA 14-13H	6/14/2015	829	385	87
BALLISTA 14-13H	6/15/2015	991	363	81
BALLISTA 14-13H	6/16/2015	959	351	85
BALLISTA 14-13H	6/17/2015	1,001	352	88
BALLISTA 14-13H	6/18/2015	1,070	369	99
BALLISTA 14-13H	6/19/2015	1,020	360	99
BALLISTA 14-13H	6/20/2015	1,020	335	97
BALLISTA 14-13H	6/21/2015	991	326	105
BALLISTA 14-13H	6/22/2015	992	322	103
BALLISTA 14-13H	6/23/2015	1,041	318	142
BALLISTA 14-13H	6/24/2015	1,017	325	140
BALLISTA 14-13H	6/25/2015	905	283	133
BALLISTA 14-13H	6/26/2015	1,001	291	137
BALLISTA 14-13H	6/27/2015	990	278	130
BALLISTA 14-13H	6/28/2015	955	268	129
BALLISTA 14-13H	6/29/2015	979	233	123
BALLISTA 14-13H	6/30/2015	642	199	55
BALLISTA 14-13H	7/1/2015	709	240	72
BALLISTA 14-13H	7/2/2015	733	196	85
BALLISTA 14-13H	7/3/2015	799	242	73
BALLISTA 14-13H	7/4/2015	948	272	100
BALLISTA 14-13H	7/5/2015	1,070	282	107
BALLISTA 14-13H	7/6/2015	1,208	250	147
BALLISTA 14-13H	7/7/2015	779	317	148
BALLISTA 14-13H	7/8/2015	1,150	244	147
BALLISTA 14-13H	7/9/2015	1,128	240	140
BALLISTA 14-13H	7/10/2015	1,327	230	130
BALLISTA 14-13H	7/11/2015	1,006	243	127
BALLISTA 14-13H	7/12/2015	1,012	224	125
BALLISTA 14-13H	7/13/2015	979	221	117
BALLISTA 14-13H	7/14/2015	1,014	233	123
BALLISTA 14-13H	7/15/2015	882	186	98
BALLISTA 14-13H	7/16/2015	796	187	82
BALLISTA 14-13H	7/17/2015	1,128	246	125
BALLISTA 14-13H	7/18/2015	1,118	231	125
BALLISTA 14-13H	7/19/2015	1,049	218	102
BALLISTA 14-13H	7/20/2015	1,025	198	127
BALLISTA 14-13H	7/21/2015	989	210	105
BALLISTA 14-13H	7/22/2015	958	197	112

First 30 days Production Rates (Used 5/13/2015-5/27/2015 and 6/8/2015-7/6/2015)

Gas	Oil	Water
1100.8	381.5	284.2
<b>Using 0.6 decline factor</b>		
<b>660.5</b>	<b>228.9</b>	<b>170.5</b>

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## **Attachment E – Oil and Gas Analyses**



**EXTENDED HYDROCARBON LIQUID STUDY  
 CERTIFICATE OF ANALYSIS**

Company:	<b>EOG Resources</b>	Sample Name:	<b>BALLISTA 202-1003H</b>
	<b>Podwer River Basin</b>		
Date Sampled:	10/09/2014	Sample Number:	14101006-02
Sample Location:	Wyoming	Date Tested:	10/17/2014
Sample Pressure:	52 PSI	Test Method:	GPA 2186M
Sample Temperature:	123 DEG F		
County:	Campbell	Date Reported:	10/24/2014
Sample Source:	Treater	Note: Due to the nature of H2S, the values of	
Sampling Method:	GPA 2174	H2S reported may be lower than actual.	
Type Sample:	SPOT		

<b>Components</b>	<b>Mole %</b>	<b>Weight %</b>	<b>Liq. Vol. %</b>
Hydrogen Sulfide	0.0000	0.000	0.000
Oxygen	0.0000	0.000	0.000
Carbon Dioxide	0.0602	0.015	0.013
Nitrogen	0.0637	0.010	0.009
Methane	0.8148	0.072	0.176
Ethane	1.9763	0.328	0.675
Propane	4.4120	1.074	1.552
iso-Butane	1.3199	0.423	0.551
n-Butane	5.1852	1.664	2.087
iso-Pentane	2.8873	1.150	1.348
n-Pentane	4.2500	1.693	1.967
Hexanes	3.2699	1.555	1.717
Heptanes	7.1861	3.975	4.233
Octanes	4.7516	2.996	3.108
Nonanes	0.8731	0.618	0.627
Decanes+	56.7936	81.312	78.876
Benzene	0.3167	0.137	0.113
Toluene	1.4594	0.742	0.624
Ethylbenzene	0.1003	0.059	0.049
Xylenes	0.7896	0.463	0.392
n-Hexane	3.1298	1.489	1.643
2,2,4-Trimethylpentane	0.3606	0.227	0.239
Totals	100.000	100.000	100.000

## EXTENDED ANALYSIS DATA

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.0000	0.000	0.000
Carbon Dioxide	0.0602	0.015	0.013
Nitrogen	0.0637	0.010	0.009
Methane	0.8148	0.072	0.181
Ethane	1.9763	0.328	0.694
Propane	4.4120	1.075	1.596
iso-Butane	1.3199	0.424	0.567
n-Butane	5.1852	1.665	2.146
iso-Pentane	2.8873	1.151	1.386
n-Pentane	4.2500	1.694	2.022
Hexanes	3.2699	1.557	1.765
Heptanes	7.1861	3.979	4.352
Octanes	4.7516	2.999	3.195
Nonanes	0.8731	0.619	0.645
Decanes	5.3477	4.205	4.308
Benzene	0.3167	0.137	0.116
Toluene	1.4594	0.743	0.641
Ethylbenzene	0.1003	0.059	0.051
Xylenes	0.7896	0.463	0.403
n-Hexane	3.1298	1.490	1.689
2,2,4-Trimethylpentane	0.3606	0.228	0.246
Undecanes(C11)	3.6899	3.187	3.221
Dodecanes(C12)	3.7738	3.552	3.548
Tridecanes(C13)	4.2405	4.320	4.274
Tetradecanes(C14)	2.9413	3.225	3.162
Pentadecanes(C15)	3.9953	4.690	4.569
Hexadecanes(C16)	3.4915	4.369	4.197
Heptadecanes(C17)	2.5699	3.415	3.251
Octadecanes(C18)	2.4072	3.385	3.201
Nonadecanes(C19)	2.0530	3.047	2.833
Eicosanes (C20)	2.4641	3.847	3.672
Heneicosanes (C21)	2.4143	3.957	3.760
Docosanes (C22)	2.1221	3.643	3.524
Tricosanes (C23)	1.5037	2.698	2.548
Tetracosanes (C24)	1.2942	2.422	2.287
Pentacosanes (C25)	2.0472	3.990	3.749
Hexacosanes (C26)	1.4756	2.990	2.893
Heptacosanes (C27)	1.6698	3.513	3.390
Octacosanes (C28)	2.0069	4.378	4.083
Nonacosanes (C29)	1.3663	3.087	2.875
Triacosanes (C30)	1.1845	2.768	2.572
Hentriacontane Plus (C31+)	2.7348	6.602	6.363
Totals	100.000	100.000	100.000

### ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	2.338	1.112	1.228
3-Methylpentane	0.932	0.443	0.489
n-Hexane	3.130	1.489	1.643
2,2,4-Trimethylpentane	0.361	0.227	0.239
Benzene	0.317	0.137	0.113
Toluene	1.459	0.742	0.624
Ethylbenzene	0.100	0.059	0.049
m-Xylene	0.091	0.053	0.045
p-Xylene	0.565	0.331	0.280
o-Xylene	0.134	0.079	0.067

RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	<b>0.75562</b>
AVERAGE MOLECULAR WEIGHT	<b>180.958</b>
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	<b>259.380</b>
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	<b>70.288</b>
AVERAGE BOILING POINT, F, calculated	<b>455.786</b>
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	<b>18.414</b>
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	<b>123,681.68</b>
LBS / GALLON OF LIQUID, calculated	<b>6.111</b>

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

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**FLASHED CRUDE OIL LIQUID STUDIES  
CERTIFICATE OF ANALYSIS**

Sample Name: **BALLISTA 202-1003H**  
Sample Number: 14101006-01

<b>TEST PERFORMED</b>	<b>RESULTS</b>	<b>DATE TESTED</b>
API GRAVITY AT 60/60 F, (ASTM D-7777), calculated from SG	45.3	10/10/2014
API GRAVITY AT 100/100 F, (ASTM D-7777), calculated from SG	46.4	10/10/2014
REID VAPOR PRESSURE (ASTM D6377), PSIG AT 100 F, measured	5.20	10/10/2014
BOTTOM SEDIMENT & WATER (ASTM D-4007), weight %, measured	<0.025	10/21/2014
CLOUD POINT (ASTM D-97), deg F, measured	23.0	10/22/2014
POUR POINT (ASTM D-97), deg F, measured	-40.0	10/22/2014
SULFUR CONTENT BY XRAY (ASTM D-4294), weight %, measured	0.0120	10/21/2014
PARAFFIN CONTENT (UOP-46), weight %, measured	36.373	10/22/2014
EOG GRINDOUT (EOG METHOD), volume %, measured	25.000	10/22/2014
KINEMATIC VISCOSITY AT 100 F (ASTM D-445),	32.300	10/23/2014
KINEMATIC VISCOSITY AT 120 F (ASTM D-445),	<32.000	10/23/2014
ASPHALTENES (ASTM D-3279), weight %, CL	<0.10	10/16/2014

**ASTM D86 Distillation  
Certificate of Analysis**

<b>Date Tested:</b>	<b>10/22/2014</b>	<b>Qualifiers:</b>
	% Recovery	DEG C @ 300mm Hg
	Initial Boiling Point	22
	5	55
	10	74
	20	106
	30	134
	40	163
	50	194
	60	244
	70	290
	73	300
	Final Boiling Point	N/A
	Volume % Recovery	73
	Volume % Residue	27
	Volume % Loss	0

Comments: Residue and loss observed  
Temperatures are uncorrected for barometric pressure

Temperatures are uncorrected for barometric pressure



<b>Client:</b>	EOG Resources-Powder River Basin	<b>Analysis Date:</b>	10/14/2014
<b>Sample ID:</b>	BALLISTA 202-1003H	<b>Date Sampled:</b>	10/4/14
<b>Sample Source:</b>	Meter Run	<b>Purpose:</b>	NI
<b>Sample Temperature:</b>	82 DEG F	<b>Sample Pressure:</b>	33 PSI
<b>Sampled By:</b>	A. McKerchie	<b>Type Sample:</b>	Spot
<b>County:</b>	Campbell		

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<u>Components</u>	<u>Mole %</u>	<u>Weight %</u>	<u>Liq. Vol. %</u>
Carbon Dioxide.....	1.3056	2.423	1.103
Hydrogen Sulfide.....	0.0000	0.000	0.000
Nitrogen.....	0.3469	0.410	0.189
Methane.....	70.3492	47.598	59.046
Ethane.....	14.0748	17.849	18.636
Propane.....	7.8685	14.634	10.733
iso-Butane.....	0.9666	2.370	1.566
n-Butane.....	2.6567	6.513	4.147
iso-Pentane.....	0.6385	1.943	1.156
n-Pentane.....	0.7634	2.323	1.370
Cyclopentane.....	0.0464	0.137	0.068
n-Hexane.....	0.2003	0.728	0.408
Cyclohexane.....	0.1026	0.364	0.173
Other Hexanes .....	0.2340	0.851	0.476
Heptanes.....	0.1868	0.789	0.427
Methylcyclohexane.....	0.0878	0.363	0.175
2,2,4-Trimethylpentane...	0.0000	0.000	0.000
Benzene.....	0.0573	0.189	0.079
Toluene.....	0.0438	0.170	0.073
Ethylbenzene.....	0.0024	0.011	0.005
Xylenes.....	0.0072	0.032	0.014
Octanes.....	0.0503	0.242	0.128
Nonanes.....	0.0065	0.035	0.018
Decanes+.....	0.0042	0.025	0.013
<b>Totals .....</b>	<b>100.000</b>	<b>100.000</b>	<b>100.000</b>

**ADDITIONAL BETX DATA**

<u>Components</u>	<u>Mole %</u>	<u>Weight %</u>	<u>Liq. Vol. %</u>
Cyclopentane	0.0464	0.137	0.068
Cyclohexane	0.1026	0.364	0.173
2-Methylpentane	0.1473	0.535	0.300
3-Methylpentane	0.0867	0.315	0.177
n-Hexane	0.2003	0.728	0.408
Methylcyclohexane	0.0878	0.363	0.175
2,2,4-Trimethylpentane	0.0000	0.000	0.000
Benzene	0.0573	0.189	0.079
Toluene	0.0438	0.170	0.073
Ethylbenzene	0.0024	0.011	0.005
m-Xylene	0.0011	0.005	0.002
p-Xylene	0.0049	0.022	0.009
o-Xylene	0.0012	0.005	0.002

SPECIFIC GRAVITY @ 60/60 F, calculated.....	0.8187
TOTAL GPM (Ethane Inclusive).....	7.984
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis.....	1390.213
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis.....	1366.764
AVERAGE MOLECULAR WEIGHT.....	23.710
MOLAR MASS RATIO.....	0.8182
RELATIVE DENSITY ( G x Z (Air) / Z ), calculated.....	0.8226
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA.....	1380.452
COMPRESSIBILITY FACTOR (Z).....	0.99526

PROPANE GPM .....	2.1622
BUTANE GPM .....	1.1509
GASOLINE GPM (PENTANE AND HEAVIER) .....	0.9160

TOTAL ACID GAS MOLE %.....	1.3056
H2S MOLE % .....	0.0000
H2S PPM .....	0

VOC WEIGHT FRACTION .....	0.317
HIGHER HEATING VALUE (BTU/ft <sup>3</sup> ).....	1385.179
LOWER HEATING VALUE (BTU/ft <sup>3</sup> ).....	1260.112

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

August 3, 2015

## **Attachment F – Emissions Calculations and Supporting Documentation**

Selected Item	Date	Gas Prod	Oil Prod	Water Prod
BALLISTA 14-13H	4/24/2015	0	0	0
BALLISTA 14-13H	4/25/2015	0	0	0
BALLISTA 14-13H	4/26/2015	0	0	0
BALLISTA 14-13H	4/27/2015	0	0	0
BALLISTA 14-13H	4/28/2015	0	0	0
BALLISTA 14-13H	4/29/2015	0	0	0
BALLISTA 14-13H	4/30/2015	0	0	0
BALLISTA 14-13H	5/1/2015	0	0	0
BALLISTA 14-13H	5/2/2015	0	0	0
BALLISTA 14-13H	5/3/2015	0	0	0
BALLISTA 14-13H	5/4/2015	0	0	0
BALLISTA 14-13H	5/5/2015	0	0	0
BALLISTA 14-13H	5/6/2015	0	0	0
BALLISTA 14-13H	5/7/2015	0	0	0
BALLISTA 14-13H	5/8/2015	0	0	0
BALLISTA 14-13H	5/9/2015	0	317	0
BALLISTA 14-13H	5/10/2015	0	156	0
BALLISTA 14-13H	5/11/2015	143	246	0
BALLISTA 14-13H	5/12/2015	820	490	500
BALLISTA 14-13H	5/13/2015	1,123	622	1,015
BALLISTA 14-13H	5/14/2015	1,229	574	857
BALLISTA 14-13H	5/15/2015	1,275	542	965
BALLISTA 14-13H	5/16/2015	1,350	575	935
BALLISTA 14-13H	5/17/2015	1,433	542	845
BALLISTA 14-13H	5/18/2015	1,331	486	758
BALLISTA 14-13H	5/19/2015	1,271	477	700
BALLISTA 14-13H	5/20/2015	1,507	484	586
BALLISTA 14-13H	5/21/2015	1,485	457	332
BALLISTA 14-13H	5/22/2015	1,478	448	526
BALLISTA 14-13H	5/23/2015	1,440	428	495
BALLISTA 14-13H	5/24/2015	1,427	392	446
BALLISTA 14-13H	5/25/2015	1,341	579	417
BALLISTA 14-13H	5/26/2015	1,194	418	430
BALLISTA 14-13H	5/27/2015	1,469	305	415
BALLISTA 14-13H	5/28/2015	9	1	0
BALLISTA 14-13H	5/29/2015	9	0	0
BALLISTA 14-13H	5/30/2015	9	0	0
BALLISTA 14-13H	5/31/2015	9	0	0
BALLISTA 14-13H	6/1/2015	9	0	0
BALLISTA 14-13H	6/2/2015	9	0	0
BALLISTA 14-13H	6/3/2015	9	0	0
BALLISTA 14-13H	6/4/2015	9	0	0
BALLISTA 14-13H	6/5/2015	9	0	0
BALLISTA 14-13H	6/6/2015	9	0	0
BALLISTA 14-13H	6/7/2015	9	0	0
BALLISTA 14-13H	6/8/2015	1,080	490	38
BALLISTA 14-13H	6/9/2015	1,018	419	28
BALLISTA 14-13H	6/10/2015	1,071	462	65
BALLISTA 14-13H	6/11/2015	1,016	421	70
BALLISTA 14-13H	6/12/2015	1,032	419	78
BALLISTA 14-13H	6/13/2015	997	407	85
BALLISTA 14-13H	6/14/2015	829	385	87
BALLISTA 14-13H	6/15/2015	991	363	81
BALLISTA 14-13H	6/16/2015	959	351	85
BALLISTA 14-13H	6/17/2015	1,001	352	88
BALLISTA 14-13H	6/18/2015	1,070	369	99
BALLISTA 14-13H	6/19/2015	1,020	360	99
BALLISTA 14-13H	6/20/2015	1,020	335	97
BALLISTA 14-13H	6/21/2015	991	326	105
BALLISTA 14-13H	6/22/2015	992	322	103
BALLISTA 14-13H	6/23/2015	1,041	318	142
BALLISTA 14-13H	6/24/2015	1,017	325	140
BALLISTA 14-13H	6/25/2015	905	283	133
BALLISTA 14-13H	6/26/2015	1,001	291	137
BALLISTA 14-13H	6/27/2015	990	278	130
BALLISTA 14-13H	6/28/2015	955	268	129
BALLISTA 14-13H	6/29/2015	979	233	123
BALLISTA 14-13H	6/30/2015	642	199	55
BALLISTA 14-13H	7/1/2015	709	240	72
BALLISTA 14-13H	7/2/2015	733	196	85
BALLISTA 14-13H	7/3/2015	799	242	73
BALLISTA 14-13H	7/4/2015	948	272	100
BALLISTA 14-13H	7/5/2015	1,070	282	107
BALLISTA 14-13H	7/6/2015	1,208	250	147
BALLISTA 14-13H	7/7/2015	779	317	148
BALLISTA 14-13H	7/8/2015	1,150	244	147
BALLISTA 14-13H	7/9/2015	1,128	240	140
BALLISTA 14-13H	7/10/2015	1,327	230	130
BALLISTA 14-13H	7/11/2015	1,006	243	127
BALLISTA 14-13H	7/12/2015	1,012	224	125
BALLISTA 14-13H	7/13/2015	979	221	117
BALLISTA 14-13H	7/14/2015	1,014	233	123
BALLISTA 14-13H	7/15/2015	882	186	98
BALLISTA 14-13H	7/16/2015	796	187	82
BALLISTA 14-13H	7/17/2015	1,128	246	125
BALLISTA 14-13H	7/18/2015	1,118	231	125
BALLISTA 14-13H	7/19/2015	1,049	218	102
BALLISTA 14-13H	7/20/2015	1,025	198	127
BALLISTA 14-13H	7/21/2015	989	210	105
BALLISTA 14-13H	7/22/2015	958	197	112

First 30 days Production Rates (Used 5/13/2015-5/27/2015 and 6/8/2015-7/6/2015)

Gas	Oil	Water
1100.8	381.5	284.2
<b>Using 0.6 decline factor</b>		
<b>660.5</b>	<b>228.9</b>	<b>170.5</b>

Well Name:	Ballista 202-1003H Composite Gas Analysis				
Date Sampled:	10/4/2014				
Component:	mol%	mol%	M.W.	(mol% X MW)/100	WT%
Hydrogen Sulfide (H2S)	0.00000	<b>0.0000</b>	34.08	0.0000	0.00000
Oxygen (O2)	0.00000	<b>0.0000</b>	32.00	0.0000	0.00000
Carbon Dioxide (CO2)	1.3056	<b>1.3056</b>	44.01	0.5746	0.02424
Nitrogen (N2)	0.3469	<b>0.3469</b>	28.02	0.0972	0.00410
Methane (C1)	70.3492	<b>70.3492</b>	16.04	11.2840	0.47595
Ethane (C2)	14.0748	<b>14.0748</b>	30.07	4.2323	0.17851
Propane (C3)	7.8685	<b>7.8685</b>	44.09	3.4692	0.14633
iso-Butane (i-C4)	0.9667	<b>0.9667</b>	58.12	0.5618	0.02370
n-Butane (n-C-4)	2.6567	<b>2.6567</b>	58.12	1.5441	0.06513
iso-Pentane (i-C5)	0.6385	<b>0.6385</b>	72.15	0.4607	0.01943
n-Pentane (n-C5)	0.7634	<b>0.7634</b>	72.15	0.5508	0.02323
Cyclopentane	0.0464	<b>0.0464</b>	70.1	0.0325	0.00137
n-Hexane (n-C6)	0.2003	<b>0.2003</b>	86.17	0.1726	0.00728
Cyclohexane	0.1026	<b>0.1026</b>	84.16	0.0863	0.00364
Other Hexanes	0.2340	<b>0.2340</b>	85.00	0.1989	0.00839
Heptanes	0.1868	<b>0.1868</b>	100.20	0.1872	0.00789
Methylcyclohexane	0.0878	<b>0.0878</b>	98.18	0.0862	0.00364
2,2,4-Trimethylpentane	0.0000	<b>0.0000</b>	114.22	0.0000	0.00000
Benzene	0.0573	<b>0.0573</b>	78.11	0.0448	0.00189
Toluene	0.0438	<b>0.0438</b>	92.14	0.0404	0.00170
Ethylbenzene	0.0024	<b>0.0024</b>	106.17	0.0025	0.00011
Xylene	0.0072	<b>0.0072</b>	106.17	0.0076	0.00032
Octanes	0.0503	<b>0.0503</b>	120.00	0.0604	0.00255
Nonanes	0.0065	<b>0.0065</b>	128.26	0.0083	0.00035
Decanes+	0.0042	<b>0.0042</b>	142.29	0.0060	0.00025
Total	100.000	<b>99.9999</b>	M.W.=	23.71	
Temperature (F)	82.0	<b>82.00</b>			
Pressure (psig)	33.0	<b>33.00</b>			
Molecular WT	23.71	<b>23.71</b>			
Higher Heating Value (Btu/scf)	1390.213	<b>1390.21</b>			
Total VOC Weight Percent	31.72				
Total HAP Weight Percent	1.13				

Well Name:	Ballista 202-1003H	<b>Composite</b>
Date Sampled:	10/17/2014	
Component:	mole%	<b>mole %</b>
Hydrogen Sulfide (H2S)	0.0000	<b>0.0000</b>
Oxygen (O2)	0.0000	<b>0.0000</b>
Carbon Dioxide (CO2)	0.0602	<b>0.0602</b>
Nitrogen (N2)	0.0637	<b>0.0637</b>
Methane (C1)	0.8148	<b>0.8148</b>
Ethane (C2)	1.9763	<b>1.9763</b>
Propane (C3)	4.4120	<b>4.4120</b>
iso-Butane (i-C4)	1.3199	<b>1.3199</b>
n-Butane (nC-4)	5.1852	<b>5.1852</b>
iso-Pentane (i-C5)	2.8873	<b>2.8873</b>
n-Pentane (n-C5)	4.2500	<b>4.2500</b>
2-Methylpentane (C6)	2.3380	<b>2.3380</b>
3-Methylpentane (C6)	0.9320	<b>0.9320</b>
Heptanes (C7)	7.1861	<b>7.1861</b>
Octanes (C8)	4.7516	<b>4.7516</b>
Nonanes (C9)	0.8731	<b>0.8731</b>
Benzene	0.3167	<b>0.3167</b>
Toluene	1.4594	<b>1.4594</b>
Ethylbenzene	0.1003	<b>0.1003</b>
m-Xylene	0.0910	<b>0.0910</b>
p-Xylene	0.5650	<b>0.5650</b>
o-Xylene	0.1340	<b>0.1340</b>
n-Hexane	3.1298	<b>3.1298</b>
2,2,4-Trimethylpentane	0.3606	<b>0.3606</b>
Decanes+ (C10+)	56.7936	<b>56.7936</b>
Total	100.001	100.001
MW C10+	259.3800	259.3800
Specific Gravity C10+	0.7556	0.7556
API Gravity (sales oil)	45.3	45.3
RVP (sales oil)	5.20	5.2
Temperature (F)	123	123.0
Pressure (psig)	52	52.0

### Heater Emission Calculations

AP-42 Emission Factors for Natural Gas Combustion, Table 1.4-1

Process Unit:	Heat Input Rating	
Heater Treater 1:	0.375	MMBtu/hr
Line Heater 1:	0.375	MMBtu/hr
NA	0.000	MMBtu/hr
Fuel Heat Value:	1390.2	Btu/scf
Annual Operating Hours:	8760	hrs
<b>NO<sub>x</sub> Emissions =</b>	<b>0.4</b>	<b>TPY</b>
<b>CO Emissions =</b>	<b>0.4</b>	<b>TPY</b>
<b>VOC Emissions=</b>	<b>0.0</b>	<b>TPY</b>

Fuel Consumed (Comb. Size, MMBtu/hr Heat Input)	
Natural Gas	
NO <sub>x</sub>	100
CO	84
VOC	5.5

Estimated Heater NO <sub>x</sub> Emissions							
Heater Number	Heater Rating	Emissions Factor	Emissions Factor	Fuel Heat Value	Corrected Emissions Factor	Operating Hours	Estimated Emissions
( )	(MMBtu/hr)	(lb/MMCF)	(lb/hr)	(Btu/scf)	(lb/hr)	(hrs)	(TPY)
1	0.375	100	0.037	1390	0.050	8760	0.219
2	0.375	100	0.037	1390	0.050	8760	0.219
3	0.000	100	0.000	1390	0.000	8760	0.000
4	0.000	100	0.000	1390	0.000	8760	0.000
5	0.000	100	0.000	1390	0.000	8760	0.000
6	0.000	100	0.000	1390	0.000	8760	0.000
7	0.000	100	0.000	1390	0.000	8760	0.000
8	0.000	100	0.000	1390	0.000	8760	0.000
9	0.000	100	0.000	1390	0.000	8760	0.000
10	0.000	100	0.000	1390	0.000	8760	0.000

<b>Total NO<sub>x</sub> Emissions =</b>	<b>0.4</b>	<b>TPY</b>
<b>Total NO<sub>x</sub> Emissions =</b>	<b>0.10</b>	<b>lb/hr</b>

Estimated Heater CO Emissions							
Heater Number	Heater Rating	Emissions Factor	Emissions Factor	Fuel Heat Value	Corrected Emissions Factor	Operating Hours	Estimated Emissions
( )	(MMBtu/hr)	(lb/MMCF)	(lb/hr)	(Btu/scf)	(lb/hr)	(hrs)	(TPY)
1	0.375	84	0.031	1390	0.042	8760	0.184
2	0.375	84	0.031	1390	0.042	8760	0.184
3	0.000	84	0.000	1390	0.000	8760	0.000
4	0.000	84	0.000	1390	0.000	8760	0.000
5	0.000	84	0.000	1390	0.000	8760	0.000
6	0.000	84	0.000	1390	0.000	8760	0.000
7	0.000	84	0.000	1390	0.000	8760	0.000
8	0.000	84	0.000	1390	0.000	8760	0.000
9	0.000	84	0.000	1390	0.000	8760	0.000
10	0.000	84	0.000	1390	0.000	8760	0.000

<b>Total CO Emissions =</b>	<b>0.4</b>	<b>TPY</b>
<b>Total CO Emissions =</b>	<b>0.08</b>	<b>lb/hr</b>

Estimated Heater VOC Emissions							
Heater Number	Heater Rating	Emissions Factor	Emissions Factor	Fuel Heat Value	Corrected Emissions Factor	Annual Operating	Estimated Emissions
( )	(MMBtu/hr)	(lb/MMCF)	(lb/hr)	(Btu/scf)	(lb/hr)	(hrs)	(TPY)
1	0.375	5.5	0.002	1390	0.003	8760	0.012
2	0.375	5.5	0.002	1390	0.003	8760	0.012
3	0.000	5.5	0.000	1390	0.000	8760	0.000
4	0.000	5.5	0.000	1390	0.000	8760	0.000
5	0.000	5.5	0.000	1390	0.000	8760	0.000
6	0.000	5.5	0.000	1390	0.000	8760	0.000
7	0.000	5.5	0.000	1390	0.000	8760	0.000
8	0.000	5.5	0.000	1390	0.000	8760	0.000
9	0.000	5.5	0.000	1390	0.000	8760	0.000
10	0.000	5.5	0.000	1390	0.000	8760	0.000

<b>Total VOC Emissions =</b>	<b>0.0</b>	<b>TPY</b>
<b>Total VOC Emissions =</b>	<b>0.01</b>	<b>lb/hr</b>

## Combustor Emission Calculations

Emission Source:

Tank Vent Gas Flowrate: 10.5 Mcf/day (from Promax, includes VRT gas)  
 Tank Vent Gas Flowrate: 436.6 scf/hr  
 Estimated Heating Value: 2633.4 Btu/scf (Average Btu content of tank flash and VRT gas from Promax)  
 Pneumatic Pumps Flowrate: 15408.0 scf/day  
 Pneumatic Pumps Flowrate: 642.0 scf/hr  
 Pilot Gas Flowrate: 0.14 scf/min (one flare @ 0.14 CFM)  
 Pilot Gas Flowrate: 8.4 scf/hr  
 Estimated Heating Value: 1390.2 Btu/scf  
 Total Flow to Flare: 26089.1 scf/day

Pollutant	lb/hr	ton/yr
<b>NO<sub>x</sub></b>	<b>0.29</b>	<b>1.3</b>
<b>CO</b>	<b>0.07</b>	<b>0.3</b>

Emission Factors (From Ch. 6, Sec. 2 Guidance)

NO<sub>x</sub> 0.14 lb/MMBtu  
 CO 0.035 lb/MMBtu

**PNEUMATIC PUMP EMISSIONS CALCULATIONS**

<b>COMPONENT</b>	<b>mol %</b>	<b>M.W.</b>	<b>(mol % X MW)/100</b>	<b>WT% of i</b>
H2S	0.0000	34.08	0	0
O2	0.0000	32.00	0	0.0000
CO2	1.3056	44.01	0.5746	0.0242
N2	0.3469	28.02	0.0972	0.0041
Methane C1	70.3492	16.04	11.2840	0.4759
Ethane C2	14.0748	30.07	4.2323	0.1785
Propane C3	7.8685	44.09	3.4692	0.1463
i-Butane i-C4	0.9667	58.12	0.5618	0.0237
n-Butane n-C4	2.6567	58.12	1.5441	0.0651
i-Pentane iC5	0.6385	72.15	0.4607	0.0194
n-Pentane nC5	0.7634	72.15	0.5508	0.0232
Cyclopentane	0.0464	70.1	0.0325	0.0014
n-Hexane n-C6	0.2003	86.17	0.1726	0.0073
Cyclohexane	0.1026	84.16	0.0863	0.0036
other Hexanes	0.2340	85.00	0.1989	0.0084
Heptanes	0.1868	100.20	0.1872	0.0079
Methylcyclohexane	0.0878	98.18	0.0862	0.0036
2,2,4 Trimethylpentane	0.0000	114.22	0.0000	0.0000
Benzene	0.0573	78.11	0.0448	0.0019
Toluene	0.0438	92.14	0.0404	0.0017
Ethylbenzene	0.0024	106.17	0.0025	0.0001
Xylenes	0.0072	106.17	0.0076	0.0003
C8+ Heavies	0.0503	120.00	0.0604	0.0025
nonanes	0.0065	128.26	0.0083	0.0004
C <sub>10</sub> +	0.0042	142.29	0.0060	0.0003
	100.000			1.0000
<b>MOLECULAR WEIGHT (lb/lb-mol)=</b>			23.7084	
<b>TOTAL VOCs WEIGHT PERCENT =</b>			0.3172	
<b>TOTAL HAPs WEIGHT PERCENT =</b>			0.0113	
<b>WEIGHT PERCENT H2S =</b>			0.0000	

<b># of Pumps</b>	<b>3</b>	
<b>Flow rate</b>	<b>15408</b>	<b>scf/day</b>
<b>Gas Consumption Rate (Pumps)</b>		
<b>scf/hr</b>	<b>214</b>	

<b>Emission Summary</b>	
<b>VOC TPY</b>	<b>55.8</b>
<b>controlled</b>	<b>1.1</b>
<b>HAP TPY</b>	<b>2.0</b>
<b>controlled</b>	<b>0.0</b>
<b>H2S</b>	<b>0.0</b>
<b>controlled</b>	<b>0.0</b>
<b>SO2</b>	<b>0.0</b>
<b>NOx</b>	<b>0.5</b>
<b>CO</b>	<b>0.1</b>

## Truck Loading Emission Calculations

VOC Emissions from Truck Loading - AP-42 Chapter 5.2

AP-42 Chapter 5.2, Table 5.2-1	
Tank trucks and rail cars submerged loading of a clean cargo tank	0.5
Submerged loading; dedicated normal service	0.6
Submerged loading; dedicated vapor balance service	1
Splash loading of a clean cargo tank	1.45
Splash loading; dedicated normal service	1.45
Splash loading; dedicated vapor balance service	1
Marine vessels, submerged loading; ships	0.2
Submerged loading; barges	0.5

Equation 1 for loading losses:  $(12.46) * (SPM / T) = L_L$

Where:

$L_L$  = loading losses, lbs/1000 gal of liquid loaded

S = saturation factor

P = true vapor pressure of liquid loaded (psia). Source: 5.2 RVP of crude oil (from Precision Analysis) converted to TVP @50°F using Figure 7.1-13a of AP-42 Chapter 7 (11/06).

M = Molecular wt of vapors, lb/lb-mol (from Promax)

T = temperature of bulk liquids loaded °R (°F = 460)

<b>228.9</b>	<b>barrels/day</b>	(production rates)
83553.48	bbls/yr	
3509246	gallons/yr	

S= 0.6  
P= 2.4 psia  
M= 49.48 lb/lb-mol (taken from Promax)  
T= 510 °R  
 **$L_L$ = 1.74 lb/1000 gallons**

Total Loss= 3.1 TPY TOC

<b>Uncontrolled VOC Emissions:</b>	<b>2.7</b>	<b>TPY</b>
<b>Uncontrolled HAP Emissions:</b>	<b>0.1</b>	<b>TPY</b>

COMPONENT	(Taken from Promax)			
	mol %	M.W.	(mol % X MW)/100	WT% of i
H2S	0.0000	34.08	0	0
O2	0.0000	32.00	0	0.0000
CO2	0.4413	44.01	0.1942	0.0039
N2	0.1374	28.02	0.0385	0.0008
Methane C1	3.5973	16.04	0.5770	0.0117
Ethane C2	17.7748	30.07	5.3449	0.1087
Propane C3	34.0250	44.09	15.0016	0.3051
i-Butane i-C4	6.2051	58.12	3.6064	0.0733
n-Butane n-C4	19.6077	58.12	11.3960	0.2317
i-Pentane iC5	5.1117	72.15	3.6881	0.0750
n-Pentane nC5	6.0062	72.15	4.3335	0.0881
n-Hexane n-C6	1.5032	86.17	1.2953	0.0263
Cyclohexane	0.0000	84.16	0.0000	0.0000
other Hexanes	2.0261	85.00	1.7222	0.0350
Heptanes	1.1826	100.20	1.1849	0.0241
Methylcyclohexane	0.0000	98.18	0.0000	0.0000
2,2,4 Trimethylpentane	0.0598	114.22	0.0683	0.0014
Benzene	0.1639	78.11	0.1280	0.0026
Toluene	0.2281	92.14	0.2101	0.0043
Ethylbenzene	0.0058	106.17	0.0061	0.0001
Xylenes	0.0391	106.17	0.0415	0.0008
C8+ Heavies	0.2638	120.00	0.3166	0.0064
nonanes	0.0174	128.26	0.0223	0.0005
C <sub>10</sub> +	0.0000	142.29	0.0001	0.0000
Water	1.6039			
	100.000			1.0000
MOLECULAR WEIGHT (lb/lb-mol)=			49.1755	
TOTAL VOCs WEIGHT PERCENT =			0.8748	
TOTAL HAPs WEIGHT PERCENT =			0.0356	

## Fugitive Emissions Calculations - Ballista 14-13H

EPA Average Emission Factors for Total Hydrocarbon (THC) Emissions from O&G Production Operations  
(lb/component-day)

### Equipment Service Category

Equipment Type	Gas	Heavy Oil (<20° API)	Light Oil (>20° API)	Water/Light Oil
connector	0.011	0.0004	0.011	0.0058
flange	0.021	0.000021	0.0058	0.00015
open ended line	0.11	0.0074	0.074	0.013
other	0.47	0.0017	0.4	0.74
pump	0.13	0	0.69	0.0013
valve	0.24	0.00044	0.13	0.0052

### Speciated Fugitive Emission Factors

(Estimated weight fractions of THC emissions in each category)

	Methane	NMHC	VOC	C6+	Benzene	Toluene	Ethyl- Benzene	Xylenes
Light Crude	0.613	0.387	0.292	0.0243	0.00027	0.00075	0.00017	0.00036
Heavy Crude	0.942	0.058	0.030	0.00752	0.00935	0.00344	0.00051	0.00372
Gas Production	0.92	0.080	0.035	0.00338	0.00023	0.00039	0.00002	0.0001

### Service

Type	Gas	Heavy Oil	Light Oil	Water/Light Oil
connector	248	0	120	62
flange	56	0	52	40
open ended line	1	0	0	0
other	15	0	0	0
pump	0	0	8	0
valve	97	0	70	41
Emissions (lb/day)	34.344	0	16.2416	0.5788

365 days

2000 lbs

0.875 VOC concentration - light crude from Promax

0.317 VOC concentration - gas sample

Using Site Specific Data

	TOC	VOC	C6+	Benzene	Toluene	Ethyl- Benzene	Xylene	Total HAP
lb/day	51.2	25.609	0.513	0.012	0.026	0.003	0.009	0.564
ton/yr	9.3	4.7	0.094	0.0023	0.005	0.001	0.002	0.1



STATE OF WYOMING

Department of Environmental Quality - Air Quality Division
Oil and Gas Production Facilities C6 S2 Permit Application
EMISSION SUMMARY



Company Name EOG Resources, Inc.
Facility Name Ballista 14-13H

This form must be completed for each emission source at the facility. A list of the emission sources which must be considered is found in Appendix B of the C6 S2 O&G Production Facilities Permitting Guidance.

UNCONTROLLED EMISSIONS (Tons Per Year)

These are the total uncontrolled, potential emissions from each source.

Table with 7 columns: EMISSION SOURCE, VOCs, total HAPs, NOx, CO, SO2, H2S. Rows include: four (4) 400-bbl oil storage tanks & VRT, 0.375 MMBtu/hr heater treater heater, 0.375 MMBtu/hr line heater, three (3) pneumatic pumps, truck loading, fugitives, and a Total row.

CONTROLLED EMISSIONS (Tons Per Year)

These are the total emissions from each source. Include controlled emissions from each controlled source and uncontrolled emissions from each source which does not require control, such as process equipment burners.

Table with 7 columns: EMISSION SOURCE, VOCs, total HAPs, NOx, CO, SO2, H2S. Rows include: four (4) 400-bbl oil storage tanks & VRT, 0.375 MMBtu/hr heater treater heater, 0.375 MMBtu/hr line heater, three (3) pneumatic pumps, truck loading, Steffes flare, fugitives, and a Total row.

HAZARDOUS AIR POLLUTANT SUMMARY (Tons Per Year)

Complete this section for each emissions source if TOTAL HAPs from that source are 9 TPY or greater.

Table with 6 columns: SOURCE, Benzene, Toluene, Ethyl-Benzene, Xylenes, Other. Includes a blank row for data entry.



**STATE OF WYOMING**  
 Department of Environmental Quality - Air Quality Division  
 Oil and Gas Production Facilities C6 S2 Permit Application



**Equipment List**

Company Name \_\_\_\_\_ EOG Resources, Inc. \_\_\_\_\_  
 Facility Name \_\_\_\_\_ Ballista 14-13H \_\_\_\_\_

List all production equipment at the site including all pressurized vessels with the potential for flash emissions, all hydrocarbon liquids and produced water storage tanks, all dehydration units, all pneumatic pumps, all natural gas-fired burners and heaters and all emission control equipment and devices. Pressurized vessels with the potential for flash emissions are all vessels that vent vapors to the atmosphere during times other than upset or emergency conditions (water knockouts, 2-phase and 3-phase separators, heater treaters, gun barrels, scrubber pots, etc). Provide design ratings for dehyds (MMCFD), process heaters, burners and pilots (MMBtu/hr, SCFH). Provide size of production & water storage tanks (BPD). For dehydration units indicate if the unit includes a glycol flash separator and/or reboiler still vent condenser. For emission control combustors/flares indicate design rating (MMBtu/hr, SCFD) and combustor/flare height (ft). Provide pneumatic pump motive gas usage (SCFH).

If more space is required, continue on page 2 of this sheet.

**PROVIDE INSTALLATION DATES OF ALL EMISSION CONTROL EQUIPMENT & MONITORING DEVICES/SYSTEMS !!!**

- four (4) 400-barrel (bbl) oil storage tanks (routed to Steffes flare)
- one (1) 400-bbl produced water storage tank (routed to Steffes flare)
- one (1) 400-bbl emergency storage tank
- one (1) heater treater w/ 0.375 MMBtu/hr heater
- one (1) 0.375 MMBtu/hr trace line heater
- one (1) 15' Steffes Smokeless Tri-Tip flare with continuous pilot and thermocouple monitored through Cygnet (controls VRT, produced water storage tank, oil storage tanks, and pneumatic pump emissions,) installed prior to first date of production
- one (1) Vapor Recovery Tower (VRT) (routed to Steffes flare)
- three (3) pneumatic pumps (tank combustor scrubber, VRT combustor scrubber, and recycle. 214 scf/hr each, routed to Steffes flare)
- two (2) electric pumps (recycle and trace)
- various gas scrubbers/liquids knockouts (VRT vent line, tank vent line, sales gas line, fuel gas, etc)
- controllers are all non-bleed
- truck loading
- fugitives
- two (2) 500-gallon propane tanks

Example:

- 1 2-phase high pressure separator (unheated)
- 1 3-phase low pressure separator w/ 0.5 MMBtu/hr heater
- 2 0.5 MMBtu/hr line heaters
- 1 5 MMCFD TEG dehydration unit w/ 0.5 MMBtu/hr reboiler heater, glycol flash separator(0.5 MMBtu/hr heater) and overheads condenser
- 2 400-bbl condensate tanks
- 1 400-bbl produced water tank
- 1 30-ft enclosed combustor (3.0 MMBtu/hr, 5 MCFD) for flashing & reboiler vent/glycol flash separator emissions control **installed 1/1/2007**



Bryan Research & Engineering, Inc.

**ProMax<sup>®</sup> 3.2**

with  
**TSWEET<sup>®</sup> & PROSIM<sup>®</sup>**

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## Simulation Report

**Project: Ballista 14-13H.pmx**

**Licensed to EOG Resources, Inc. and Affiliates**

**Client Name: EOG**

**Location: Ballista 14-13H**

**Job:**

**ProMax Filename: M:\ProMax\Ballista 14-13H.pmx**

**ProMax Version: 3.2.13330.0**

**Simulation Initiated: 7/24/2015 8:54:14 AM**

### **Bryan Research & Engineering, Inc.**

Chemical Engineering Consultants

P.O. Box 4747 Bryan, Texas 77805

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FAX: (979) 776-4818

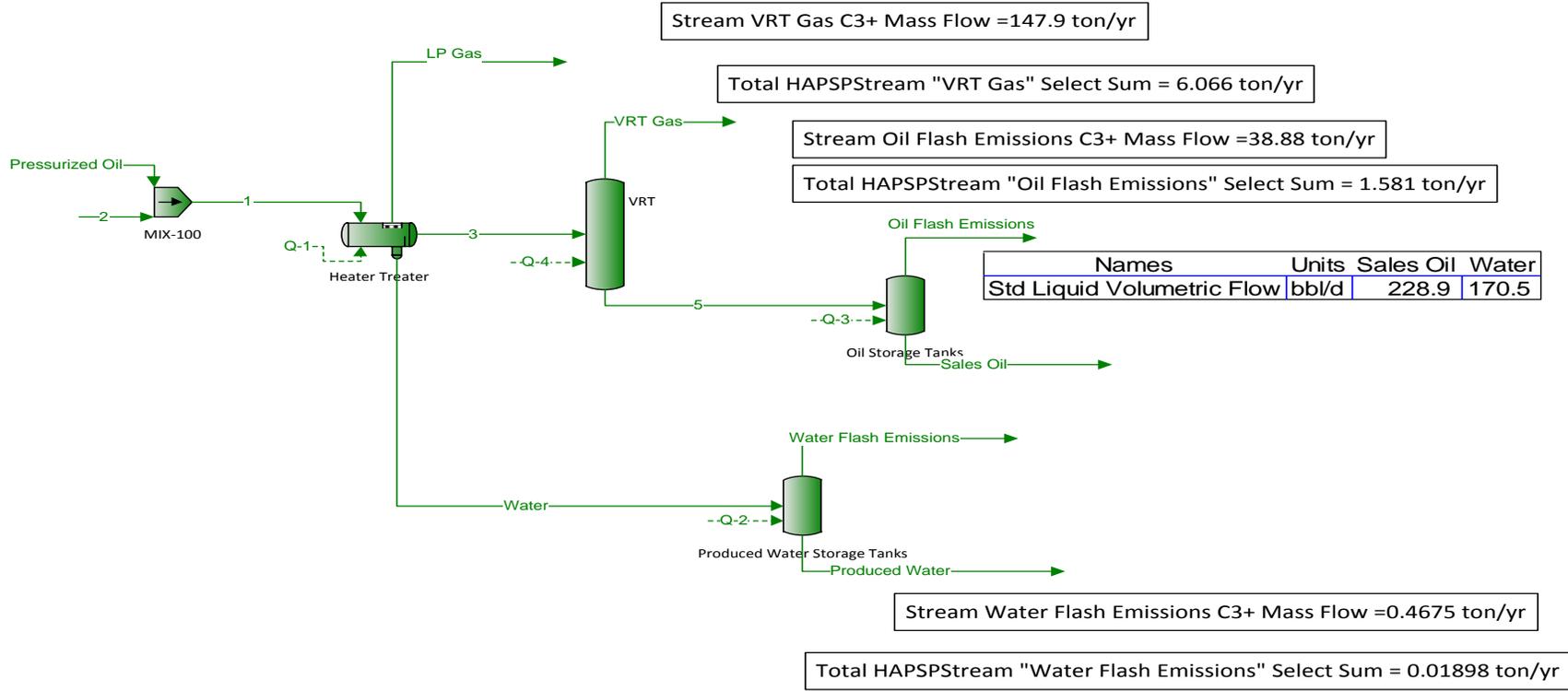
<mailto:sales@bre.com>

<http://www.bre.com/>

Report Navigator can be activated via the ProMax Navigator Toolbar.

An asterisk (\*), throughout the report, denotes a user specified value.

An asterisk (\*) and question mark (?) after a value, throughout the report, denotes an extrapolated or approximated value.



Process Streams	Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions
Composition	Solved		Solved	Solved
Phase: Total	From Block:	Oil Storage Tanks	Oil Storage Tanks	Produced Water Storage Tanks
To Block:	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks
Mass Flow	lb/h	lb/h	lb/h	lb/h
Hydrogen Sulfide	0	0	0	0
Oxygen	0	0	0	0
Carbon Dioxide	0.0400586	0.0404371	0.244509	0.0104535
Nitrogen	0.00793767	0.00083162	0.233971	0.0100549
Methane	0.119041	0.0307973	1.66394	0.0569523
Ethane	1.10247	1.37432	6.07966	0.0628092
Propane	3.09484	12.7474	12.4070	0.0573882
Isobutane	0.743933	7.68456	2.74003	0.00428327
n-Butane	2.35079	32.9379	8.57567	0.0269143
Isopentane	0.760747	26.8074	2.77327	0.00494590
n-Pentane	0.893865	40.4879	3.28155	0.00647458
2-Methylpentane	0.263534	28.0967	0.991776	0.00102138
3-Methylpentane	0.0966201	11.2391	0.364405	0.000812135
Heptane	0.244423	103.688	0.975259	0.000407153
Octane	0.0621606	78.7553	0.260641	0.000134548
Nonane	0.00460154	16.2900	0.0202171	1.44900E-05
Benzene	0.0264056	3.44945	0.0992316	0.00112715
Toluene	0.0433430	19.3348	0.171030	0.00194065
Ethylbenzene	0.00126381	1.54399	0.00521666	5.36133E-05
m-Xylene	0.000981695	1.40166	0.00409119	4.37427E-05
p-Xylene	0.00624463	8.70215	0.0259793	0.000277893
o-Xylene	0.00132850	2.06425	0.00554127	6.09482E-05
n-Hexane	0.267213	38.0081	0.101820	0.000819736
2,2,4-Trimethylpentane	0.0140854	5.93142	0.0550767	8.88309E-06
Water	0.0596034	0.0548159	0.375343	0.0128967
C10+	2.59158E-05	2146.25	0.000185026	0
<b>Mole Fraction</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Hydrogen Sulfide	0	0	0	0
Oxygen	0	0	0	0
Carbon Dioxide	0.441270	0.00684122	0.588320	2.63229
Nitrogen	0.137367	0.000220912	0.884426	3.97772
Methane	3.59734	0.0142936	10.9833	39.3424
Ethane	17.7748	0.340306	21.4104	23.1466
Propane	34.0250	2.15241	29.7945	14.4228
Isobutane	6.20507	0.984412	4.99204	0.816684
n-Butane	19.6077	4.21943	15.6240	5.13170
Isopentane	5.11171	2.76647	4.07033	0.759691
n-Pentane	6.00617	4.17827	4.81632	0.994497
2-Methylpentane	1.48255	2.42757	1.21870	0.131349
3-Methylpentane	0.543550	0.971067	0.447782	0.104440
Heptane	1.16255	7.70463	1.03064	0.0450300
Octane	0.263813	5.13340	0.241620	0.0130534
Nonane	0.0173934	0.945894	0.0166920	0.00125202
Benzene	0.163883	0.328801	0.134524	0.159914
Toluene	0.228052	1.56242	0.196560	0.233414
Ethylbenzene	0.00577105	0.108284	0.00520327	0.00559644
m-Xylene	0.00448281	0.0983021	0.00408069	0.00456609
p-Xylene	0.0285154	0.610303	0.0259127	0.0290079
o-Xylene	0.00606645	0.144771	0.00552705	0.00636210
n-Hexane	1.50325	3.28392	1.25117	0.105417
2,2,4-Trimethylpentane	0.0597793	0.386620	0.0516414	0.000861808
Water	1.60393	0.0226551	2.20624	7.93341
C10+	4.84376E-05	61.6089	7.55372E-05	0
<b>Mass Fraction</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Hydrogen Sulfide	0	0	0	0
Oxygen	0	0	0	0
Carbon Dioxide	0.392519	0.00156314	0.577047	4.02218
Nitrogen	0.0777782	3.21294E-05	0.552178	3.86884
Methane	1.16644	0.00119050	3.92695	21.9135
Ethane	10.8027	0.0531258	14.3482	24.1671
Propane	30.3252	0.492763	29.2808	22.0813
Isobutane	7.28951	0.297055	6.46653	1.64807
n-Butane	23.0345	1.27525	20.2368	10.3556
Isopentane	7.45426	1.03627	6.54500	1.90304
n-Pentane	8.75864	1.56510	7.74455	2.49123
2-Methylpentane	2.58227	1.08611	2.34062	0.392998
3-Methylpentane	0.946744	0.434460	0.860005	0.312486
Heptane	2.39500	4.00816	2.30164	1.56660
Octane	0.609088	3.04436	0.615120	0.0517700
Nonane	0.0450887	0.629706	0.0477128	0.00557531
Benzene	0.258738	0.133342	0.234189	0.433695
Toluene	0.424701	0.747405	0.403634	0.746704
Ethylbenzene	0.0123636	0.0596944	0.0123114	0.0262688
m-Xylene	0.00961925	0.0541828	0.0096531	0.0168309
p-Xylene	0.0611887	0.336391	0.0613119	0.106925
o-Xylene	0.0130174	0.0797957	0.0130775	0.0234511
n-Hexane	2.61832	1.46924	2.40298	0.315410
2,2,4-Trimethylpentane	0.138018	0.229285	0.131469	0.00341795
Water	0.584031	0.00211896	0.885820	4.96228
C10+	0.000253939	82.9654	0.000436666	0

SWB HAP TPY  
(assume 6.4% HAP  
based on oil flash  
concentration)

SWB VOC TPY from  
Tanks 4.0  
1.1

VRT VOC TPY  
147.9

Oil Flash VOC TPY  
38.9

VRT HAP TPY  
6.1

Oil Flash HAP TPY  
1.6

<b>Total VOC TPY</b>	<b>Total HAP TPY</b>
187.9	7.7

Process Streams	Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions	
<b>Properties</b>					
Phase: <b>Total</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	
From Block: <b>Total</b>	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks	
To Block: <b>--</b>	--	--	--	--	
<b>Property</b>					
<b>Units</b>					
Temperature	°F	100°	100	115°	100°
Pressure	psia	12"	12	19.6959"	12"
Mole Fraction Vapor	%	100	0	100	100
Mole Fraction Light Liquid	%	0	100	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	49.4755	192.612	44.8692	28.8018
Mass Density	lb/ft³	0.100324	47.2748	0.145988	0.0578185
Molar Flow	lbmol/h	0.206274	13.4307	0.944354	0.00902359
Mass Flow	lb/h	10.2055	2586.92	42.3724	0.259895
Vapor Volumetric Flow	ft³/h	101.726	54.7209	290.246	4.49502
Liquid Volumetric Flow	gpm	12.6827	6.82234	36.1865	0.560418
Std Vapor Volumetric Flow	MMSCFD	0.00187867	0.122322	0.00860083	8.21835E-05
Std Liquid Volumetric Flow	sgpm	0.0383815	6.67625	0.166046	0.00119584
Compressibility		0.985309	0.00814026	0.981580	0.995262
Specific Gravity		1.70825	0.757986	1.54921	0.994447
API Gravity			51.1623		
Enthalpy	Btu/h	-10309.3	-2.17312E+06	-44881.2	-401.285
Mass Enthalpy	Btu/lb	-1010.17	-840.041	-1059.21	-1544.03
Mass Cp	Btu/(lb*°F)	0.416787	0.509774	0.429456	0.431507
Ideal Gas Cp/Cv Ratio		1.10725	1.02589	1.11593	1.19095
Dynamic Viscosity	cP	0.00840663	1.52894	0.00901462	0.0105997
Kinematic Viscosity	cSt	5.23116	2.01902	3.85487	11.4447
Thermal Conductivity	Btu/(ft²*°F)	0.0108367	0.0703797	0.0121919	0.0149557
Surface Tension	lb/ft		0.00168377		
Net Ideal Gas Heating Value	Btu/ft³	2549.75	9577.96	2299.82	1346.59
Net Liquid Heating Value	Btu/lb	19395.0	18717.9	19291.8	17584.1
Gross Ideal Gas Heating Value	Btu/ft³	2787.41	10241.0	2499.35	1476.58
Gross Liquid Heating Value	Btu/lb	21064.4	20024.1	20979.4	19296.8

Process Streams	Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions
<b>Composition</b>				
Phase: <b>Vapor</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>
From Block: <b>Vapor</b>	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks
To Block: <b>--</b>	--	--	--	--
<b>Mass Flow</b>				
	lb/h		lb/h	lb/h
Hydrogen Sulfide	0		0	0
Oxygen	0		0	0
Carbon Dioxide	0.0400586		0.244509	0.0104535
Nitrogen	0.00793767		0.233971	0.0100549
Methane	0.119041		1.66394	0.0569523
Ethane	1.10247		6.07966	0.0628092
Propane	3.09484		12.4070	0.0573882
Isobutane	0.743933		2.74003	0.00428327
n-Butane	2.35079		8.57567	0.0269143
Isopentane	0.760747		2.77327	0.00494590
n-Pentane	0.893865		3.28155	0.00647458
2-Methylpentane	0.263534		0.991776	0.00102138
3-Methylpentane	0.0966201		0.364405	0.000812135
Heptane	0.244423		0.975259	0.000407153
Octane	0.0621606		0.260641	0.000134548
Nonane	0.00460154		0.0202171	1.44900E-05
Benzene	0.0264056		0.0992316	0.00112715
Toluene	0.0433430		0.171030	0.00194065
Ethylbenzene	0.00126381		0.00521686	5.36133E-05
m-Xylene	0.000981695		0.00409119	4.37427E-05
p-Xylene	0.00624463		0.0259793	0.000277893
o-Xylene	0.00132850		0.00554127	6.09482E-05
n-Hexane	0.267213		1.01820	0.000819736
2,2,4-Trimethylpentane	0.0140854		0.0557067	8.88309E-06
Water	0.0596034		0.375343	0.0128967
C10+	2.59158E-05		0.000185026	0
<b>Mole Fraction</b>				
	%		%	%
Hydrogen Sulfide	0		0	0
Oxygen	0		0	0
Carbon Dioxide	0.441270		0.588320	2.63229
Nitrogen	0.137367		0.884426	3.97772
Methane	0.00981695		10.9833	39.3424
Ethane	17.7748		21.4104	23.1496
Propane	34.0250		29.7945	14.4228
Isobutane	6.20507		4.99204	0.816684
n-Butane	19.6077		15.6240	5.13170
Isopentane	5.11171		4.07033	0.759691
n-Pentane	6.00617		4.81632	0.994497
2-Methylpentane	1.48255		1.21870	0.131349
3-Methylpentane	0.543550		0.447782	0.104440
Heptane	1.18255		1.03064	0.040300
Octane	0.263813		0.241620	0.0130534
Nonane	0.0173934		0.0166920	0.00125203
Benzene	0.163883		0.134524	1.059914
Toluene	0.228052		0.196560	0.233414
Ethylbenzene	0.00577105		0.00520327	0.00559644
m-Xylene	0.00448281		0.00408069	0.00456609
p-Xylene	0.0285154		0.0259127	0.0290079
o-Xylene	0.00606645		0.00552705	0.00636210
n-Hexane	1.50325		1.25117	1.05417
2,2,4-Trimethylpentane	0.0597793		0.0516414	0.000861808
Water	1.60393		2.20624	7.93341
C10+	4.84378E-05		7.55372E-05	0
<b>Mass Fraction</b>				
	%		%	%
Hydrogen Sulfide	0		0	0
Oxygen	0		0	0
Carbon Dioxide	0.392519		0.577047	4.02218
Nitrogen	0.0777782		0.552178	3.86884
Methane	1.16644		3.92695	21.9135
Ethane	10.8027		14.3482	24.1671
Propane	30.3252		29.2808	22.0813
Isobutane	7.28951		6.69653	1.64807
n-Butane	23.0345		20.2388	10.3558
Isopentane	7.45426		6.54500	1.90304
n-Pentane	8.75864		7.74455	2.49123
2-Methylpentane	2.58227		2.34062	0.392998
3-Methylpentane	0.946744		0.860005	0.312486
Heptane	2.39500		2.30164	0.156660
Octane	0.609088		0.615120	0.0517700
Nonane	0.0450887		0.0477128	0.00557531
Benzene	0.258738		0.234189	0.433695
Toluene	0.424701		0.403634	0.746704
Ethylbenzene	0.0123836		0.0123114	0.0206288
m-Xylene	0.00961925		0.00965531	0.0168309
p-Xylene	0.0611887		0.0613119	0.106925
o-Xylene	0.0130174		0.0130775	0.0234511
n-Hexane	2.61832		2.40298	0.315410
2,2,4-Trimethylpentane	0.138018		0.131469	0.00341795
Water	0.584031		0.885820	4.96228
C10+	0.000253939		0.000436666	0

Process Streams		Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions
Properties		Status: Solved		Solved	Solved
Phase: Vapor	From Block: To Block:	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks
Property	Units				
Temperature	°F	100		115	100
Pressure	psia	12		19.6959	12
Mole Fraction Vapor	%	100		100	100
Mole Fraction Light Liquid	%	0		0	0
Mole Fraction Heavy Liquid	%	0		0	0
Molecular Weight	lb/lbmol	49.4755		44.8692	28.8018
Mass Density	lb/ft³	0.100324		0.145988	0.0578185
Molar Flow	lbmol/h	0.296274		0.944354	0.00902359
Mass Flow	lb/h	10.2055		42.3724	0.259895
Vapor Volumetric Flow	ft³/h	101.726		290.246	4.49502
Liquid Volumetric Flow	gpm	12.6827		36.1865	0.560418
Std Vapor Volumetric Flow	MMSCFD	0.00187867		0.00860083	8.21835E-05
Std Liquid Volumetric Flow	sgpm	0.0383815		0.166046	0.00119584
Compressibility		0.985309		0.981580	0.995262
Specific Gravity		1.70825		1.54921	0.994447
API Gravity					
Enthalpy	Btu/h	-10309.3		-44881.2	-401.285
Mass Enthalpy	Btu/lb	-1010.17		-1059.21	-1544.03
Mass Cp	Btu/(lb*°F)	0.416787		0.429456	0.431507
Ideal Gas Cp/Cv Ratio		1.10725		1.11593	1.19095
Dynamic Viscosity	cP	0.00840663		0.00901462	0.0105997
Kinematic Viscosity	cSt	5.23116		3.85487	11.4447
Thermal Conductivity	Btu/(ft²*°F)	0.0108367		0.0121919	0.0149557
Surface Tension	lb/ft				
Net Ideal Gas Heating Value	Btu/ft³	2549.75		2299.82	1346.59
Net Liquid Heating Value	Btu/lb	19395.0		19291.8	17584.1
Gross Ideal Gas Heating Value	Btu/ft³	2767.41		2499.35	1476.58
Gross Liquid Heating Value	Btu/lb	21064.4		20979.4	19296.8

Process Streams		Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions
Composition		Status: Solved		Solved	Solved
Phase: Light Liquid	From Block: To Block:	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks
Mass Flow			lb/h		
Hydrogen Sulfide			0		
Oxygen			0		
Carbon Dioxide			0.0404371		
Nitrogen			0.000831162		
Methane			0.0307973		
Ethane			1.37432		
Propane			12.7474		
Isobutane			7.68456		
n-Butane			32.9379		
Isopentane			28.8074		
n-Pentane			40.4879		
2-Methylpentane			28.0967		
3-Methylpentane			11.2391		
Heptane			103.688		
Octane			78.7553		
Nonane			16.2900		
Benzene			3.44945		
Toluene			19.3348		
Ethylbenzene			1.54399		
m-Xylene			1.40166		
p-Xylene			8.70215		
o-Xylene			2.06425		
n-Hexane			38.0081		
2,2,4-Trimethylpentane			5.93142		
Water			0.0548159		
C10+			21.46.25		
<b>Mole Fraction</b>			<b>%</b>		
Hydrogen Sulfide			0		
Oxygen			0		
Carbon Dioxide			0.00694122		
Nitrogen			0.000220912		
Methane			0.0142936		
Ethane			0.340306		
Propane			2.15241		
Isobutane			0.984412		
n-Butane			4.21943		
Isopentane			2.76647		
n-Pentane			4.17827		
2-Methylpentane			2.42757		
3-Methylpentane			0.971067		
Heptane			7.70463		
Octane			5.13340		
Nonane			0.945684		
Benzene			0.328801		
Toluene			1.56242		
Ethylbenzene			0.108284		
m-Xylene			0.0983021		
p-Xylene			0.610303		
o-Xylene			0.144771		
n-Hexane			3.28392		
2,2,4-Trimethylpentane			0.398620		
Water			0.0226551		
C10+			61.6089		
<b>Mass Fraction</b>			<b>%</b>		
Hydrogen Sulfide			0		
Oxygen			0		
Carbon Dioxide			0.00156314		
Nitrogen			3.21294E-05		
Methane			0.00119050		
Ethane			0.0531258		
Propane			0.492763		
Isobutane			0.297055		
n-Butane			1.27325		
Isopentane			1.03627		
n-Pentane			1.56510		
2-Methylpentane			1.08611		
3-Methylpentane			0.434460		
Heptane			4.00816		
Octane			3.04436		
Nonane			0.629706		
Benzene			0.133342		
Toluene			0.747405		
Ethylbenzene			0.0596844		
m-Xylene			0.0541828		
p-Xylene			0.336391		
o-Xylene			0.0797957		
n-Hexane			1.46924		
2,2,4-Trimethylpentane			0.229285		
Water			0.00211896		
C10+			82.9654		

Process Streams	Oil Flash Emissions	Sales Oil	VRT Gas	Water Flash Emissions
<b>Properties</b>				
Phase: <b>Light Liquid</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>	Status: <b>Solved</b>
From Block:	Oil Storage Tanks	Oil Storage Tanks	VRT	Produced Water Storage Tanks
To Block:	--	--	--	--
<b>Property</b>	<b>Units</b>			
Temperature	°F		100	
Pressure	psia		12	
Mole Fraction Vapor	%		0	
Mole Fraction Light Liquid	%		100	
Mole Fraction Heavy Liquid	%		0	
Molecular Weight	lb/lbmol		192.612	
Mass Density	lb/ft³		47.2748	
Molar Flow	lbmol/h		13.4307	
Mass Flow	lb/h		2586.92	
Vapor Volumetric Flow	ft³/h		54.7209	
Liquid Volumetric Flow	gpm		6.82234	
Std Vapor Volumetric Flow	MMSCFD		0.122322	
Std Liquid Volumetric Flow	sgpm		6.67625	
Compressibility			0.00814026	
Specific Gravity			0.757986	
API Gravity			51.1623	
Enthalpy	Btu/h		-2.17312E+06	
Mass Enthalpy	Btu/lb		-840.041	
Mass Cp	Btu/(lb*°F)		0.509774	
Ideal Gas Cp/Cv Ratio			1.02589	
Dynamic Viscosity	cP		1.52894	
Kinematic Viscosity	cSt		2.01902	
Thermal Conductivity	Btu/(ft²*°F)		0.0703797	
Surface Tension	lb/ft		0.00168377	
Net Ideal Gas Heating Value	Btu/ft³		9577.96	
Net Liquid Heating Value	Btu/lb		18717.9	
Gross Ideal Gas Heating Value	Btu/ft³		10241.0	
Gross Liquid Heating Value	Btu/lb		20024.1	

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

**Identification**

User Identification: Ballista 14-13H  
City:  
State:  
Company:  
Type of Tank: Vertical Fixed Roof Tank  
Description:

**Tank Dimensions**

Shell Height (ft): 20.00  
Diameter (ft): 12.00  
Liquid Height (ft) : 15.00  
Avg. Liquid Height (ft): 14.00  
Volume (gallons): 12,690.44  
Turnovers: 276.51  
Net Throughput(gal/yr): 3,509,037.00  
Is Tank Heated (y/n): N

**Paint Characteristics**

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

**Roof Characteristics**

Type: Cone  
Height (ft) 0.50  
Slope (ft/ft) (Cone Roof) 0.08

**Breather Vent Settings**

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

Meteorological Data used in Emissions Calculations: Casper, Wyoming (Avg Atmospheric Pressure = 12.14 psia)

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

**Ballista 14-13H - Vertical Fixed Roof Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Crude oil (RVP 5)	All	46.94	40.44	53.44	45.07	2.2119	1.9304	2.5257	50.0000			207.00	Option 4: RVP=5



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

**Emissions Report for: Annual**

**Ballista 14-13H - Vertical Fixed Roof Tank**

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude oil (RVP 5)	1,906.90	316.45	2,223.35



**Facility Detail Report**  
**Facility Name: Ballista 14-13H**  
**ID: F026954**

- **Facility Information**

Facility ID: F026954  
 FacilityName: Ballista 14-13H  
 Facility Description: single well sweet crude oil and natural gas production facility  
 Company Name: EOG Resources, Inc.  
 Operating Status: Operating AFS:  
 Facility Class: Minor Facility Type: Production Site  
 CERR Class: NON

- **Location**

Physical Address	City	County	Lat/Long	PLSS	Effective Date
Section 13, 41N, 73W	Campbell County	Campbell	43.53171/-105.58176	QNWNW-S13-T41N-R73W	07/14/2015

Location Detail For : Section 13, 41N, 73W

Latitude: 43.53171 Longitude: -105.58176  
 Quarter Quarter: NW Quarter: NW  
 Section: 13  
 Township: 41N Range: 73W  
 County: Campbell State: Wyoming  
 Distict: District 3  
 Physical Address 1: Section 13, 41N, 73W Physical Address 2:  
 City: Campbell County Zip: 82716  
 Effective Date: 07/14/2015

- **API**

API
561930

- **Notes**

User Name	Date	Note
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- **NAICS Codes**

211111 Crude Petroleum and Natural Gas Extraction (SIC 1311)

- **Contacts**

Contact Type	Contact Person	Phone Number	Email	Start Date	End Date
Environmental contact	Rice, Curtis	(303)262-9946	Curtis_Rice@eogresources.com	03/09/2015	
NSR Permitting contact	Smith, Mark	(307)399-2365	mark_smith@eogresources.com	01/05/2015	

Contact Detail For : Rice, Curtis

Prefix: First Name: Curtis  
 Middle Name: Last Name: Rice

Suffix:  
 Company Title: Contact's Company Name: EOG Resources, Inc.  
 Address 1: 600 17th Street, Suite 1000N  
 Address 2:  
 City: Denver Zip Code: 80202  
 State: Colorado  
 Work Phone No: (303)262-9946 Secondary Phone No.:  
 Address 2: Secondary Ext. No.:  
 Mobile Phone No.: Pager No.:  
 Fax No: (303)262-9449 Pager PIN No.:  
 Email: Curtis\_Rice@eogresources.com  
 Email Pager Address:

**Contact Detail For : Smith, Mark**

Prefix: Mr. First Name: Mark  
 Middle Name: Last Name: Smith  
 Suffix:  
 Company Title: Senior Environmental Representative Contact's Company Name: EOG Resources, Inc.  
 Address 1: 3001 E. Pershing Blvd.  
 Address 2:  
 City: Cheyenne Zip Code: 82001  
 State: Wyoming  
 Work Phone No: (307)399-2365 Secondary Phone No.:  
 Address 2: Secondary Ext. No.:  
 Mobile Phone No.: Pager No.:  
 Fax No: Pager PIN No.:  
 Email: mark\_smith@eogresources.com  
 Email Pager Address:

**- Rules & Regs**

Subject to Part 60 NSPS: Subject to 112(r) Accidental Release Prevention:  
 Subject to Part 61 NESHAP: Subject to non-attainment NSR:  
 Subject Part 63 NESHAP: Subject to PSD:  
 Subject to Title IV Acid Rain:

**- Attachments**

Description	Type	Modified By	Modified Date
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**- Version**

Version ID	Version Start Date	Version End Date	Preserved
CURRENT	08/03/2015		X
31168	07/15/2015	08/03/2015	X

## Emission Unit : FLR001

Sep 11 2015, 14:21:05

### - Emission Unit Information

AQD Emissions Unit ID: FLR001

Emission Unit Type: Flare

Maximum Design Capacity: 1000000.0

Units : scf/day

Minimum Design Capacity: 1000.0

Units : scf/day

Pilot Gas Volume (scf/min): 0.1400

AQD Description:

Company Equipment ID: FLA1

Company Equipment Description: Steffes Tri-Tip Flare

Operating Status: Operating

Initial Construction Commencement Date: 05/09/2015

Date:

Initial Operation Commencement Date: 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

### - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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### - Processes

#### - Emission Process Information

Process ID: PRC001

Process Name: Steffes Tri-Tip Flare

Company Process Description: Steffes Tri-Tip Flare

Source Classification Code (SCC): 3-10-002-05

Release points(s) directly associated with this process

VER003

## Emission Unit : FUG001

Sep 11 2015, 14:21:05

### - Emission Unit Information

AQD Emissions Unit ID: FUG001

Emission Unit Type: Fugitive

AQD Description:

Company Equipment ID: FUG1

Company Equipment Description: process fugitives

Operating Status: Operating

Initial Construction Commencement Date: 05/09/2015

Initial Operation Commencement Date: 05/09/2015

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

### - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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### - Processes

#### - Emission Process Information

Process ID: PRC002

Process Name: fugitive emissions

Company Process Description: fugitive emissions

Source Classification Code (SCC): 3-10-888-11

Release points(s) directly associated with this process

AVL003

# Emission Unit : HET001

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: HET001

Emission Unit Type: Heater/Chiller

Firing Type: Indirect

Heat Input Rating: 0.38

Units: MMBtu/hr

Primary Fuel Type: Field Gas

Secondary Fuel Type: N/A

Heat Content of Fuel (BTU/scf): 1390

AQD Description:

Company Equipment ID: HET1

Company Equipment Description: Trace Line Heater - 0.375 MMBtu/hr

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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## - Processes

### - Emission Process Information

Process ID: PRC003

Process Name: Line Heater

Company Process Description: Line Heater

Source Classification Code (SCC): 3-10-004-04

Release points(s) directly associated with this process

VER001

# Emission Unit : HET002

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: HET002

Emission Unit Type: Heater/Chiller

Firing Type: Indirect

Heat Input Rating: 0.38

Units: MMBtu/hr

Primary Fuel Type: Field Gas

Secondary Fuel Type: N/A

Heat Content of Fuel (BTU/scf): 1390

AQD Description:

Company Equipment ID: HET2

Company Equipment Description: heater treater - 0.375 MMBtu/hr

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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## - Processes

### - Emission Process Information

Process ID: PRC004

Process Name: heater treater heater

Company Process Description: heater treater heater

Source Classification Code (SCC): 3-10-004-04

Release points(s) directly associated with this process

VER002

## Emission Unit : LUD001

Sep 11 2015, 14:21:05

### - Emission Unit Information

AQD Emissions Unit ID: LUD001

Emission Unit Type: Loading/Unloading/Dump

Type of Material: liquid

Material Description: crude oil - 228.9 bbls/day

Maximum Annual Throughput: 83548

Units: barrels/yr

AQD Description:

Company Equipment ID: TL01

Company Equipment Description: truck oil loading from storage tanks

Operating Status: Operating

Initial Construction Commencement Date: 05/09/2015

Date:

Initial Operation Commencement Date: 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

### - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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### - Processes

#### - Emission Process Information

Process ID: PRC005

Process Name: truck loadout

Company Process Description: truck loadout

Source Classification Code (SCC): 4-06-001-32

Release points(s) directly associated with this process

AVL002

# Emission Unit : PNE001

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: PNE001

Emission Unit Type: Pneumatic Equipment

Type of Equipment: Pump

Bleed rate (cu. ft/hr):

Gas Consumption Rate (cu. ft/hr): 642.0000

AQD Description:

Company Equipment ID: PNE1

Company Equipment Description: three (3) pneumatic pumps (tank combustor scrubber, VRT combustor scrubber, and recycle) each pump has a gas consumption rate of 214 scf/hr for a total of 642 scf/hr

Operating Status: Operating

Initial Construction Commencement 05/09/2015  
Date:

Initial Operation Commencement 05/09/2015  
Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

## - Processes

### - Emission Process Information

Process ID: PRC006

Process Name: pneumatic pumps

Company Process Description: pneumatic pumps

Source Classification Code (SCC): 3-10-001-99

Control equipment(s) directly associated with this process

FLA001

## Emission Unit : PNE002

Sep 11 2015, 14:21:05

### - Emission Unit Information

AQD Emissions Unit ID: PNE002

Emission Unit Type: Pneumatic Equipment

Type of Equipment: Pump

Bleed rate (cu. ft/hr):

Gas Consumption Rate (cu. ft/hr): 0.0000

AQD Description:

Company Equipment ID: PNE2

Company Equipment Description: two (2) electric pumps (recycle and trace)

Operating Status: Operating

Initial Construction Commencement Date: 05/09/2015

Date:

Initial Operation Commencement Date: 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

### - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

### - Processes

#### - Emission Process Information

Process ID: PRC007

Process Name: electric pumps

Company Process Description: electric pumps

Source Classification Code (SCC): 3-10-001-99

# Emission Unit : SEP001

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: SEP001

Emission Unit Type: Separator/Treater

Type Of Vessel: Heater-Treater

is Vessel Heated: Yes

AQD Description:

Company Equipment ID: HT1

Company Equipment Description: Heater Treater

Operating Status: Operating

Initial Construction Commencement 05/09/2015  
Date:

Initial Operation Commencement 05/09/2015  
Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

## - Processes

### - Emission Process Information

Process ID: PRC008

Process Name: heater treater

Company Process Description: heater treater

Source Classification Code (SCC): 3-10-001-07

# Emission Unit : TNK001

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: TNK001

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: crude oil - 228.9 bbl/day total throughput. 57.23 bbl/tank

Capacity: 400

Units: barrels

Maximum Throughput: 57.2300

Units: barrels/day

AQD Description:

Company Equipment ID: T1

Company Equipment Description: 400-bbl oil storage tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

## - Processes

### - Emission Process Information

Process ID: PRC009

Process Name: oil storage tank

Company Process Description: oil storage tank

Source Classification Code (SCC): 4-04-003-12

Control equipment(s) directly associated with this process

FLA001

# Emission Unit : TNK002

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: TNK002

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: crude oil - 228.9 bbl/day total throughput. 57.23 bbl/tank

Capacity: 400

Units: barrels

Maximum Throughput: 57.2300

Units: barrels/day

AQD Description:

Company Equipment ID: T2

Company Equipment Description: 400-bbl oil storage tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

## - Processes

### - Emission Process Information

Process ID: PRC010

Process Name: oil storage tank

Company Process Description: oil storage tank

Source Classification Code (SCC): 4-04-003-12

Control equipment(s) directly associated with this process

FLA001

# Emission Unit : TNK003

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: TNK003

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: crude oil - 228.9 bbl/day total throughput. 57.23 bbl/tank

Capacity: 400

Units: barrels

Maximum Throughput: 57.2300

Units: barrels/day

AQD Description:

Company Equipment ID: T3

Company Equipment Description: 400-bbl oil storage tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

## - Processes

### - Emission Process Information

Process ID: PRC011

Process Name: oil storage tank

Company Process Description: oil storage tank

Source Classification Code (SCC): 4-04-003-12

Control equipment(s) directly associated with this process

FLA001

# Emission Unit : TNK004

Sep 11 2015, 14:21:05

## - Emission Unit Information

AQD Emissions Unit ID: TNK004

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: crude oil - 228.9 bbl/day total throughput. 57.23 bbl/tank

Capacity: 400

Units: barrels

Maximum Throughput: 57.2300

Units: barrels/day

AQD Description:

Company Equipment ID: T4

Company Equipment Description: 400-bbl oil storage tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

## - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
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## - Processes

### - Emission Process Information

Process ID: PRC012

Process Name: oil storage tank

Company Process Description: oil storage tank

Source Classification Code (SCC): 4-04-003-12

Control equipment(s) directly associated with this process

FLA001

- **Emission Unit Information**

AQD Emissions Unit ID: TNK005

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: produced water - 170.5 bbl/day total throughput.

Capacity: 400

Units: barrels

Maximum Throughput: 170.5000

Units: barrels/day

AQD Description:

Company Equipment ID: T5

Company Equipment Description: 400-bbl produced water storage tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015

Date:

Initial Operation Commencement 05/09/2015

Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

- **Permitted Emissions**

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments

- **Processes**

- **Emission Process Information**

Process ID: PRC013

Process Name: produced water storage tank

Company Process Description: produced water storage tank

Source Classification Code (SCC): 4-04-003-15

Control equipment(s) directly associated with this process

FLA001

- Emission Unit Information

AQD Emissions Unit ID: TNK006

Emission Unit Type: Storage Tank/Silo

Material Type: Liquid

Description of Material Stored: emergency tank

Capacity: 400

Units: barrels

Maximum Throughput: 1.0000

Units: barrels/day

AQD Description:

Company Equipment ID: T6

Company Equipment Description: 400-bbl emergency tank

Operating Status: Operating

Initial Construction Commencement 05/09/2015  
Date:

Initial Operation Commencement 05/09/2015  
Date:

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

- Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments

- Processes

- Emission Process Information

Process ID: PRC014

Process Name: emergency tank

Company Process Description: emergency tank

Source Classification Code (SCC): 4-04-003-15

Release points(s) directly associated with this process

AVL001

## Emission Unit : VNT001

Sep 11 2015, 14:21:05

### - Emission Unit Information

AQD Emissions Unit ID: VNT001

Emission Unit Type: Process Vent

AQD Description:

Company Equipment ID: VRT1

Company Equipment Description: Vapor Recovery Tower

Operating Status: Operating

Initial Construction Commencement Date: 05/09/2015

Initial Operation Commencement Date: 05/09/2015

Most Recent  
Construction/Modification  
Commencement Date:

Most Recent Operation  
Commencement Date:

### - Permitted Emissions

Pollutant	Potential Emissions (Lbs/hour)	Potential Emissions (Tons/Year)	Allowable Emissions (Lbs/Hour)	Allowable Emissions (Tons/Year)	Comments
-----------	--------------------------------	---------------------------------	--------------------------------	---------------------------------	----------

### - Processes

#### - Emission Process Information

Process ID: PRC015

Process Name: Vapor Recovery Tower

Company Process Description: Vapor Recovery Tower

Source Classification Code (SCC): 3-10-001-07

Control equipment(s) directly associated with this process

FLA001

## Control Equipment : FLA001

Sep 11 2015, 14:21:05

### - Control Equipment Information

Equipment Type: Flare

Control Equipment ID: FLA001

AQD Description:

Company Control Equipment ID: FL1

Company Control Equipment Description: Steffes Tri-Tip Flare

Operating Status: Operating

Initial Installation Date: 05/09/2015

Manufacturer: Steffes

Model: Tri-Tip

### - Specific Equipment Type information

Flare Type: Elevated - Open

Elevated Flare Type: Non-Assisted

Ignition Device: Yes

Flame Presence Sensor: Yes

Inlet Gas Temp: 50

Flame Presence Type: Thermocouple

Gas Flow Rate:

Sec. Outlet Gas Temp:

### - Pollutants Controlled

Pollutant	Design Control Efficiency(%)	Operating Control Efficiency(%)	Capture Efficiency(%)	Total Capture Control(%)
Total HAP Pollutants	98	98	100	98
VOC - Volatile Organic Compounds	98	98	100	98

### - Associated Control Equipments And Release Points

Release points(s) directly associated with this control equipment

VER003

## Release Point : AVL001

Sep 11 2015, 14:21:05

### - Release Point Information

Release Point ID: AVL001

Release Type: Fugitive (Area, Volume, Line)

AQD Description:

Company Release Point ID: AVL1

Company Release Point Description: emergency tank

Operating Status: Operating

Release Height (ft): 15.0

### - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

### - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

## Release Point : AVL002

Sep 11 2015, 14:21:05

### - Release Point Information

Release Point ID: AVL002

Release Type: Fugitive (Area, Volume, Line)

AQD Description:

Company Release Point ID: AVL2

Company Release Point Description: truck loadout

Operating Status: Operating

Release Height (ft): 3.0

### - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

### - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

## Release Point : AVL003

Sep 11 2015, 14:21:05

### - Release Point Information

Release Point ID: AVL003

Release Type: Fugitive (Area, Volume, Line)

AQD Description:

Company Release Point ID: FUG001

Company Release Point Description: process fugitives

Operating Status: Operating

Release Height (ft): 3.0

### - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

### - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

# Release Point : VER001

Sep 11 2015, 14:21:05

## - Release Point Information

Release Point ID: VER001

Release Type: Vertical

AQD Description:

Company Release Point ID: HET001

Company Release Point Description: 0.375 MMBtu/hr line heater

Operating Status: Operating

Base Elevation (ft): 5070.0

## - Stack Details

Stack Height (ft): 15.0

Stack Diameter (ft): 1.0

Exit Gas Velocity (ft/s): 50.0

Exit Gas Flow Rate (acfm): 1.0

Exit Gas Temp (F): 600.0

## - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

## - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

# Release Point : VER002

Sep 11 2015, 14:21:05

## - Release Point Information

Release Point ID: VER002

Release Type: Vertical

AQD Description:

Company Release Point ID: HET002

Company Release Point Description: 0.375 MMBtu/hr heater treater heater

Operating Status: Operating

Base Elevation (ft): 5070.0

## - Stack Details

Stack Height (ft): 15.0

Stack Diameter (ft): 1.0

Exit Gas Velocity (ft/s): 50.0

Exit Gas Flow Rate (acfm): 1.0

Exit Gas Temp (F): 600.0

## - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

## - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

# Release Point : VER003

Sep 11 2015, 14:21:05

## - Release Point Information

Release Point ID: VER003

Release Type: Vertical

AQD Description:

Company Release Point ID: VER1

Company Release Point Description: Steffes Tri-Tip Flare

Operating Status: Operating

Base Elevation (ft): 5070.0

## - Stack Details

Stack Height (ft): 15.0

Stack Diameter (ft): 0.25

Exit Gas Velocity (ft/s): 6.15

Exit Gas Flow Rate (acfm): 18.12

Exit Gas Temp (F): 1400.0

## - Release Latitude and Longitude

Latitude: 43.53171

Longitude: -105.58176

## - CEM Data

Description	H2S	SO2	NOX	CO	THC	HCL	HFL	O	TRS	CO2	FLOW	OPACITY	PM
-------------	-----	-----	-----	----	-----	-----	-----	---	-----	-----	------	---------	----

**NSR Application A0001413**  
**Ballista 14-13H**  
**F026954**  
**August 03, 2015**

**Air Quality Division**  
**Application for NSR Permit**

Sep 11 2015, 14:05:12

**NSR Application**

Date application received : 08/03/2015

Is this a legacy NSR Application? No

*This information should be filled out for each New Source Review (NSR) application. An NSR permit is required for all air contaminant sources (emissions units) installed or modified after January 1, 1974. See the application instructions for additional information.*

Emission Unit application reason summary :	<input checked="" type="checkbox"/> Construction	<input type="checkbox"/> Synthetic Minor
	<input type="checkbox"/> Modification	<input type="checkbox"/> Temporary Permit
	<input type="checkbox"/> Reconstruction	<input type="checkbox"/> Other

Facility Type :

Sage Grouse :

**Purpose of Application**

Please summarize the reason this permit is being applied for.

to construct a new single well sweet crude oil and natural gas production facility known as the Ballista 14-13H located in the NW¼ NW¼ of Section 13, T41N, R73W approximately twelve (12) miles east-southeast of Pine Tree Jct, in Campbell County, Wyoming.

Has the facility changed location or is it a new/greenfield facility? Yes

Has a Land Use Planning document been included in this application? No

Does production at this facility contain H2S? No

**Federal Rules Applicability - Facility Level**

**Prevention of Significant Deterioration (PSD)**

*These rules are found under WAQSR Chapter 6, Section 4.*

Not affected

**Non-Attainment New Source Review**

*These rules are found under WAQSR Chapter 6, Section 13.*

Not affected

**Trade Secret Information** - One or more Emissions Units in this application contains trade secret information.

No

**Permit Application Contact** - Newly created contacts and application contact changes will be saved when the application is saved.

Curtis Rice		EOG Resources, Inc.
Name	Title	Company
600 17th Street, Suite 1000N	Denver, CO	80202
Street Address	City/Township, State	Zip Code
(303)262-9946	(303)262-9449	Curtis_Rice@eogresources.com
Phone	Fax	E-mail

**Modeling Section**

*Ambient Air Quality Impact Analysis: WAQSR Chapter 6, Section 2(c)(ii) requires that permit applicants demonstrate that a proposed facility will not prevent the attainment or maintenance of any ambient air quality standard.*

Has the applicant contacted AQD to determine if modeling is required? No

Is a modeling analysis part of this application? No

Is the proposed project subject to Prevention of Significant Deterioration (PSD) No requirements?

- **Application Attachments**

<b>Required Attachment</b>	<b>Public Document Id</b>	<b>Attachment Type</b>	<b>Description</b>
X	7146	Process Flow Diagram	process flow-site diagram
X	7147	Emissions Calculations	emission calculations
X	7148	Cover Letter/Project Description	Cover letter and process description
X	7149	Equipment List	equipment list
X	7150	Facility Map	facility map

- **Notes**

<b>User Name</b>	<b>Date</b>	<b>Note</b>
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** FLR001

**AQD EU description:**

**Company EU ID:** FLA1

**Company EU Description:** Steffes Tri-Tip Flare

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Flare

Emergency Flare Only : No

Btu Content (Btu/scf) : 2,633.00

Assist Gas Utilized : No

Waste Gas Volume : 26,089.00

Installation Date : 05/09/2015

Continuously Monitored : Yes

Describe Continuous Monitoring : continuous pilot flame monitored through Cygnet

Ignition Device Type : Pilot

Smokeless Design : Yes

Units : scf/day

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly	0	0		0	0	

particulate matter, (PM)						
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0.29	1.3	AP-42
Carbon monoxide (CO)	0	0		0.07	0.3	AP-42
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**

New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Not affected

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** FUG001

**AQD EU description:**

**Company EU ID:** FUG1

**Company EU Description:** process fugitives

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Fugitive

Type of Fugitive Emission : Fugitive Leaks at O&G

Equipment and Service Type	Number of Each Equipment Type	Leak Rate (ppm)	Percent VOC
Connector; Gas	248	10,000.00	31.700
Flange; Gas	56	10,000.00	31.700
Open Ended Line; Gas	1	10,000.00	31.700
Other; Gas	15	10,000.00	31.700
Valve; Gas	97	10,000.00	31.700
Connector; Light Oil	120	10,000.00	87.500
Flange; Light Oil	52	10,000.00	87.500
Pump; Light Oil	8	10,000.00	87.500
Valve; Light Oil	70	10,000.00	87.500
Connector; Water/Light Oil	62	10,000.00	87.500
Flange; Water/Light Oil	40	10,000.00	87.500
Valve; Water/Light Oil	41	10,000.00	87.500

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*

- AP-42
- Other. If this is selected, attach a document with a description of the method used.

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	4.7	0		0	0	AP-42
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0.1	0		0	0	AP-42
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** HET001

**AQD EU description:**

**Company EU ID:** HET1

**Company EU Description:** Trace Line Heater  
- 0.375 MMBtu/hr

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Heater/Chiller

Fuel Sulfur Content : 0.00

Units : ppm

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0.05	0.22	AP-42

Carbon monoxide (CO)	0	0		0.04	0.18	AP-42
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** HET002

**AQD EU description:**

**Company EU ID:** HET2

**Company EU Description:** heater treater -  
0.375 MMBtu/hr

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Heater/Chiller

Fuel Sulfur Content : 0.00

Units : ppm

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0.05	0.22	AP-42

Carbon monoxide (CO)	0	0		0.04	0.18	AP-42
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** LUD001

**AQD EU description:**

**Company EU ID:** TLO1

**Company EU Description:** truck oil loading from storage tanks

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Loading/Unloading/Dump

Maximum Hourly Throughput 10

Units : barrels/hr

Detailed Description of Loading/Unloading/Dump Source : truck loading crude oil from four (4) oil storage tanks, 228.9 bbl/day (9.5 bbl/hr)

*\*Provide detailed calculations documenting the potential emissions and emission factors used to calculate emissions from this source.*

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in	0	0		0	0	

diameter (PE/PM10)						
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	2.7	0		0	0	AP-42
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0.1	0		0	0	AP-42
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** PNE001

**AQD EU description:**

**Company EU ID:** PNE1

**Company EU Description:** three (3) pneumatic pumps (tank combustor scrubber, VRT combustor scrubber, and recycle) each pump has a gas consumption rate of 214 scf/hr for a total of 642 scf/hr

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Pneumatic Equipment

Motive Force : Field Gas

VOC Content (%) : 31.700

HAP Content (%) : 1.100

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions	0	0		0	0	

(PE/PM) (formerly particulate matter, PM)						
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	55.3	0		0.25	1.1	AP-42
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	2	0		0.009	0.04	AP-42
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air** Not affected

**Pollutants (NESHAP Part 61)**

*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)**

*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

Not affected

**Prevention of Significant Deterioration (PSD)**

*These rules are found under WAQSR Chapter 6, Section 4.*

Not Affected

**Non-Attainment New Source Review**

*These rules are found under WAQSR Chapter 6, Section 13.*

Not Affected

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** PNE002

**AQD EU description:**

**Company EU ID:** PNE2

**Company EU Description:** two (2) electric pumps (recycle and trace)

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Pneumatic Equipment

Motive Force : Other

VOC Content (%) : 0.000

HAP Content (%) : 0.000

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	

Sulfur dioxide (SO <sub>2</sub> )	0	0		0	0	
Nitrogen oxides (NO <sub>x</sub> )	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H <sub>2</sub> S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected

National Emission Standards for Hazardous Air Pollutants  
(NESHAP Part 63) standards are listed under 40 CFR 63.

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** SEP001

**AQD EU description:**

**Company EU ID:** HT1

**Company EU Description:** Heater Treater

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Separator/Treater

Operating Temperature (F) : 123

Operating Pressure (psig) : 52.00

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	

Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H <sub>2</sub> S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK001

**AQD EU description:**

**Company EU ID:** T1

**Company EU Description:** 400-bbl oil storage tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 2.3800

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 2.40  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre- Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determinatio n*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	46.975	0		0.21	0.94	Tanks Program
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	1.925	0		0.009	0.04	Tanks Program
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**  
 New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Subject to subpart

<b>NSPS Subpart</b>
0000 - Crude Oil and Natural Gas Production, Transmission and Distribution

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK002

**AQD EU description:**

**Company EU ID:** T2

**Company EU Description:** 400-bbl oil storage tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 2.3800

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 2.40  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	46.975	0		0.21	0.94	Tanks Program
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	1.925	0		0.009	0.04	Tanks Program
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**  
 New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Subject to subpart

<b>NSPS Subpart</b>
0000 - Crude Oil and Natural Gas Production, Transmission and Distribution

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK003

**AQD EU description:**

**Company EU ID:** T3

**Company EU Description:** 400-bbl oil storage tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 2.3800

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 2.40  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	46.975	0		0.21	0.94	Tanks Program
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	1.925	0		0.009	0.04	Tanks Program
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**  
 New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Subject to subpart

<b>NSPS Subpart</b>
0000 - Crude Oil and Natural Gas Production, Transmission and Distribution

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK004

**AQD EU description:**

**Company EU ID:** T4

**Company EU Description:** 400-bbl oil storage tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 2.3800

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 2.40  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	46.975	0		0.21	0.94	Tanks Program
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	1.925	0		0.009	0.04	Tanks Program
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**  
 New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Subject to subpart

<b>NSPS Subpart</b>
0000 - Crude Oil and Natural Gas Production, Transmission and Distribution

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK005

**AQD EU description:**

**Company EU ID:** T5

**Company EU Description:** 400-bbl produced water storage tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 7.1000

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 0.01  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**  
 New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Subject to subpart

<b>NSPS Subpart</b>
0000 - Crude Oil and Natural Gas Production, Transmission and Distribution

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

Not affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** TNK006

**AQD EU description:**

**Company EU ID:** T6

**Company EU Description:** 400-bbl emergency tank

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Storage Tank/Silo

Maximum Hourly Throughput 0.0000

Units : barrels/hr

Is Tank Heated : No

Operating Pressure (psig) : 0.01

Vapor Pressure of Material 0.01  
Stored (psig) :

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	

PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	
Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

- **Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

- **Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

- **Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)**

New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

Not affected

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)**

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Not affected

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63.*

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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**Section II - Specific Air Contaminant Source Information**

**AQD EU ID:** VNT001

**AQD EU description:**

**Company EU ID:** VRT1

**Company EU Description:** Vapor Recovery Tower

- **Source Installation or Modification Schedule** – Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Construction(greenfield/new facility)

**Date production began:**

05/09/2015

- **Emission Unit Type Specific Information**

Emission Unit Type : Process Vent

Flow Rate or Throughput : 400.58

Units : gallons/hr

VOC Concentration (%) : 87.500

HAPs Concentration (%) : 3.600

- **Potential Operating Schedule** – Provide the operating schedule for this emissions unit

Hours/day : 24

Hours/year : 8760

- **Emissions Information** "Potential to emit" means the maximum capacity of a source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in Title IV of the Act or the regulations promulgated thereunder.

Basis for Determination Options:

- *Manufacturer Data*
- *Test results for this source*
- *Similar source test results*
- *GRICalc*
- *Tanks Program*
- *AP-42*
- *Other. If this is selected, attach a document with a description of the method used.*

**Criteria Pollutants :**

Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
		Potential to Emit (PTE)*	Units*			
Particulate emissions (PE/PM) (formerly particulate matter, PM)	0	0		0	0	
PM # 10 microns in diameter (PE/PM10)	0	0		0	0	
PM # 2.5 microns in diameter (PE/PM2.5)	0	0		0	0	
Sulfur dioxide (SO2)	0	0		0	0	

Nitrogen oxides (NOx)	0	0		0	0	
Carbon monoxide (CO)	0	0		0	0	
Volatile organic compounds (VOC)	0	0		0	0	
Lead (Pb)	0	0		0	0	
Total Hazardous Air Pollutants (HAPs)	0	0		0	0	
Fluoride (F)	0	0		0	0	
Hydrogen Sulfide (H2S)	0	0		0	0	
Mercury (Hg)	0	0		0	0	
Total Reduced Sulfur (TRS)	0	0		0	0	
Sulfuric Acid Mist (SAM)	0	0		0	0	

**Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants:**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

**Greenhouse Gases (GHGs):**

Pollutant	Pollutant Category	Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (PTE) (lbs/hr)*	Potential to Emit (PTE) (tons/yr)*	Basis for Determination*
			Potential to Emit (PTE)*	Units*			

\* Provide your calculations as an attachment and explain how all process variables and emissions factors were selected. Note the emission factor(s) employed and document origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

\*\* AQD Calculated - See 'Help' for more information.

**- Best Available Control Technology (BACT)**

Was a BACT Analysis completed for this unit? No

**- Lowest Achievable Emission Rate (LAER)**

Was a LAER Analysis completed for this unit? No

**- Federal and State Rule Applicability**

**New Source Performance Standards (NSPS)** Not affected  
*New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61)** Not affected  
*National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).*

**National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63)** Not affected  
*National Emission Standards for Hazardous Air Pollutants*

(NESHAP Part 63) standards are listed under 40 CFR 63.

**Prevention of Significant Deterioration (PSD)** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 4.*

**Non-Attainment New Source Review** Not Affected  
*These rules are found under WAQSR Chapter 6, Section 13.*

- **Emission Unit Attachments**

Required Attachment	Public Document Id	Attachment Type	Description
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