

# Yates Petroleum Corporation

## Source of Emissions Data reported as LGS Equivalent emissions reduction:

**Facility:** Blue Rim State #2  
**Location:** NWN E S. 16, T30N, R108W, Sublette County

**Proposed action:** Remove all production equipment at the site except the wellhead, pipe wellhead stream to an adjacent site to be processed in existing permitted equipment.

### Annual VOC Emissions:

	<u>TPY</u>	
Tank Flashing	<b>8.6</b>	Based on 2008 production data, see P. 2 E&P Tanks report
Dehydrator	<b>0.5</b>	Based on WYDEQ calculations, see permit CT-4053 P. 5
Pneumatic Venting & Process Burners	<b>1.5</b>	Based on approved calculation methodology, see WYDEQ permit P.5, and calculation spreadsheets
Total	<b>10.6</b>	

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 \* Project Setup Information \*

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 Project File : C:\Megee Consulting\A - Yates\Emissions Inventory\2008 Sublette Annual\Highw  
 Flowsheet Selection : Oil Tank with Separator  
 Calculation Method : RVP Distillation  
 Control Efficiency : 98.0%  
 Known Separator Stream : High Pressure Oil  
 Entering Air Composition : No  
  
 Filed Name : Yates Petroleum Corporation  
 Well Name \* : Blue Rim State #2  
 Well ID : Pinedale Field Average Composition-Blue Rim Area  
 Permit Number \* : 2008 Emission Inventory Run  
 Date : 2009.06.23

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 \* Data Input \*

Separator Pressure : 500.00[psig]  
 Separator Temperature : 70.00[F]  
 Ambient Pressure : 12.02[psia]  
 Ambient Temperature : 44.57[F]  
 C10+ SG : 0.7471  
 C10+ MW : 163.60

-- High Pressure Oil -----

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.2248
4	N2	0.0069
5	C1	13.8538
6	C2	4.0622
7	C3	3.8700
8	i-C4	1.9589
9	n-C4	2.3707
10	i-C5	2.4177
11	n-C5	1.5174
12	C6	5.6274
13	C7	13.1258
14	C8	6.6577
15	C9	5.4697
16	C10+	22.4837
17	Benzene	0.9272
18	Toluene	4.4895
19	E-Benzene	0.2359
20	Xylenes	7.8346
21	n-C6	2.4000
22	224Trimethylp	0.4661

-- Sales Oil -----

Production Rate : 6.2[bbl/day]  
 Days of Annual Operation : 365 [days/year]  
 API Gravity : 50.0  
 Reid Vapor Pressure : 7.25[psia]

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 \* Calculation Results \*

-- Emission Summary -----

Item	Uncontrolled	Uncontrolled	Controlled	Controlled

	[ton/yr]	[lb/hr]	[ton/yr]	[lb/hr]
Total HAPs	0.270	0.062	0.005	0.001
Total HC	19.947	4.554	0.399	0.091
VOCs, C2+	12.516	2.858	0.250	0.057
VOCs, C3+	8.622	1.968	0.172	0.039

Uncontrolled Recovery Info.

Vapor	1.5800	[MSCFD]
HC Vapor	1.5600	[MSCFD]
GOR	254.84	[SCF/bbl]

-- Emission Composition -----

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.330	0.075	0.330	0.075
4	N2	0.006	0.001	0.006	0.001
5	C1	7.431	1.697	0.149	0.034
6	C2	3.895	0.889	0.078	0.018
7	C3	3.779	0.863	0.076	0.017
8	i-C4	1.454	0.332	0.029	0.007
9	n-C4	1.326	0.303	0.027	0.006
10	i-C5	0.693	0.158	0.014	0.003
11	n-C5	0.313	0.071	0.006	0.001
12	C6	0.405	0.092	0.008	0.002
13	C7	0.314	0.072	0.006	0.001
14	C8	0.049	0.011	0.001	0.000
15	C9	0.013	0.003	0.000	0.000
16	C10+	0.005	0.001	0.000	0.000
17	Benzene	0.043	0.010	0.001	0.000
18	Toluene	0.057	0.013	0.001	0.000
19	E-Benzene	0.001	0.000	0.000	0.000
20	Xylenes	0.027	0.006	0.001	0.000
21	n-C6	0.132	0.030	0.003	0.001
22	224Trimethylp	0.010	0.002	0.000	0.000
	Total	20.283	4.631	0.406	0.093

-- Stream Data -----

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.2248	0.0177	0.0009	0.9596	1.7915	0.9864
4	N2	28.01	0.0069	0.0000	0.0000	0.0312	0.0043	0.0304
5	C1	16.04	13.8538	0.3219	0.0002	61.8700	34.2334	60.9783
6	C2	30.07	4.0622	0.6214	0.2438	16.2715	40.4224	17.0508
7	C3	44.10	3.8700	1.8011	1.6907	11.2111	13.4439	11.2832
8	i-C4	58.12	1.9589	1.5842	1.5663	3.2884	3.4722	3.2943
9	n-C4	58.12	2.3707	2.1939	2.1850	2.9981	3.1301	3.0024
10	i-C5	72.15	2.4177	2.7433	2.7570	1.2622	1.3055	1.2636
11	n-C5	72.15	1.5174	1.7843	1.7956	0.5705	0.5905	0.5711
12	C6	86.16	5.6274	7.0346	7.0950	0.6343	0.6594	0.6351
13	C7	100.20	13.1258	16.7051	16.8593	0.4252	0.4450	0.4258
14	C8	114.23	6.6577	8.5177	8.5979	0.0577	0.0608	0.0578
15	C9	128.28	5.4697	7.0072	7.0736	0.0139	0.0159	0.0140
16	C10+	163.60	22.4837	28.8190	29.0923	0.0038	0.0042	0.0038
17	Benzene	78.11	0.9272	1.1683	1.1787	0.0717	0.0748	0.0718
18	Toluene	92.13	4.4895	5.7317	5.7852	0.0818	0.0861	0.0820
19	E-Benzene	106.17	0.2359	0.3020	0.3049	0.0012	0.0013	0.0012
20	Xylenes	106.17	7.8346	10.0330	10.1278	0.0340	0.0360	0.0340
21	n-C6	86.18	2.4000	3.0195	3.0461	0.2018	0.2102	0.2021
22	224Trimethylp	114.24	0.4661	0.5941	0.5996	0.0120	0.0126	0.0120
	MW		95.09	114.40	115.19	26.56	31.02	26.70
	Stream Mole Ratio		1.0000	0.7801	0.7728	0.2199	0.0073	0.2272
	Heating Value	[BTU/SCF]				1549.01	1769.82	1556.14
	Gas Gravity	[Gas/Air]				0.92	1.07	0.92

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Bubble Pt. @ 100F	[psia]	503.20	21.94	9.35
RVP @ 100F	[psia]	102.08	10.59	7.58
Spec. Gravity @ 100F		0.667	0.693	0.694

# PNEUMATIC DEVICE VOC EMISSIONS

Calculation In Accordance With Wyoming DEQ AQD  
Oil and Gas Production Facilities Permitting Guidance  
For Emissions From Pneumatic Sources

September 22, 2009

## YATES PETROLEUM CORPORATION

**FACILITY:** Blue Rim State #2 Production Facility

**DEVICE:** Heat Trace Fluid Pump, Graco Husky Model 1040

**FORMULA:** Emissions (lb/hr)=PSCR(scf/min)\*(60min/1 hr)\*(1/379 scf/lb-mol)\*gas MW\*VOC wt.fraction

### FACTORS:

PSCR (Pneumatic Source Consumption Rate (scf/min))	1.125
Gas MW (Supply Gas MW (lb/lb-mol))	18.08
VOC Weight Fraction (C3+ Weight)	0.0897
Hours Of Operation	4380

EMISSIONS (Operating LB/HR) 0.28884

Annual Hours Of Operation 8760

<b>EMISSIONS (TPY)</b>	<b>1.265</b>	*
<b>EMISSIONS (ANNUAL BASIS LB/HR)</b>	<b>0.289</b>	

NOTES: Pneumatic Source Consumption Rate derived from Manufacturers Data Sheet; Gas molecular weight from VOC Weight Percent calculation spreadsheet; VOC Weight Fraction from calculation spreadsheet

# PNEUMATIC DEVICE VOC EMISSIONS

*Calculation In Accordance With Wyoming DEQ AQD  
Oil and Gas Production Facilities Permitting Guidance  
For Emissions From Pneumatic Sources*

September 22, 2009

## **YATES PETROLEUM CORPORATION**

**FACILITY:** Blue Rim State #2 Production Facility

**DEVICE:** Methanol Injection Pump, Texsteam Model MX3

**FORMULA:** Emissions (lb/hr)=PSCR(scf/min)\*(60min/1 hr)\*(1/379 scf/lb-mol)\*gas MW\*VOC wt.fraction

### **FACTORS:**

PSCR (Pneumatic Source Consumption Rate (scf/min))	0.144
Gas MW (Supply Gas MW (lb/lb-mol))	18.08
VOC Weight Fraction (C3+ Weight)	0.0897
Hours Of Operation	4380

Emissions (Operating lb/hr)	0.03697
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Annual Hours Of Operation	8760
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<b>EMISSIONS (TPY)</b>	<b>0.162</b>	✱
<b>EMISSIONS (ANNUAL BASIS LB/HR)</b>	<b>0.037</b>	

**NOTES:** Pneumatic Source Consumption Rate derived from Manufacturers Data Sheet; Gas molecular weight from VOC Weight Percent calculation spreadsheet; VOC Weight Fraction from calculation spreadsheet

September 22, 2009

# Yates Petroleum Corporation

## Blue Rim State #2 Production Facility

### Calculation of Burner Emissions

	<u>Separator</u>	<u>BTEX Incinerator</u>	<u>Dehydrator</u>	<u>Tank Heater</u>	
Burner Size MMBtu/hr	0.75	0.125	0.25	0.50	
Run Time - %	50.00%	100.00%	50.00%	50.00%	
Btu/Ft <sup>3</sup> - LHV	1,340.3	1,340.3	1,340.3	1,340.3	
VOC Weight Fraction	0.3984	0.3984	0.3984	0.3984	
Emission Factor lb/mmcf					
NOx	100.0	100.0	100.0	100.0	
CO	84.0	84.0	84.0	84.0	
TOC	11.0	11.0	11.0	11.0	
<b>Emissions - lb/hour</b>					<b>Total Process Burners</b>
NOx	0.0503	0.0168	0.0168	0.0335	0.1173
CO	0.0422	0.0141	0.0141	0.0281	0.0985
VOC	0.0022	0.0007	0.0007	0.0015	0.0051
<b>Emissions - TPY</b>					
NOx	0.2201	0.0734	0.0734	0.1468	0.5137
CO	0.1849	0.0616	0.0616	0.1233	0.4315
VOC →	0.0096	0.0032	0.0032	0.0064	* 0.0225 *

Note: Burner gas VOC Weight % Fraction and fuel gas LHV from calculation spreadsheet;  
Emission Factors from WYDEQ August 2007 Guidance (AP-42)



# Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Copy: Mike Mason  
Drew Podany  
Dennis Stallions



Dave Freudenthal, Governor

John Corra, Director

September 14, 2005

- Non-CBM Air Permit Distribution Lists:
- Application Package from Consultants
  - Application Receipt Notice
  - Application Deemed Complete Notice
  - Notice of Publication
  - Permit
  - Misc. Notices after Permit Issued

Ms. Lisa Norton  
Environmental Coordinator  
Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, NM 88210

Permit No. CT-4053

10/28/05  
by

Dear Ms. Norton:

The Division of Air Quality of the Wyoming Department of Environmental Quality has completed final review of Yates Petroleum Corporation's application to construct a new gas/condensate production facility known as the ~~Blue Rim State 2~~ with a smokeless combustion device and B-TEX condenser/combustor system to control volatile organic compound and hazardous air pollutant emissions associated with the condensate storage tanks and dehydration unit reboiler still vent, located in the NW¼ NE¼ of Section 16, T30N, R108W, approximately twelve (12) miles south of Boulder, in Sublette County, Wyoming.

Following this agency's proposed approval of the request as published August 11, 2005 and in accordance with Chapter 6, Section 2(m) of the Wyoming Air Quality Standards and Regulations, the public was afforded a 30-day period in which to submit comments concerning the proposed new source, and an opportunity for a public hearing. No comments have been received. Therefore, on the basis of the information provided to us, approval to construct the Blue Rim State 2 as described in the application is hereby granted pursuant to Chapter 6, Section 2 of the regulations with the following conditions:

**Conditions applicable to all operations at the Blue Rim State 2 facility:**

1. That authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or is being constructed or installed for the purpose of investigating actual or potential sources of air pollution and for determining compliance or non-compliance with any rules, standards, permits or orders.
2. That all substantive commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as conditions of this permit.
3. A permit to operate in accordance with WAQSR Chapter 6, Section 2(a)(iii) is required after a 120-day start-up period in order to operate this facility.
4. All notifications, reports and correspondence required by this permit shall be submitted to the Stationary Source Compliance Program Manager, Air Quality Division, 122 West 25<sup>th</sup> Street, Cheyenne, WY 82002 and a copy shall be submitted to the District Engineer, Air Quality Division, 510 Meadowview Dr., Lander, WY 82520.

Herschler Building • 122 West 25th Street • Cheyenne, WY 82002 • <http://deq.state.wy.us>

ADMIN/OUTREACH  
(307) 777-7758  
FAX 777-3610

ABANDONED MINES  
(307) 777-6145  
FAX 777-6462

AIR QUALITY  
(307) 777-7391  
FAX 777-5616

INDUSTRIAL SITING  
(307) 777-7369  
FAX 777-6937

LAND QUALITY  
(307) 777-7756  
FAX 777-5864

SOLID & HAZ. WASTE  
(307) 777-7752  
FAX 777-5973

WATER QUALITY  
(307) 777-7781  
FAX 777-5973



5. All records required under this permit shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.

**Conditions applicable to current operations at the Blue Rim State 2 facility:**

6. Vapors from the two 400-barrel condensate storage tanks, including tank flash vapors from the LP separator condensate, shall be routed to a combustion device for ninety-eight (98) percent control of VOC emissions for at least one (1) year following the date of installation of the control device, after which time the control may be removed provided it can be demonstrated that the previous thirty (30)-day, uncontrolled, annualized VOC emission rate is less than thirty (30) tons per year. No prior authorization or permit modification is required by the Division for control device removal; however, the applicant must notify the Division of removal date and certify the uncontrolled emission rate, including method of calculation, within thirty (30)-days of removal.
7. Reboiler still vent vapors associated with the one 5.0 MMCFD TEG dehydration unit shall be directed to a JW Williams® B-TEX control system consisting of an overhead condenser for collection of condensed liquids and a combustion device for incineration of non-condensable vapors to reduce the mass content of total HAP's and VOC's in the gases vented to the device by at least ninety-five (95) percent by weight.
8. Yates Petroleum Corporation shall maintain and operate the tank vapor combustion device and JW Williams® B-TEX control system during all periods of active well site operation such that each remains effective as a viable emissions control device. Records shall be maintained noting date and duration of times during active well site operation when any emission control device is not operational.
9. The tank vapor combustion device and JW Williams® B-TEX control system combustion device shall be designed, constructed, operated and maintained to be smokeless, per Chapter 3, Section 6(b)(i) of the WAQSR, with no visible emissions except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours as determined by 40 CFR, Part 60, Appendix A, Method 22.

**Conditions applicable to equipment, production or emissions installed under additional guidance for the Jonah and Pinedale Anticline Fields, effective July 28, 2004:**

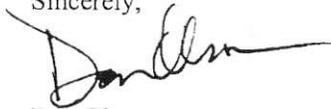
10. For the Blue Rim State 2 facility, the following emission control requirements and control installation deadlines shall be met:
  - A. Upon the First Date of Production of an additional well at the Blue Rim State 2 or upon the date production associated with a well from a separate location is tied into the Blue Rim State 2, controls for emissions from all existing and new hydrocarbon liquid storage tanks and pressure vessels (flashing, standing/working/breathing losses and any separator flash gas not collected for sales) shall be installed and operational. Emission control systems or devices installed under this condition shall be designed and operated to reduce the mass content of VOC's in the gases vented to the device by at least ninety-eight (98) percent by weight, and shall meet the requirements of the Chapter 6, Section 2 Oil and Gas Production Facilities Permitting Guidance.

- B. Upon the First Date of Production of an additional well at the Blue Rim State 2 or upon the date production associated with a well from a separate location is tied into the Blue Rim State 2, controls for emissions from all existing and new dehydration units, including the reboiler still vents and the vents from GCG separators (flash tanks), if present, shall be installed and operational. Emission control systems or devices installed under this condition shall be designed and operated to reduce the mass content of total HAP's in the gases vented to the device by at least ninety-five (95) percent by weight, and shall meet the requirements of the Chapter 6, Section 2 Oil and Gas Production Facilities Permitting Guidance.
11. Emission control devices installed under condition ten (10) shall be maintained and operated during all periods of active well site operation such that each remains effective as a viable emissions control device. Records shall be maintained noting dates and durations of times during active well site operation when any emission control device is not operational.
  12. Tank vapor combustion devices and B-TEX control system combustion devices installed under condition ten (10) shall be designed, constructed, operated and maintained to be smokeless, per Chapter 3, Section 6(b)(i) of the WAQSR, with no visible emissions except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours as determined by 40 CFR, Part 60, Appendix A, Method 22.
  13. For all combustion units used for control of flashing and dehydration unit emissions at multiple well facilities, pilot flames must be continually monitored using a thermocouple and continuous recording device or any other device(s) which can detect and record the presence of the pilot flame(s). These must be installed and operational upon start up of the combustion devices.
  14. Emissions from all existing and new hydrocarbon liquid storage tanks and pressure vessels (flashing, standing/working/breathing losses and separator flash gas not collected for sales) must remain controlled per condition ten (10)(A) for at least one (1) year after the most recently installed control system or device becomes operational. After this time, the control(s) may be removed provided the previous, thirty (30)-day, uncontrolled, annualized VOC emission rate, from all storage tanks and pressure vessels at the facility, is less than twenty (20) tons per year. No prior authorization or permit modification is required by the Division for control device removal however, the applicant must notify the Division of removal date and certify the uncontrolled emission rate, including method of calculation, within thirty (30)-days of removal.
  15. Yates Petroleum Corporation shall provide notification to the Division of additional equipment or emissions and provide certification of control and monitoring installation dates, on the appropriate form(s), to be provided by the Division.
  16. Emissions from this facility shall not exceed 100 TPY or more of any regulated air pollutant, 10 TPY or more of any individual Hazardous Air Pollutant or 25 TPY or more of any combination of Hazardous Air Pollutants.

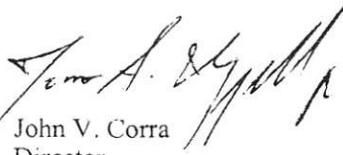
It must be noted that this approval does not relieve you of your obligation to comply with all applicable county, state, and federal standards, regulations or ordinances. Special attention must be given to Chapter 6, Section 2 of the Wyoming Air Quality Standards and Regulations, which details the requirements for compliance with condition 3. Any appeal of this permit as a final action of the Department must be made to the Environmental Quality Council within sixty (60) days of permit issuance per Section 16, Chapter I, General Rules of Practice and Procedure, Department of Environmental Quality.

If we may be of further assistance to you, please feel free to contact this office.

Sincerely,



Dan Olson  
Administrator  
Air Quality Division



John V. Corra  
Director  
Dept. of Environmental Quality

cc: Tony Hoyt

DO/cs

**EMISSIONS SUMMARY**

<b>Blue Rim State 2</b>				
24.1 BPD <sup>1</sup> total condensate 2.490 MMCFD <sup>1</sup>				
SOURCE	EMISSIONS (TPY) <sup>2</sup>			
	VOC	HAP	NO <sub>x</sub>	CO
two 400-bbl condensate tanks LP separator flash, tank flash and S/W/B vapors				
98% control w/ smokeless combustor	1.1	insig	0.3	0.1
one 5.0 MMCFD dehydration unit w/ Kimray Model 4015PV pump at maximum rate of 0.67 gpm reboiler still vent emissions				
95+ control w/ Williams <sup>®</sup> B-TEX condenser/combustor control system	0.5	0.2	0.1	insig
0.75 MMBtu/hr separator burner 0.25 MMBtu/hr reboiler burner				
pneumatic equipment	1.5	insig		
74-Hp Caterpillar G3306NA vapor recovery unit compressor engine w/ NSCR and AFR controller				
	0.4	insig	0.7	0.7
<b>Total Facility Emissions</b>				
	<b>3.5</b>	<b>0.2</b>	<b>1.5</b>	<b>0.9</b>

*DEHY*

*PNEUMATICS  
+  
BURNERS*

*No*

<sup>1</sup> May 2005 average daily production, WOGCC  
<sup>2</sup> Rounded to the nearest 0.1 ton