

100 bbl Produced Water Tanks 1 and 2

* Project Setup Information

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Project File : Untitled.Ept
Model : Stable Oil Tank
Calculation Method : AP42
Control Efficiency : 100.0%

Filed Name : Marcellus Shale - Laurel Mountain Midstream
Well Name : Springhill Compressor Station
Well ID : 100 BBL Produced Water Tanks
Date : 2009.10.23

* Data Input

*

Separator Pressure : 23.00[psig]
Separator Temperature : 85.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 70.00[F]
C10+ SG : 0.8990
C10+ MW : 166.00

-- Stable Oil

No.	Component	mol %
1	H2S	0.0298
2	O2	0.0000
3	CO2	0.0813
4	N2	0.0006
5	C1	0.1429
6	C2	0.3200
7	C3	1.6601
8	i-C4	1.0163
9	n-C4	4.3102
10	i-C5	3.0783
11	n-C5	5.0568
12	C6	4.2584
13	C7	10.6399
14	C8	11.1525
15	C9	5.6739
16	C10+	47.3307
17	Benzene	0.5815
18	Toluene	0.2191
19	E-Benzene	0.0732
20	Xylenes	0.6999
21	n-C6	3.6746
22	224Trimethylp	0.0000

-- Sales Oil

Production Rate : 4.1[bbl/day]

100 bbl Produced Water Tanks 1 and 2
Days of Annual Operation : 365 [days/year]
API Gravity : 46.0
Reid Vapor Pressure : 7.70[psia]
Bulk Temperature : 60.00[F]

-- Tank and Shell Data

Diameter : 8.50[ft]
Shell Height : 10.00[ft]
Cone Roof Slope : 0.06
Average Liquid Height : 5.00[ft]
Vent Pressure Range : 0.06[psi]
Solar Absorbance : 0.89

-- Meteorological Data

----- Page 1----- E&P TANK

City : Pittsburgh, PA
Ambient Pressure : 14.70[psia]
Ambient Temperature : 70.00[F]
Min Ambient Temperature : 40.70[F]
Max Ambient Temperature : 59.90[F]
Total Solar Insolation : 1067.00[Btu/ft^2*day]

* Calculation Results
*

-- Emission Summary

Item Uncontrolled Uncontrolled
[ton/yr] [lb/hr]
Total HAPs 0.020 0.005
Total HC 0.509 0.116
VOCs, C2+ 0.509 0.116
VOCs, C3+ 0.499 0.114

Uncontrolled Recovery Info.

Vapor 18.2300 x1E-3 [MSCFD]
HC Vapor 18.1000 x1E-3 [MSCFD]
GOR 4.44 [SCF/bbl]

-- Emission Composition

No Component Uncontrolled Uncontrolled
[ton/yr] [lb/hr]
1 H2S 0.002 0.000
2 O2 0.000 0.000
3 CO2 0.001 0.000
4 N2 0.000 0.000
5 C1 0.000 0.000
6 C2 0.010 0.002
7 C3 0.109 0.025
8 i-C4 0.050 0.011
9 n-C4 0.154 0.035

100 bbl Produced Water Tanks 1 and 2

10	i-C5	0.057	0.013
11	n-C5	0.067	0.015
12	C6	0.020	0.005
13	C7	0.018	0.004
14	C8	0.007	0.002
15	C9	0.001	0.000
16	C10+	0.000	0.000
17	Benzene	0.001	0.000
18	Toluene	0.000	0.000
19	E-Benzene	0.000	0.000
20	Xylenes	0.000	0.000
21	n-C6	0.013	0.003
22	224Trimethylp	0.000	0.000
	Total	0.510	0.116

-- Stream Data

No.	Component	MW	Stable Oil mol %	Sales Oil mol %	Total Emissions mol %
1	H2S	34.80	0.0508	0.0098	0.5465
2	O2	32.00	0.0000	0.0000	0.0000
3	CO2	44.01	0.2437	0.0009	0.1640
4	N2	28.01	0.0102	0.0000	0.0001
5	C1	16.04	0.9543	0.0000	0.0001
6	C2	30.07	0.6701	0.0373	3.8757
7	C3	44.10	2.1827	0.9117	28.0946
8	i-C4	58.12	1.1269	0.8183	9.8255
9	n-C4	58.12	4.6091	3.7640	30.2584
10	i-C5	72.15	3.1066	2.9813	8.9486
11	n-C5	72.15	5.0558	4.9858	10.6419
12	C6	86.16	4.1726	4.3324	2.6583
13	C7	100.20	10.3655	10.9186	2.1550
Page 2-----					E&P TANK
14	C8	114.23	10.8426	11.4772	0.6934
15	C9	128.28	5.5127	5.8440	0.1181
16	C10+	166.00	45.9695	48.7693	0.0202
17	Benzene	78.11	0.5685	0.5949	0.2030
18	Toluene	92.13	0.2132	0.2253	0.0205
19	E-Benzene	106.17	0.0711	0.0754	0.0022
20	Xylenes	106.17	0.6802	0.7208	0.0180
21	n-C6	86.18	3.5939	3.7498	1.7559
22	224Trimethylp	114.24	0.0000	0.0000	0.0000
	MW		126.33	128.04	58.23
	Stream Mole Ratio		1.0000	0.9947	0.0053
	Heating Value [BTU/SCF]				3248.76
	Gas Gravity [Gas/Air]				2.01
	Bubble Pt. @ 100F [psia]		18.82	8.15	
	RVP @ 100F [psia]		75.59	49.29	
	SG @ 100F		0.804	0.807	

100 bbl Separator Produced Water Tank

* Project Setup Information *

Project File : Untitled.Ept
Model : Stable Oil Tank
Calculation Method : AP42
Control Efficiency : 100.0%

Filed Name : Marcellus Shale Field
Well Name : Springhill Compressor Station
Well ID : 100 bbl Separator Produced Water Tank Red-Brown
Date : 2009.10.23

* Data Input *

Separator Pressure : 23.00[psig]
Separator Temperature : 85.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 70.00[F]
C10+ SG : 0.8990
C10+ MW : 166.00

-- Stable Oil

No.	Component	mol %
1	H2S	0.0298
2	O2	0.0000
3	CO2	0.0813
4	N2	0.0006
5	C1	0.1429
6	C2	0.3200
7	C3	1.6601
8	i-C4	1.0163
9	n-C4	4.3102
10	i-C5	3.0783
11	n-C5	5.0568
12	C6	4.2584
13	C7	10.6399
14	C8	11.1525
15	C9	5.6739
16	C10+	47.3307
17	Benzene	0.5815
18	Toluene	0.2191
19	E-Benzene	0.0732
20	Xylenes	0.6999
21	n-C6	3.6746
22	224Trimethylp	0.0000

-- Sales Oil

Production Rate : 4 [bbl/day]

100 bbl Separator Produced Water Tank

Days of Annual Operation : 365 [days/year]
 API Gravity : 46.0
 Reid Vapor Pressure : 7.70[psia]
 Bulk Temperature : 60.00[F]

-- Tank and Shell Data

Diameter : 8.50[ft]
 Shell Height : 10.00[ft]
 Cone Roof Slope : 0.06
 Average Liquid Height : 5.00[ft]
 Vent Pressure Range : 0.06[psi]
 Solar Absorbance : 0.89

-- Meteorological Data

----- E&P TANK

Page 1-----

City : Pittsburgh, PA
 Ambient Pressure : 14.70[psia]
 Ambient Temperature : 70.00[F]
 Min Ambient Temperature : 40.70[F]
 Max Ambient Temperature : 59.90[F]
 Total Solar Insolation : 1067.00[Btu/ft^2*day]

 * Calculation Results
 *

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
Total HAPs	0.020	0.005	0.001	0.000
Total HC	0.508	0.116	0.023	0.005
VOCs, C2+	0.508	0.116	0.023	0.005
VOCs, C3+	0.498	0.114	0.022	0.005

Uncontrolled Recovery Info.

Vapor	18.2100 x1E-3	[MSCFD]
HC Vapor	18.0800 x1E-3	[MSCFD]
GOR	4.44	[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.002	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.001	0.000	0.000	0.000
4	N2	0.000	0.000	0.000	0.000
5	C1	0.000	0.000	0.000	0.000
6	C2	0.010	0.002	0.000	0.000
7	C3	0.109	0.025	0.000	0.000
8	i-C4	0.050	0.011	0.000	0.000
9	n-C4	0.154	0.035	0.000	0.000

100 bbl Separator Produced Water Tank				
10	i-C5	0.057	0.013	0.000
11	n-C5	0.067	0.015	0.000
12	C6	0.020	0.005	0.000
13	C7	0.018	0.004	0.000
14	C8	0.007	0.002	0.000
15	C9	0.001	0.000	0.000
16	C10+	0.000	0.000	0.000
17	Benzene	0.001	0.000	0.000
18	Toluene	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000
20	Xylenes	0.000	0.000	0.000
21	n-C6	0.013	0.003	0.000
22	224Trimethylp	0.000	0.000	0.000
	Total	0.510	0.116	0.000

-- Stream Data

No.	Component	MW	Stable Oil mol %	Sales Oil mol %	Total Emissions mol %
1	H2S	34.80	0.0508	0.0098	0.5458
2	O2	32.00	0.0000	0.0000	0.0000
3	CO2	44.01	0.2437	0.0009	0.1616
4	N2	28.01	0.0102	0.0000	0.0001
5	C1	16.04	0.9543	0.0000	0.0001
6	C2	30.07	0.6701	0.0372	3.8635
7	C3	44.10	2.1827	0.9108	28.0832
8	i-C4	58.12	1.1269	0.8180	9.8275
9	n-C4	58.12	4.6091	3.7631	30.2685
10	i-C5	72.15	3.1066	2.9811	8.9531
11	n-C5	72.15	5.0558	4.9856	10.6475
12	C6	86.16	4.1726	4.3325	2.6598
13	C7	100.20	10.3655	10.9190	2.1562
Page 2-----					E&P TANK
14	C8	114.23	10.8426	11.4776	0.6938
15	C9	128.28	5.5127	5.8442	0.1181
16	C10+	166.00	45.9695	48.7712	0.0202
17	Benzene	78.11	0.5685	0.5950	0.2031
18	Toluene	92.13	0.2132	0.2253	0.0205
19	E-Benzene	106.17	0.0711	0.0754	0.0022
20	Xylenes	106.17	0.6802	0.7208	0.0180
21	n-C6	86.18	3.5939	3.7498	1.7569
22	224Trimethylp	114.24	0.0000	0.0000	0.0000
	MW		126.33	128.04	58.24
	Stream Mole Ratio		1.0000	0.9947	0.0053
	Heating Value [BTU/SCF]				3249.27
	Gas Gravity [Gas/Air]				2.01
	Bubble Pt. @ 100F [psia]		18.82	8.15	
	RVP @ 100F [psia]		75.59	49.27	
	SG @ 100F		0.804	0.807	

50 bbl Reboiler Produced Water

* Project Setup Information

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Project File : Untitled.Ept
Model : Stable Oil Tank
Calculation Method : AP42
Control Efficiency : 100.0%

Filed Name : Marcellus Shale Field
Well Name : Springhill Compressor Station
Well ID : 50 BBL Reboiler Produced Water Tank
Date : 2009.10.23

* Data Input

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Separator Pressure : 23.00[psig]
Separator Temperature : 85.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 70.00[F]
C10+ SG : 0.8990
C10+ MW : 166.00

-- Stable Oil

No.	Component	mol %
1	H2S	0.0298
2	O2	0.0000
3	CO2	0.0813
4	N2	0.0006
5	C1	0.1429
6	C2	0.3200
7	C3	1.6601
8	i-C4	1.0163
9	n-C4	4.3102
10	i-C5	3.0783
11	n-C5	5.0568
12	C6	4.2584
13	C7	10.6399
14	C8	11.1525
15	C9	5.6739
16	C10+	47.3307
17	Benzene	0.5815
18	Toluene	0.2191
19	E-Benzene	0.0732
20	Xylenes	0.6999
21	n-C6	3.6746
22	224Trimethylp	0.0000

-- Sales Oil

Production Rate : 1.4[bbl/day]

50 bbl Reboiler Produced Water
 Days of Annual Operation : 365 [days/year]
 API Gravity : 46.0
 Reid Vapor Pressure : 7.70[psia]
 Bulk Temperature : 60.00[F]

-- Tank and Shell Data

 Diameter : 8.50[ft]
 Shell Height : 5.00[ft]
 Cone Roof Slope : 0.06
 Average Liquid Height : 5.00[ft]
 Vent Pressure Range : 0.06[psi]
 Solar Absorbance : 0.89

-- Meteorological Data

----- E&P TANK
 Page 1-----

City : Pittsburgh, PA
 Ambient Pressure : 14.70[psia]
 Ambient Temperature : 70.00[F]
 Min Ambient Temperature : 40.70[F]
 Max Ambient Temperature : 59.90[F]
 Total Solar Insolation : 1067.00[Btu/ft^2*day]

 * Calculation Results
 *

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
Total HAPs	0.000	0.000	0.001	0.000
Total HC	0.120	0.027	0.023	0.005
VOCs, C2+	0.120	0.027	0.023	0.005
VOCs, C3+	0.113	0.026	0.022	0.005

Uncontrolled Recovery Info.

Vapor	4.6900 x1E-3	[MSCFD]
HC Vapor	4.5500 x1E-3	[MSCFD]
GOR	3.42	[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.001	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.002	0.000	0.000	0.000
4	N2	0.000	0.000	0.000	0.000
5	C1	0.000	0.000	0.000	0.000
6	C2	0.007	0.002	0.000	0.000
7	C3	0.031	0.007	0.000	0.000
8	i-C4	0.011	0.003	0.000	0.000
9	n-C4	0.034	0.008	0.000	0.000

50 bbl Reboiler Produced Water				
10	i-C5	0.012	0.003	0.000
11	n-C5	0.014	0.003	0.000
12	C6	0.004	0.001	0.000
13	C7	0.004	0.001	0.000
14	C8	0.001	0.000	0.000
15	C9	0.000	0.000	0.000
16	C10+	0.000	0.000	0.000
17	Benzene	0.000	0.000	0.000
18	Toluene	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000
20	Xylenes	0.000	0.000	0.000
21	n-C6	0.003	0.001	0.000
22	224Trimethylp	0.000	0.000	0.000
	Total	0.124	0.028	0.000

-- Stream Data

No.	Component	MW	Stable Oil mol %	Sales Oil mol %	Total Emissions mol %
1	H2S	34.80	0.0508	0.0181	0.8098
2	O2	32.00	0.0000	0.0000	0.0000
3	CO2	44.01	0.2437	0.0139	2.0996
4	N2	28.01	0.0102	0.0000	0.0002
5	C1	16.04	0.9543	0.0000	0.0002
6	C2	30.07	0.6701	0.1224	10.4693
7	C3	44.10	2.1827	1.2739	31.0081
8	i-C4	58.12	1.1269	0.9258	8.6910
9	n-C4	58.12	4.6091	4.0703	25.5367
10	i-C5	72.15	3.1066	3.0428	7.1113
11	n-C5	72.15	5.0558	5.0380	8.3713
12	C6	86.16	4.1726	4.3015	2.0575
13	C7	100.20	10.3655	10.7883	1.6600
Page 2-----					E&P TANK
14	C8	114.23	10.8426	11.3222	0.5334
15	C9	128.28	5.5127	5.7624	0.0908
16	C10+	166.00	45.9695	48.0772	0.0157
17	Benzene	78.11	0.5685	0.5888	0.1570
18	Toluene	92.13	0.2132	0.2224	0.0158
19	E-Benzene	106.17	0.0711	0.0743	0.0017
20	Xylenes	106.17	0.6802	0.7108	0.0139
21	n-C6	86.18	3.5939	3.7167	1.3568
22	224Trimethylp	114.24	0.0000	0.0000	0.0000
	MW		126.33	127.20	54.48
	Stream Mole Ratio		1.0000	0.9959	0.0041
	Heating Value [BTU/SCF]				2999.22
	Gas Gravity [Gas/Air]				1.88
	Bubble Pt. @ 100F [psia]		18.82	10.06	
	RVP @ 100F [psia]		75.59	57.58	
	SG @ 100F		0.804	0.806	

LAUREL MOUNTAIN MIDSTREAM, LLC
Springhill Compressor Station
General Permit BAQ-GPA/GP-5 Application
Truck Loading Emission Calculations

- Notes:
- 1 - Assumed submerged loading.
 - 2 - Emission factors and formulas are from EPA Section 5.2 Transportation and Marketing of
$$L_L = 12.46 \times S \times P \times M / T$$
where: L_L = loading loss, pounds per 1000 gallons (lb/1000 gal) of liquid loaded
 S = a saturation factor. Use 0.5 for submerge loading into clean tank
 P = true vapor pressure of liquid loaded, psia
 M = molecular weight of vapors, lb/lb-mol
 T = temperature of bulk liquid loaded, °R (°F + 460)
 - 3 - Temperature, vapor pressure and molecular weights are E&P Tank 2.0 defaults
 - 4.- Assume conservative condensate throughput of 5000 barrels per year

S	P (psia)	M (lb/lb-mol)	T (R)	L_L (lb/1000 gal)	Maximum Hourly Throughput (gallons/hr)	Annual Throughput (gallons/yr)	VOC Emission Rate (lb/hr)	VOC Emission Rate (tpy)
0.5	4.9	166	520	9.75	23.97	210000	0.23	1.02

Record Fee Payments - Role: FC

Fee Payment Screen

Payment Information		Reference	Date	Date on	Deposit	Paid By	Address	
Type	Amount Paid	Number	Paid	Check	Method	Client	Payer	List
CHECK	\$375.00	9420000662	11/03/2009	10/06/2009	DEP	Y	274129	LAUREL M

Retrieval Criteria							
Account Id	Invoice Id	Client Id	Client AKA	Client Name	Program	Auth Id	Entity Type Entity Id
668065							

Get Client Retrieve Next Query

Transaction Payments										
Account Id	Feetrans Id	Auth Id	Entity Type	Entity Id	Trans Reason	Billing Year	Date Due	Balance	Amount Applied	Rev Trans Code Details
668065	1887420	812704			GP		11/03/2009	\$0.00	\$375.00	1384

Allocate Fees

Total Applied \$375.00 Total Amount of Payments \$375.00

LAUREL MOUNTAIN MIDSTREAM, LLC
 PO Box 21218
 Tulsa, OK 74121-1218
 Customer Support 1-866-778-2665

CHECK NUMBER	PAY DATE	SUPPLIER NO.	SUPPLIER NAME	TOTAL AMOUNT
9420000662	10/06/2009	407947	COMMONWEALTH OF PENNSYLVANIA	*****375.00

INVOICE NUMBER	INV. DATE	INVOICE DESCRIPTION	NET AMOUNT
05-OCT-2009A	20091005	FOR SPRING HILL	375.00

THIS MULTI-TONE AREA OF THE DOCUMENT CHANGES COLOR GRADUALLY AND EVENLY FROM DARK TO LIGHT WITH DARKER AREAS BOTH TOP AND BOTTOM. IT ALSO HAS A REFLECTIVE WATERMARK ON THE BACK.

LAUREL MOUNTAIN MIDSTREAM, LLC
 PO Box 21218
 Tulsa, OK 74121-1218
 Customer Support 1-866-778-2665

JPMorgan Chase Bank, N.A.
 Chicago, IL 60606

70-2322-7719
 A/C 826076770
9420000662
 DATE: 10/06/2009

PAY TO THE ORDER OF:

COMMONWEALTH OF PENNSYLVANIA
 400 WATER FRONT DRIVE
 PITTSBURGH, PA 15222-4745
 UNITED STATES

PAY → \$***375.00**
 USD

Rodney J. Siah
 Authorized Signer

SUPPLIER NUMBER
 407947

⑈9420000662⑈ ⑆071923226⑆

826076770⑈