

PRICE ENERGY CONSULTING, LLC
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December 1, 2024

Air Permits Initial Review Team (APIRT)
Texas Commission on Environmental Quality
MC 161
P. O. Box 13087
Austin, TX 78711-3087

Re: Cambrian Management, LTD – CN604754283
Vina Bagley Battery PBR

Dear Madam/Sir:

Enclosed, please find the completed forms and supporting documentation to modify the above referenced registration under 106.352(l) and 106.492, Permit by Rule.

If you have any questions or require additional information, please contact me at the above address or telephone.

Sincerely,

Robert A. Price

Enclosures

Cc: TCEQ, Region
9900 W IH-20, Ste 100
Midland, TX 79706

Socorro Hendry, Octane Energy – Odessa, TX

Cambrian Management, LTD
Vina Bagley Battery

PROCESS DESCRIPTION:

This Permit by Rule application is being submitted to authorize emissions from Vina Bagley Battery.

The facility gathers crude oil from producing wells. The produced fluids are initially split into gas, oil and water streams through the inlet separation process.

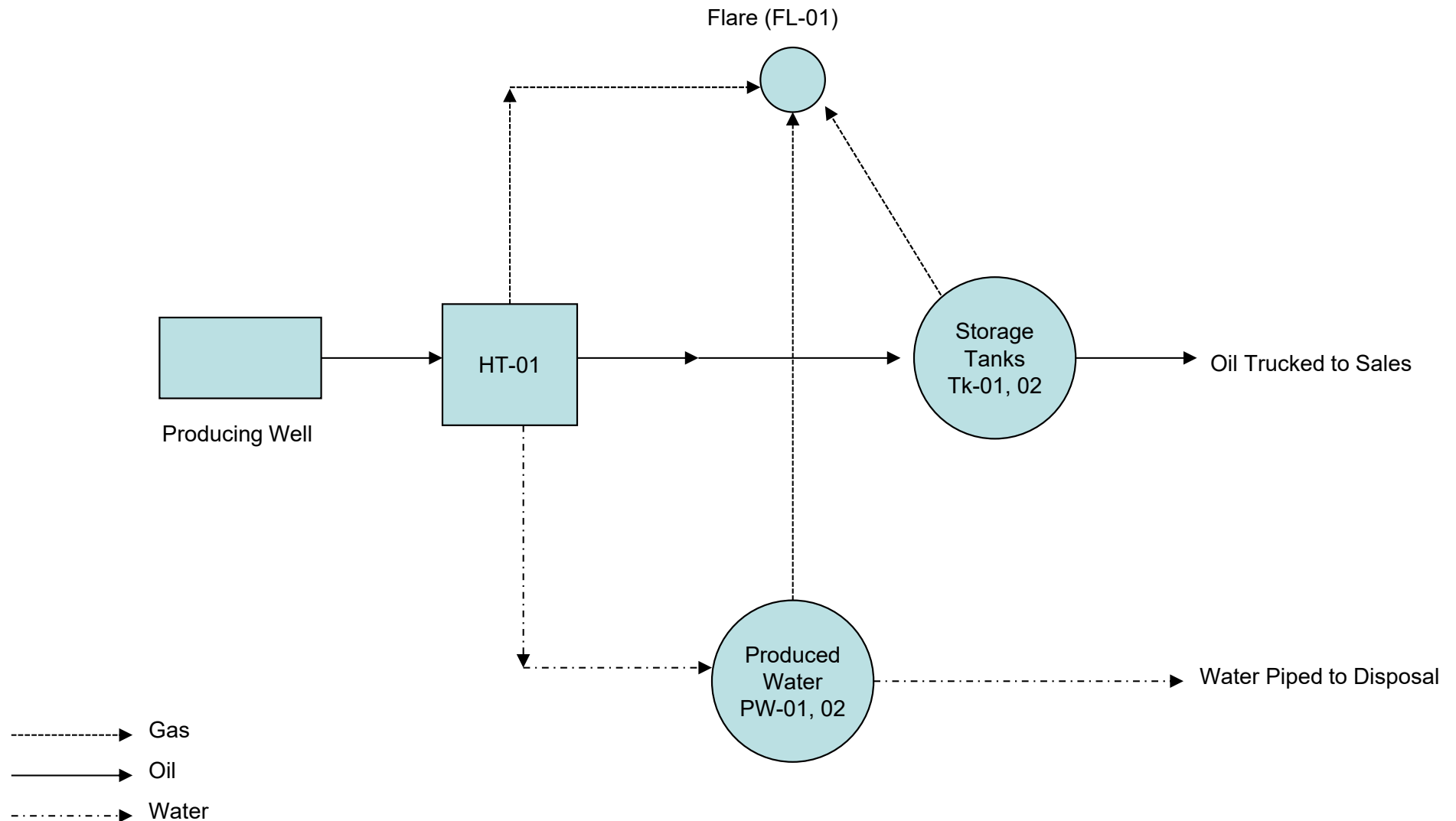
From the separators, crude oil is routed to two (2) 500 bbl storage tanks (TK-01 – 02). Crude oil is trucked from the facility to downstream markets.

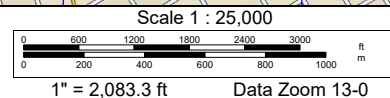
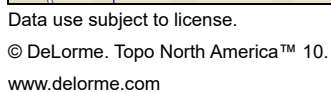
Water from the separator is routed to two (2) 500 bbl produced water tank (PW-01 - 02). Produced water is piped from the facility to disposal.

The facility does not produce a commercial amount of gas. Any gas flashed from the inlet separator is routed to a flare for destruction. The flare is equipped with an electronic ignition system.

MSS Emissions for the facility are included with this application.

Vina Bagley Battery Process Flow Diagram





Cambrian Management, LTD
Vina Bagley Battery

Emission Rate Summary			VOC Emissions		H2S Emissions		SO2 Emissions		NOx Emissions		CO Emissions	
EPN	Description	Production (bbls/day)	Emissions (lbs/hr)	Emissions (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)
PBR CERTIFIED EMISSIONS												
Tk-01	Oil Storage Tank	50	0.232	1.015	0.0000	0.0000						
Tk-02	Oil Storage Tank	50	0.232	1.015	0.0000	0.0000						
FL-01	Flare		0.506	2.218	0.000	0.000	0.0000	0.00	0.18	0.77	0.35	1.55
PW-01	Produced Water Tank	500	0.023	0.101	0.0000	0.0000						
PW-02	Produced Water Tank	500	0.023	0.101	0.0000	0.0000						
Fug-01	Fugitive Emissions		1.385	6.064	0.0000	0.0000						
HT-01	Heater Treater		0.011	0.047			0.0000	0.0000	0.1951	0.8544	0.1638	0.7177
TL-01	Truck Loading	100	36.641	3.163	0.0000	0.0000						
MSS-01	MSS Emissions		9.638	0.351								
Totals			48.69	14.08	0.0000	0.0000	0.000	0.000	0.37	1.63	0.52	2.26

		PM10 Emissions		PM2.5 Emissions	
EPN	Description	Emissions (lbs/hr)	Emissions (tons/yr)	Emissions (lbs/hr)	Emissions (tons/yr)
HT-01	Heater Treater	0.015	0.065	0.0111	0.0487
Totals		0.01	0.06	0.01	0.05

MISCELLANEOUS EMISSIONS

CRUDE OIL STORAGE TANK EMISSIONS

	VOC Emissions							H2S Emissions	
	Throughput bbls/day	W&B Flashing Loss					Flare Control Efficiency	Total Emissions (tpy)	lbs/hr tons/yr
Tk-01	50	20.298					0.95	1.01	0.00000 0.0000
Tk-02	50	20.298					0.95	1.01	0.00000 0.0000

PRODUCED WATER STORAGE TANK EMISSIONS

			VOC Emissions*			H2S Emissions	
			lbs/hr	tons/yr		lbs/hr	tons/yr
	Throughput bbls/day	Uncontrolled Emissions* tpy			H2S Wt%		
PW-01	500	202.983	0.023	0.101	0.00	0.00000	0.0000
PW-02	500	202.983	0.023	0.101	0.00	0.00000	0.0000

* From E&P Tanks Results multiplied by 0.01 per TCEQ Guidance. Then multiplied by control efficiency of the Flare.

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*****
*      Project Setup Information      *
*****
Project File       : C:\Users\Andy\Documents\Virtual Machine Tanks Data\Octane - Vina Bagley.ept3
Flowsheet Selection : Oil Tank with Separator
Calculation Method  : RVP Distillation
Control Efficiency  : 0.00%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No
Component Group     : C10+

Filed Name         : Vina Bagley Battery
Well Name          : Crude Oil Tank Emissions
Permit Number      : Gandu Sat 37 Representative Analytical
Date               : 12/9/2024

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*****
*      Data Input      *
*****

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Separator Pressure (psia)      : 41.00
Separator Temperature (F)      : 38.4
C10+ SG                       : 0.83
C10+ MW(lb/lbmol)             : 184.61

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-- Low Pressure Oil -----

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No.	Component	Mole%	Wt%
1	H2S	0.0000	0.0000
2	O2	0.0000	0.0000
3	CO2	0.0340	0.0120
4	N2	0.0400	0.0090
5	C1	1.1280	0.1452
6	C2	1.3750	0.3317
7	C3	2.9980	1.0607
8	i-C4	0.7340	0.3422
9	n-C4	3.4940	1.6291
10	i-C5	1.7430	1.0089
11	n-C5	3.4590	2.0021
12	C6	9.1410	6.3184
13	C7	9.2860	7.4646
14	C8	7.3960	6.7777
15	C9	6.6230	6.8159
16	C10+	37.3300	55.2876
17	Benzene	0.8720	0.5464
18	Toluene	1.2080	0.8928
19	E-Benzene	0.5250	0.4472
20	Xylenes	1.0620	0.9046
21	n-C6	11.4760	7.9342
22	224Trimethylp	0.0760	0.0697

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-- Sales Oil -----
Production Rate (bbl/day)      : 50.00
Days of Annual Operation       : 365
API Gravity                    : 39.96
Reid Vapor Pressure (psia)     : 7.00
Ambient Pressure (psia)        : 14.70
Ambient Temperature (F)        : 70.0

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*****
*      Calculation Results      *
*****

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-- Emission Summary -----
Uncontrolled

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	ton
Total HAPs	1.7170
Total HC	32.1210
VOCs, C2+	28.4010
VOCs, C3+	20.2980
CO2	0.3070
CH4	3.7200

Uncontrolled Recovery Information:

Vapor (mscfd) :	1.8500
HC Vapor (mscfd) :	1.8200
CO2 (mscfd) :	0.0100
CH4 (mscfd) :	0.4800
GOR (SCF/STB) :	37.0000

-- Emission Composition -----

NoComponent	Uncontrolled ton
1 H2S	0.0000
2 O2	0.0000
3 CO2	0.3070
4 N2	0.2300
5 C1	3.7200
6 C2	8.1030
7 C3	9.6570
8 i-C4	1.1920
9 n-C4	3.8370
10 i-C5	0.9080
11 n-C5	1.3360
12 C6	1.2410
13 Benzene	0.0900
14 Toluene	0.0400
15 E-Benzene	0.0070
16 Xylenes	0.0110
17 n-C6	1.5640
18 224Trimethylp	0.0050
19 Pseudo Comp1	0.3790
20 Pseudo Comp2	0.0270
21 Pseudo Comp3	0.0030
22 Pseudo Comp4	0.0000
23 Pseudo Comp5	0.0000
24 Total	32.6570

-- Stream Data -----

NoComponent	MW lb/lbmol	LP Oil mole %	Flash Oil mole %	Sales Oil mole %	Flash Gas mole %	W&S Gas mole %	Total Emission mole %
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	0.0340	0.0120	0.0000	0.8916	0.6351	0.7832
4 N2	28.01	0.0400	0.0021	0.0000	1.5176	0.1091	0.9224
5 C1	16.04	1.1280	0.2006	0.0000	37.2377	10.6714	26.0104
6 C2	30.07	1.3750	0.8055	0.0675	23.5513	39.3251	30.2177
7 C3	44.10	2.9980	2.5621	2.0206	19.9711	30.8247	24.5580
8 i-C4	58.12	0.7340	0.6975	0.6630	2.1570	2.4933	2.2991
9 n-C4	58.12	3.4940	3.4019	3.3168	7.0814	7.8448	7.4040
10 i-C5	72.15	1.7430	1.7525	1.7580	1.3721	1.4662	1.4119
11 n-C5	72.15	3.4590	3.4959	3.5217	2.0211	2.1534	2.0770
12 C6	84.00	9.1410	9.3344	9.4803	1.6099	1.7200	1.6564
13 Benzene	78.11	0.8720	0.8912	0.9057	0.1261	0.1331	0.1291
14 Toluene	92.14	1.2080	1.2378	1.2605	0.0479	0.0511	0.0492
15 E-Benzene	106.17	0.5250	0.5383	0.5485	0.0068	0.0073	0.0070
16 Xylenes	106.17	1.0620	1.0890	1.1096	0.0116	0.0126	0.0120
17 n-C6	86.18	11.4760	11.7199	11.9040	1.9805	2.1099	2.0352
18 224Trimethylp	114.23	0.0760	0.0778	0.0792	0.0046	0.0049	0.0047
19 Pseudo Comp1	106.60	23.3050	23.8936	24.3434	0.3879	0.4133	0.3986
20 Pseudo Comp2	139.71	14.4475	14.8180	15.1014	0.0216	0.0226	0.0220
21 Pseudo Comp3	167.15	8.8560	9.0834	9.2574	0.0020	0.0020	0.0020

22 Pseudo Comp4	209.02	8.7561	8.9810	9.1531	0.0001	0.0001	0.0001
23 Pseudo Comp5	299.25	5.2703	5.4057	5.5092	0.0000	0.0000	0.0000
		LP Oil	Flash Oil	Sales Oil	Flash Gas	W&S Gas	Total Emission
MW (lb/lbmol):		123.19	125.48	127.12	34.17	39.98	36.62
Stream Mole Ratio:		1.0000	0.9750	0.9566	0.0250	0.0183	0.0434
Stream Weight Ratio:		123.19	122.34	121.60	0.86	0.73	1.59
Total Emission (ton):					17.593	15.066	32.659
Heating Value (BTU/scf):					1923.75	2265.63	2068.23
Gas Gravity (Gas/Air):					1.18	1.38	1.26
Bubble Pt. @100F (psia):		57.32	19.91	8.14			
RVP @100F (psia):		17.92	10.92	6.97			
Spec. Gravity @100F:		0.73	0.74	0.74			

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*****
*      Project Setup Information      *
*****
Project File       : C:\Users\Andy\Documents\Virtual Machine Tanks Data\Octane - Vina Bagley.ept3
Flowsheet Selection : Oil Tank with Separator
Calculation Method  : RVP Distillation
Control Efficiency  : 0.00%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No
Component Group     : C10+

Filed Name         : Vina Bagley Battery
Well Name          : Produced Water Tank Emissions
Permit Number      : Gandu Sat 37 Representative Analytical
Date               : 12/9/2024

```

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*****
*      Data Input      *
*****

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```

Separator Pressure (psia)      : 41.00
Separator Temperature (F)      : 38.4
C10+ SG                       : 0.83
C10+ MW(lb/lbmol)             : 184.61

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-- Low Pressure Oil -----

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No.	Component	Mole%	Wt%
1	H2S	0.0000	0.0000
2	O2	0.0000	0.0000
3	CO2	0.0340	0.0120
4	N2	0.0400	0.0090
5	C1	1.1280	0.1452
6	C2	1.3750	0.3317
7	C3	2.9980	1.0607
8	i-C4	0.7340	0.3422
9	n-C4	3.4940	1.6291
10	i-C5	1.7430	1.0089
11	n-C5	3.4590	2.0021
12	C6	9.1410	6.3184
13	C7	9.2860	7.4646
14	C8	7.3960	6.7777
15	C9	6.6230	6.8159
16	C10+	37.3300	55.2876
17	Benzene	0.8720	0.5464
18	Toluene	1.2080	0.8928
19	E-Benzene	0.5250	0.4472
20	Xylenes	1.0620	0.9046
21	n-C6	11.4760	7.9342
22	224Trimethylp	0.0760	0.0697

```

-- Sales Oil -----
Production Rate (bbl/day)      : 500.00
Days of Annual Operation       : 365
API Gravity                    : 39.96
Reid Vapor Pressure (psia)     : 7.00
Ambient Pressure (psia)        : 14.70
Ambient Temperature (F)        : 70.0

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*****
*      Calculation Results      *
*****

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-- Emission Summary -----
Uncontrolled

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	ton
Total HAPs	17.1720
Total HC	321.2120
VOCs, C2+	284.0090
VOCs, C3+	202.9830
CO2	3.0740
CH4	37.2030

Uncontrolled Recovery Information:

Vapor (mscfd) :	18.5200
HC Vapor (mscfd) :	18.2000
CO2 (mscfd) :	0.1500
CH4 (mscfd) :	4.8200
GOR (SCF/STB) :	37.0400

-- Emission Composition -----

NoComponent	Uncontrolled ton
1 H2S	0.0000
2 O2	0.0000
3 CO2	3.0740
4 N2	2.3040
5 C1	37.2030
6 C2	81.0260
7 C3	96.5740
8 i-C4	11.9160
9 n-C4	38.3730
10 i-C5	9.0840
11 n-C5	13.3630
12 C6	12.4070
13 Benzene	0.8990
14 Toluene	0.4040
15 E-Benzene	0.0660
16 Xylenes	0.1140
17 n-C6	15.6400
18 224Trimethylp	0.0480
19 Pseudo Comp1	3.7890
20 Pseudo Comp2	0.2740
21 Pseudo Comp3	0.0290
22 Pseudo Comp4	0.0020
23 Pseudo Comp5	0.0000
24 Total	326.5890

-- Stream Data -----

NoComponent	MW lb/lbmol	LP Oil mole %	Flash Oil mole %	Sales Oil mole %	Flash Gas mole %	W&S Gas mole %	Total Emission mole %
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	0.0340	0.0120	0.0000	0.8916	0.6351	0.7832
4 N2	28.01	0.0400	0.0021	0.0000	1.5176	0.1091	0.9224
5 C1	16.04	1.1280	0.2006	0.0000	37.2377	10.6714	26.0104
6 C2	30.07	1.3750	0.8055	0.0675	23.5513	39.3251	30.2177
7 C3	44.10	2.9980	2.5621	2.0206	19.9711	30.8247	24.5580
8 i-C4	58.12	0.7340	0.6975	0.6630	2.1570	2.4933	2.2991
9 n-C4	58.12	3.4940	3.4019	3.3168	7.0814	7.8448	7.4040
10 i-C5	72.15	1.7430	1.7525	1.7580	1.3721	1.4662	1.4119
11 n-C5	72.15	3.4590	3.4959	3.5217	2.0211	2.1534	2.0770
12 C6	84.00	9.1410	9.3344	9.4803	1.6099	1.7200	1.6564
13 Benzene	78.11	0.8720	0.8912	0.9057	0.1261	0.1331	0.1291
14 Toluene	92.14	1.2080	1.2378	1.2605	0.0479	0.0511	0.0492
15 E-Benzene	106.17	0.5250	0.5383	0.5485	0.0068	0.0073	0.0070
16 Xylenes	106.17	1.0620	1.0890	1.1096	0.0116	0.0126	0.0120
17 n-C6	86.18	11.4760	11.7199	11.9040	1.9805	2.1099	2.0352
18 224Trimethylp	114.23	0.0760	0.0778	0.0792	0.0046	0.0049	0.0047
19 Pseudo Comp1	106.60	23.3050	23.8936	24.3434	0.3879	0.4133	0.3986
20 Pseudo Comp2	139.71	14.4475	14.8180	15.1014	0.0216	0.0226	0.0220
21 Pseudo Comp3	167.15	8.8560	9.0834	9.2574	0.0020	0.0020	0.0020

22 Pseudo Comp4	209.02	8.7561	8.9810	9.1531	0.0001	0.0001	0.0001
23 Pseudo Comp5	299.25	5.2703	5.4057	5.5092	0.0000	0.0000	0.0000
		LP Oil	Flash Oil	Sales Oil	Flash Gas	W&S Gas	Total Emission
MW (lb/lbmol):		123.19	125.48	127.12	34.17	39.98	36.62
Stream Mole Ratio:		1.0000	0.9750	0.9566	0.0250	0.0183	0.0434
Stream Weight Ratio:		123.19	122.34	121.60	0.86	0.73	1.59
Total Emission (ton):					175.933	150.656	326.590
Heating Value (BTU/scf):					1923.75	2265.63	2068.23
Gas Gravity (Gas/Air):					1.18	1.38	1.26
Bubble Pt. @100F (psia):		57.32	19.91	8.14			
RVP @100F (psia):		17.92	10.92	6.97			
Spec. Gravity @100F:		0.73	0.74	0.74			

FUGITIVE COMPONENT EMISSIONS

Component	Number	Service	Emissions Factor	VOC Content (Wt %)	VOC Emissions		H2S Emissions	
					lbs/hr	tons/yr	lbs/hr	tons/yr
Flanges	180	Gas	0.00086	40.2568826	0.062	0.27	0.000	0.00
Flanges	200	Light Liquid	0.00024	100	0.048	0.21	0.000	0.00
Flanges	60	Water/Oil	0.000006	100	0.000	0.00	0.000	0.00
Connector	200	Gas	0.000463	40.2568826	0.037	0.16	0.000	0.00
Connector	180	Light Liquid	0.000463	100	0.083	0.37	0.000	0.00
Connector	60	Water/Oil	0.000243	100	0.015	0.06	0.000	0.00
Pump Seals	4	Light Liquid	0.02866	100	0.115	0.50	0.000	0.00
Pump Seals	6	Water/Oil	0.000052	100	0.000	0.00	0.000	0.00
Valves	120	Gas	0.00992	40.2568826	0.479	2.10	0.000	0.00
Valves	80	Light Liquid	0.00551	100	0.441	1.93	0.000	0.00
Valves	40	Water/Oil	0.000216	100	0.009	0.04	0.000	0.00
Other	10	Gas	0.00992	40.2568826	0.040	0.17	0.000	0.00
Other	10	Light Liquid	0.00551	100	0.055	0.24	0.000	0.00
Totals					1.385	6.064	0.000	0.000

Cambrian Management, LTD
Vina Bagley Battery

Flare Emissions

Gas to be flared

Specific Gravity	1.0063		
Molecular Weight	28.96		
Btu Content	1538		
	Molecular Weight	Mole %	Weight %
H2S	34.8	0	0.000
O2	32	0	0.000
CO2	44.01	3.828	5.817
N2	28.01	4.812	4.654
Methane	16.04	48.908	27.089
Ethane	30.07	20.934	21.736
Propane	44.1	11.833	18.019
Iso-Butane	58.12	2.044	4.102
Normal Butane	58.12	3.742	7.510
Iso-Pentane	72.15	1.182	2.945
Normal Pentane	72.15	0.832	2.073
Hexanes	86.16	1.885	5.608
Benzene	78.11	0	0.000
Toluene	92.13	0	0.000
E-Benzene	106.17	0	0.000
Xylenes	106.17	0	0.000
n-Hexane	86.18	0	0.000
224-Trimethyl-pentane	114.24	0	0.000

Flare H2S Emissions

						VOC Emissions		H2S Emissions	
Emission Point	Gas Volume (mcf/d)	VOC Wt %	Total SO2* (lbs/yr)	Gas Density (lbs/ft ³)	Flare Duration (days)	lbs/hr	Tons	lbs/hr	Tons
FL-01	20	40.257	0	0.08	365	0.5064	2.2179	0.0000	0.0000

Flare SO2, NOx and CO EMISSIONS

						NOx Emissions		CO Emissions	
Gas Volume (mcf/day)	H2S Concentration (Mole %)	Sulfur (LT/Day)	SO2 Emissions (lbs/hr)	SO2 Flare Duration (days)	SO2 Emissions (tons)	lbs/hr	Tons	lbs/hr	Tons
20	0	0.00	0.000	365	0.00	0.18	0.77	0.35	1.55

Cambrian Management, LTD
Vina Bagley Battery
HT-01, 02

Run Time (hours/yr)	8760	
H2S Content of Fuel (ppm)	0	
Fuel Gas Heating Value (Btu/scf)	1538	
Design Heat Input (MMBtu/hr)	0.5	
Fuel Usage Rate (scf/hr)	325	Heat Input / Fuel Gas Heating Value
Estimated Annual Fuel Usage (MMscf/yr)	2.848	Fuel Usage * Run Time

NOx Emission Factor (lbs/MMscf) 100

NOx Emissions (lbs/hr)	0.033	Fuel Usage Rate * NOx Emission Factor / 1000000
NOx Emissions (Tons/yr)	0.142	NOx lbs/hr * Run Time / 2000

CO Emission Factor (lbs/MMscf) 84

CO Emissions (lbs/hr)	0.027	Fuel Usage Rate * CO Emission Factor / 1000000
CO Emissions (Tons/yr)	0.120	CO lbs/hr * Run Time / 2000

VOC Emission Factor (lbs/MMscf) 5.5

VOC Emissions (lbs/hr)	0.002	Fuel Usage Rate * VOC Emission Factor / 1000000
VOC Emissions (Tons/yr)	0.008	VOC lbs/hr * Run Time / 2000

SO2 Emission Factor (lbs/MMscf) 0.6

SO2 Emissions (lbs/hr)	0.000	Fuel Usage Rate * SO2 Emission Factor * (H2S Content/3.18) / 1000000
SO2 Emissions (Tons/yr)	0.000	SO2 lbs/hr * Run Time / 2000

PM10 Emission Factor (lbs/MMscf) 7.6

PM10 Emissions (lbs/hr)	0.002	Fuel Usage Rate * PM10 Emission Factor / 1000000
PM10 Emissions (Tons/yr)	0.011	PM10 lbs/hr * Run Time / 2000

PM2.5 Emission Factor (lbs/MMscf) 5.7

PM2.5 Emissions (lbs/hr)	0.002	Fuel Usage Rate * PM2.5 Emission Factor / 1000000
PM2.5 Emissions (Tons/yr)	0.008	PM2.5 lbs/hr * Run Time / 2000

References:

EPA. "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources," Section 1.4

AP-42, Office of Air Quality Planning and Standards, Research Triangle Park, NC. 5th edition (1/96). Supplements A & B (11/96).

Cambrian Management, LTD
Vina Bagley Battery

Truck Loading (TL-01)

L = 12.46 SPM/T AP-42, Fifth Edition, Equation 5.2-1, January 1995

L =	Loading Loss (lb/1000 gal liquid loaded)	Live Oil	RVP Constant A =	10.706
M =	Vapor Molecular Weight of liquid loaded		RVP Constant B =	4602.762
P =	True Vapor Pressure of liquid loaded	Skim Oil	RVP Constant A =	#NUM!
T =	Temperature of bulk liquid loaded (R°) F + 459.67		RVP Constant B =	#NUM!
S =	Saturation Factor (1.45 for splash loading, 0.6 for submerged from Table 5.2-1)			
RVP =	8.90 Live Oil			
	0.00 Skim Oil			

Hourly Emissions:

EPN	Loading Vessel	Liquid Loaded	Saturation Factor	Max Temp.	Mol. Weight	Vapor Pressure	Loading Loss	Control Efficiency	Max. (gal/hr) Loading Rate	Loading Emissions (lbs/hr)
TL-01	Tank Truck	Produced Water*	0.6	542.82	39.98	9.266	5.1018	0	0	0.00
TL-01	Tank Truck	Crude Oil	0.6	542.82	39.98	9.266	5.1018	0	7560	38.57

Annual Emissions:

EPN	Loading Vessel	Liquid Loaded	Saturation	Avg. Temp.	Mol. Weight	Vapor Pressure	Loading Loss	Control Efficiency	Max. (gal/yr) ** Loading Rate	Loading Emissions (tons/yr)
TL-01	Tank Truck	Produced Water*	0.6	531.41	39.98	7.723	4.3439	0	0	0.00
TL-01	Tank Truck	Crude Oil	0.6	531.41	39.98	7.723	4.3439	0	1533000	3.33

* Produced water emissions are 1% of that total per TCEQ Guidance

Total Loading Emissions:

Pollutant	Wt%	Lb/hr	Tons/yr
VOC	95.00	36.64	3.16
H2S	0.00	0.00	0.00

Cambrian Management, LTD
Vina Bagley Battery
Chemical Weight Percent Calculations

		Sales Gas*		Flash Gas**		W&B Gas**		Combined F, W&B	
Spc Grv.		1.0063							
Btu/scf		1538		1923.75		2265.63		2068.23	
MW		28.96		34.17		39.98		36.62	
		Mole %	Wt%	Mole%	Wt%	Mole%	Wt%	Mole%	Wt%
H2S	34.8	0	0.000	0	0.000	0	0.000	0	0.000
O2	32	0	0.000	0	0.000	0	0.000	0	0.000
CO2	44.01	3.828	5.817	0.8916	1.148	0.6351	0.699	0.7832	0.941
N2	28.01	4.812	4.654	1.5176	1.244	0.1091	0.076	0.9224	0.706
C1	16.04	48.908	27.089	37.2377	17.480	10.6714	4.281	26.0104	11.393
C2	30.07	20.934	21.736	23.5513	20.725	39.3251	29.577	30.2177	24.813
C3	44.1	11.833	18.019	19.9711	25.775	30.8247	34.001	24.558	29.574
i-C4	58.12	2.044	4.102	2.157	3.669	2.4933	3.625	2.2991	3.649
n-C4	58.12	3.742	7.510	7.0814	12.045	7.8448	11.404	7.404	11.751
i-C5	72.15	1.182	2.945	1.3721	2.897	1.4662	2.646	1.4119	2.782
n-C5	72.15	0.832	2.073	2.0211	4.268	2.1534	3.886	2.077	4.092
C6	86.16	1.885	5.608	1.6099	4.059	1.72	3.707	1.6564	3.897
Benzene	78.11	0	0.000	0.1261	0.288	0.1331	0.260	0.1291	0.275
Toluene	92.13	0	0.000	0.0479	0.129	0.0511	0.118	0.0492	0.124
E-Benzene	106.17	0	0.000	0.0068	0.021	0.0073	0.019	0.007	0.020
Xylenes	106.17	0	0.000	0.0116	0.036	0.0126	0.033	0.012	0.035
n-C6	86.18	0	0.000	1.9805	4.995	2.1099	4.548	2.0352	4.790
224-tmp	114.24	0	0.000	0.0046	0.015	0.0049	0.016	0.0047	0.015
VOC Wt%			40.257		58.198		64.264		61.004

* From Gas Analysis

** From E&P Tanks Stream Data Printout in Section 7

Cambrian Management, LTD
Vina Bagley Battery

Planned MSS Emissions

MSS-1 Heater Treater Cleaning

Treater Volume (ft ³)	561.46
Treater Pressure (psia)	16.7
Atm Pressure (psia)	14.7
Max Heater Temp (F)	100
Ideal Gas Constant (ft ³)(psi)/(lb-mol)(R)	10.73
Number of Treaters per Cleaning	1
Duration of Cleanings (hours)	8
Cleanings per year	12
Vapor Pressure of Oil (psia)	9.2655
Vapor MW of Flash Gas (lb/lb-mol)	34.170
VOC Concentration (wt%)	58.198
Benzene Concentration (wt%)	0.288
Benzene Concentration (mol%)	0.126
H2S Concentration (wt%)	0.000
H2S Concentration (mol%)	0.000

[illegible]

Cambrian Management, LTD
Vina Bagley Battery
Planned MSS Emissions
Vacuum Truck Loading (Heater Treater Cleaning and Tank Cleaning)

L = 12.46 SPM/T AP-42, Fifth Edition, Equation 5.2-1, January 1995

L = Loading Loss (lb/1000 gal liquid loaded)
M = Vapor Molecular Weight of liquid loaded
P = True Vapor Pressure of liquid loaded
T = Temperature of bulk liquid loaded (R°) F + 459.67
S = Saturation Factor (1.45 for splash loading, 0.6 for submerged from Table 5.2-1)

	Source	Frequency/yr
MSS-2	Heater Treater	12
MSS-3	Crude Oil Tank	4
MSS-4	Produced Water Tank	2

Hourly Emissions:

EPN	Loading Vessel	Liquid Loaded	Type of Loading	Saturation Factor	Max Temp.	Mol. Weight	Vapor Pressure	Loading Loss	Control Efficiency	Max. (gal/hr) Loading Rate	Loading Emissions (lbs/hr)
MSS-2	Tank Truck	Crude Oil	Submerged	0.6	542.82	39.98	9.2655	5.1018	0	126	0.64
MSS-3	Tank Truck	Crude Oil	Submerged	0.6	542.82	39.98	9.2655	5.1018	0	630	3.21
MSS-4	Tank Truck	Produced Water	Submerged	0.6	542.82	39.98	9.2655	5.1018	0	630	0.03

* Treater volume is estimated at 100 bbls for MSS-2. Tank Heel is assumed to be 3% of tank volume for MSS-3 and MSS-4. Tank cleaning 1/yr.

Annual Emissions:

EPN	Loading Vessel	Liquid Loaded	Type of Loading	Saturation Factor	Max Temp.	Mol. Weight	Vapor Pressure	Loading Loss	Control Efficiency	Max. (gal/yr) Loading Rate	Loading Emissions (tons/yr)
MSS-2	Tank Truck	Crude Oil	Submerged	0.6	531.41	39.98	7.7233	4.3439	0	1512	0.003
MSS-3	Tank Truck	Crude Oil	Submerged	0.6	531.41	39.98	7.7233	4.3439	0	2520	0.005
MSS-4	Tank Truck	Produced Water	Submerged	0.6	531.41	39.98	7.7233	4.3439	0	1260	0.000

* Produced water emissions are 1% of that total per TCEQ Guidance

		MSS2		MSS3		MSS4	
Weight %		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
64.26	VOC	0.413	0.002	2.066	0.004	0.021	0.000
0.00	H2S	0.000	0.000	0.000	0.000	0.000	0.000

Cambrian Management, LTD
Vina Bagley Battery

Planned MSS Emissions

MSS-5 Pigging Operations

Venting Pressure (psia)	50
Piping Length (ft)	2
Piping Diameter (ft)	0.33
Piping Volume (ft3)	0.17
Process Temperature (F)	95
Ideal Gas Constant (ft3)(psi)/(lbmol)	10.76
Activities per year	365
Duration of Activity (hours)	1
Molecular Weight of Gas	28.96
VOC Concentration (wt%)	40.257
Benzene Concentration (wt%)	0.000
H2S Concentration (mol%)	0.000

Emissions	Opening Vessel	
	lb/hr	tpy
Total HC	0.041	0.008
VOC	0.017	0.003
Benzene	0.000	0.000
H2S	0.000	0.000

Emissions vented to atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure.



Certificate of Analysis

Number: 5030-24090394-002A

Midland Laboratory
2200 East I-20
Midland, TX 79706
Phone 432-689-7252

Socorro Henry
Octane Management, LLC
310 W Wall Street
Suite 300
Midland, TX 79701

Station Name: VINA BAGLEY #12
Sample Point: WELLHEAD
Method: GPA-2261
Cylinder No: 1111-007193
Instrument: 5030_GC11, Front (TCD)
Analyzed: 09/18/2024 11:05:27 by MGN

Report Date: 09/18/2024
Sampled By: JOSUE J
Sample Of: Gas Spot
Sample Date: 08/22/2024 10:05
Sample Conditions: 95 °F
Received Date: 09/18/2024
Login Date: 09/18/2024

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	4.812	4.654		GPM TOTAL C2+	12.314
Methane	48.908	27.088		GPM TOTAL C3+	6.693
Carbon Dioxide	3.828	5.817		GPM TOTAL iC5+	1.563
Ethane	20.934	21.733	5.621		
Propane	11.833	18.015	3.273		
Iso-butane	2.044	4.102	0.672		
n-Butane	3.742	7.509	1.185		
Iso-pentane	1.182	2.944	0.434		
n-Pentane	0.832	2.073	0.303		
Hexanes Plus	1.885	6.065	0.826		
	100.000	100.000	12.314		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	1.0063	3.2176
Calculated Molecular Weight	28.96	93.19
Compressibility Factor	0.9934	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.696 psia & 60°F		
Real Gas Dry BTU	1538	5129
Water Sat. Gas Base BTU	1512	5040

Mostaq Ahammad

Data reviewed by: Mostaq Ahammad, Petroleum Chemist

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated. The test results apply to the sample as received.



Certificate of Analysis
Number: 5030-23020567-010A

Midland Laboratory
2200 East I-20
Midland, TX 79706
Phone 432-689-7252

Clark Grubbs
Maverick Natural Resources
PO Box 678
Andrews, TX 79714

Mar. 03, 2023

Station Name: GANDU SAT 37
Method: GPA 2103M
Cylinder No: 5030-06297
Analyzed: 02/27/2023 09:54:26 by MGN

Sampled By: SAM LUCAS
Sample Of: Oil Spot
Sample Date: 02/24/2023 09:54
Sample Conditions: 26.3 psig, @ 38.4 °F

Analytical Data

Components	Mol. %	MW	Wt. %	Sp. Gravity	L.V. %
Nitrogen	0.040	28.013	0.006	0.8069	0.006
Methane	1.128	16.043	0.098	0.3000	0.270
Carbon Dioxide	0.034	44.010	0.008	0.8172	0.008
Ethane	1.375	30.069	0.224	0.3563	0.519
Propane	2.998	44.096	0.716	0.5072	1.165
Iso-Butane	0.734	58.122	0.231	0.5628	0.339
n-Butane	3.494	58.122	1.100	0.5842	1.554
Iso-Pentane	1.743	72.149	0.681	0.6251	0.899
n-Pentane	3.459	72.149	1.352	0.6307	1.769
i-Hexanes	9.141	86.175	4.267	0.6641	5.303
n-Hexane	11.476	86.175	5.357	0.6641	6.658
2,2,4-Trimethylpentane	0.076	114.229	0.047	0.6964	0.056
Benzene	0.872	78.112	0.369	0.8844	0.344
Heptanes	9.286	100.202	5.040	0.6882	6.044
Toluene	1.208	92.138	0.603	0.8719	0.571
Octanes	7.396	114.229	4.576	0.7066	5.345
Ethylbenzene	0.525	106.165	0.302	0.8716	0.286
Xylenes	1.062	106.167	0.611	0.8761	0.576
Nonanes	6.623	128.255	4.601	0.7222	5.257
Decanes Plus	37.330	345.236	69.811	0.9140	63.031
	100.000		100.000		100.000

Calculated Physical Properties

	Total	C10+
Specific Gravity at 60°F	0.8253	0.9140
API Gravity at 60°F	39.957	23.310
Molecular Weight	184.613	345.236
Pounds per Gallon (in Vacuum)	6.881	7.620
Pounds per Gallon (in Air)	6.873	7.612
Cu. Ft. Vapor per Gallon @ 14.696 psia	14.144	8.376

Data reviewed by: Marco Barrientos, Laboratory Supervisor

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.