

C6+ GAS/VAPOR FRACTIONAL ANALYSIS

SAMPLE ID

Customer	Pilot Ceritas, LLC
Station No	N/A
Operator	Pilot Ceritas, LLC
Plant	Wellman
Sample Of	Inlet (spot)
Pressure	630 psig
Temperature	N/A
Atm. Temp	35 F
Sample Date	1/17/18
Sample Time	12:40:00 PM
Sampled By	Pantechs/VM
Analysis Date	01/19/18
Sample Cyl No	PL296

DISTRIBUTION

Pilot Ceritas, LLC
• Coy Gregg; Brownfield, TX (cgregg@ceritasgroup.com)

CALCULATIONS / METHODS

Pressure Base, PSIA	14.65
Temp Base, DEG F	60
Ideal/Real Gas	Real

APPLICABLE CURRENT GPA & ASTM METHODS, PROCEDURES, AND
CONSTANTS ARE USED

REMARKS / COMMENTS / OTHER

Spot

Field H2S Determination by Length of Stain Tube

Hydrogen Sulfide: 237.7 ppmv; 14.95 Grains/100 SCF

COMPONENT	SYM	MOL %	WT %	GPM
Nitrogen	N2	1.785	1.162	0.196
Carbon Dioxide	CO2	91.241	93.312	15.557
Field Hyd. Sulf.	H2S	0.024	0.019	0.003
Oxygen	O2	-----	-----	-----
Helium	He	-----	-----	-----
Hydrogen	H2	-----	-----	-----
Argon	Ar	-----	-----	-----
Methane	C1	3.171	1.182	0.538
Ethane	C2	1.071	0.748	0.287
Propane	C3	1.396	1.431	0.385
i-Butane	iC4	0.164	0.222	0.054
n-Butane	nC4	0.536	0.724	0.169
i-Pentane	iC5	0.153	0.257	0.056
n-Pentane	nC5	0.144	0.241	0.052
Hexanes+	C6+	0.315	0.702	0.135
Totals:		100.000	100.000	17.432

GASOLINE CONTENT (GPM)

Ethane & Heavier	1.138
Propane & Heavier	0.851
Butanes & Heavier	0.466
Pentanes & Heavier	0.243
26# Gasoline	0.38

HEATING VALUE (Gross Btu/CF)

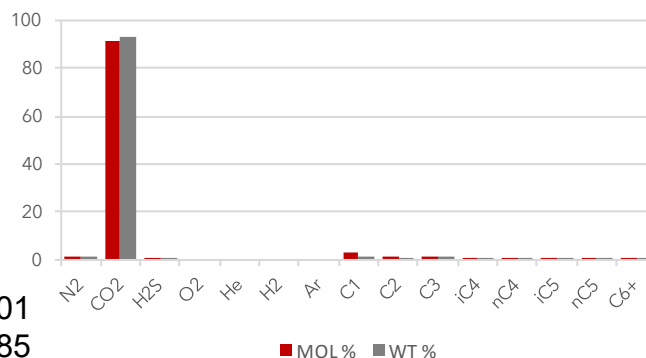
Ideal, Dry	137.00
Ideal, Water Saturated	135.50
Real, Dry	137.80
Real, Water Saturated	136.40

CALC. PROPERTIES

	SG	Z	MW
Dry	1.494	0.994	43.033
Water Saturated	1.480	0.994	42.281

Wobbe Index, Real 112.74

RELATIVE CONCENTRATION



C6+ GAS/VAPOR FRACTIONAL ANALYSIS

SAMPLE ID

Customer	Pilot Ceritas, LLC
Station No	N/A
Operator	Pilot Ceritas, LLC
Plant	Wellman
Sample Of	Outlet
Pressure	640 psig
Temperature	N/A
Atm. Temp	35 F
Sample Date	1/17/18
Sample Time	12:35:00 PM
Sampled By	Pantechs/VM
Analysis Date	01/19/18
Sample Cyl No	PL1965

DISTRIBUTION

Pilot Ceritas, LLC
• Coy Gregg; Brownfield, TX (cgregg@ceritasgroup.com)

CALCULATIONS / METHODS

Pressure Base, PSIA	14.65
Temp Base, DEG F	60
Ideal/Real Gas	Real

APPLICABLE CURRENT GPA & ASTM METHODS, PROCEDURES, AND
CONSTANTS ARE USED

REMARKS / COMMENTS / OTHER

COMPONENT	SYM	MOL %	WT %	GPM
Nitrogen	N2	1.835	1.205	0.201
Carbon Dioxide	CO2	92.681	95.591	15.798
Lab Hyd. Sulf.	H2S	----	----	----
Oxygen	O2	----	----	----
Helium	He	----	----	----
Hydrogen	H2	----	----	----
Argon	Ar	----	----	----
Methane	C1	3.234	1.216	0.548
Ethane	C2	1.087	0.766	0.291
Propane	C3	1.104	1.141	0.304
i-Butane	iC4	0.023	0.031	0.008
n-Butane	nC4	0.034	0.046	0.011
i-Pentane	iC5	0.001	0.002	0.000
n-Pentane	nC5	0.000	0.000	0.000
Hexanes+	C6+	0.001	0.002	0.000
Totals:		100.000	100.000	17.161

GASOLINE CONTENT (GPM)

Ethane & Heavier	0.614
Propane & Heavier	0.323
Butanes & Heavier	0.019
Pentanes & Heavier	0.000
26# Gasoline	0

HEATING VALUE (Gross Btu/CF)

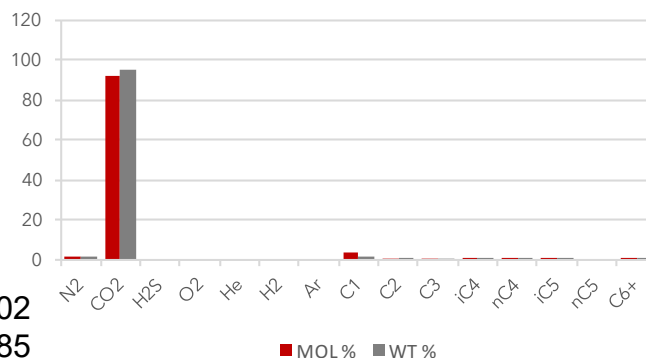
Ideal, Dry	81.40
Ideal, Water Saturated	80.90
Real, Dry	81.90
Real, Water Saturated	81.40

CALC. PROPERTIES

	SG	Z	MW
Dry	1.481	0.995	42.670
Water Saturated	1.467	0.994	41.924

Wobbe Index, Real 67.30

RELATIVE CONCENTRATION



C6+ LIQUID/LPG FRACTIONAL ANALYSIS

SAMPLE ID

Customer	Pilot Ceritas, LLC
Station No	N/A
Operator	Pilot Ceritas, LLC
Plant	Wellman
Sample Of	Total Liquid
Pressure	180 psig
Temperature	N/A
Atm. Temp	34 F
Sample Date	1/17/18
Sample Time	12:15:00 PM
Sampled By	Pantechs/VM
Analysis Date	01/18/18
Sample Cyl No	PL2236

DISTRIBUTION

Pilot Ceritas, LLC
• Coy Gregg; Brownfield, TX (cgregg@ceritasgroup.com)

CALCULATIONS / METHODS

Pressure Base, PSIA	14.65
Temp Base, DEG F	60
Ideal/Real Gas	Real

APPLICABLE CURRENT GPA & ASTM METHODS, PROCEDURES, AND
CONSTANTS ARE USED

REMARKS / COMMENTS / OTHER

COMPONENT	SYM	MOL %	VOL %	WT%
Nitrogen	N2	0.070	0.022	0.029
Carbon Dioxide	CO2	0.051	0.025	0.033
Lab Hyd. Sulf.	H2S	----	----	----
Oxygen	O2	----	----	----
Helium	He	----	----	----
Hydrogen	H2	----	----	----
Argon	Ar	----	----	----
Methane	C1	0.010	0.005	0.002
Ethane	C2	0.071	0.054	0.031
Propane	C3	17.380	13.684	11.149
i-Butane	iC4	7.664	7.164	6.480
n-Butane	nC4	27.765	25.012	23.476
i-Pentane	iC5	10.213	10.682	10.719
n-Pentane	nC5	9.260	9.583	9.719
Hexanes+	C6+	27.516	33.769	38.362
Totals:		100.000	100.000	100.000

SCF/GALLON OF LIQUID

Ideal Gas; 14.65 psia and 60F	28.734
Real Gas; 14.65 psia and 60F	27.262

MOLECULAR WEIGHT

Molar Mass	68.743
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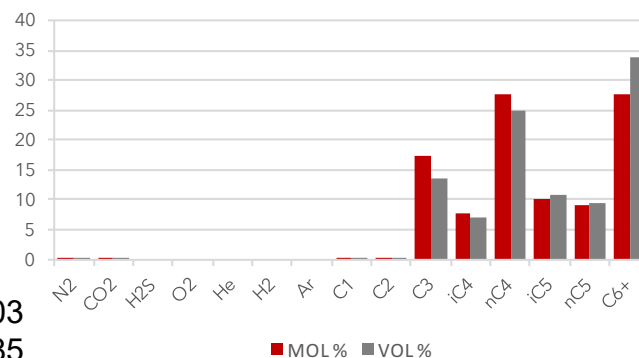
SPECIFIC GRAVITY

Relative Density, 60F/60F	0.6223
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VAPOR PRESSURE

	CALC
Absolute at 100F, psia	62.3
Reid, Equivalent, psi	59.1

RELATIVE CONCENTRATION



C6+ LIQUID/LPG FRACTIONAL ANALYSIS

SAMPLE ID

Customer	Pilot Ceritas, LLC
Station No	N/A
Operator	Pilot Ceritas, LLC
Plant	Wellman
Sample Of	Y Grade
Pressure	100 psig
Temperature	N/A
Atm. Temp	35 F
Sample Date	1/17/18
Sample Time	1:30:00 AM
Sampled By	Pantechs/VM
Analysis Date	01/18/18
Sample Cyl No	PL2165

DISTRIBUTION

Pilot Ceritas, LLC
• Coy Gregg; Brownfield, TX (cgregg@ceritasgroup.com)

CALCULATIONS / METHODS

Pressure Base, PSIA	14.65
Temp Base, DEG F	60
Ideal/Real Gas	Real

APPLICABLE CURRENT GPA & ASTM METHODS, PROCEDURES, AND
CONSTANTS ARE USED

REMARKS / COMMENTS / OTHER

COMPONENT	SYM	MOL %	VOL %	WT%
Nitrogen	N2	0.041	0.014	0.019
Carbon Dioxide	CO2	0.051	0.027	0.037
Lab Hyd. Sulf.	H2S	----	----	----
Oxygen	O2	----	----	----
Helium	He	----	----	----
Hydrogen	H2	----	----	----
Argon	Ar	----	----	----
Methane	C1	0.844	0.440	0.224
Ethane	C2	0.703	0.578	0.350
Propane	C3	21.889	18.546	15.994
i-Butane	iC4	10.498	10.560	10.111
n-Butane	nC4	37.596	36.445	36.209
i-Pentane	iC5	11.516	12.962	13.768
n-Pentane	nC5	8.891	9.901	10.629
Hexanes+	C6+	7.971	10.527	12.659
Totals:		100.000	100.000	100.000

SCF/GALLON OF LIQUID

Ideal Gas; 14.65 psia and 60F	30.917
Real Gas; 14.65 psia and 60F	29.785

MOLECULAR WEIGHT

Molar Mass	60.350
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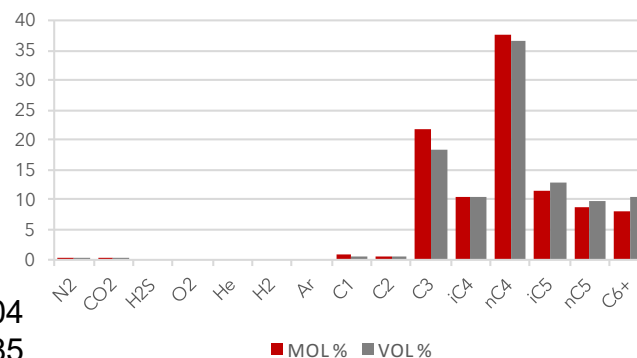
SPECIFIC GRAVITY

Relative Density, 60F/60F	0.5879
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VAPOR PRESSURE

	CALC
Absolute at 100F, psia	121.9
Reid, Equivalent, psi	116.3

RELATIVE CONCENTRATION



C6+ LIQUID/LPG FRACTIONAL ANALYSIS

SAMPLE ID

Customer	Pilot Ceritas, LLC
Station No	N/A
Operator	Pilot Ceritas, LLC
Plant	Wellman
Sample Of	Crude Mix
Pressure	91 psig
Temperature	N/A
Atm. Temp	34 F
Sample Date	1/17/18
Sample Time	12:00:00 PM
Sampled By	Pantechs/VM
Analysis Date	01/18/18
Sample Cyl No	PL463

DISTRIBUTION

Pilot Ceritas, LLC
• Coy Gregg; Brownfield, TX (cgregg@ceritasgroup.com)

CALCULATIONS / METHODS

Pressure Base, PSIA	14.65
Temp Base, DEG F	60
Ideal/Real Gas	Real

APPLICABLE CURRENT GPA & ASTM METHODS, PROCEDURES, AND
CONSTANTS ARE USED

REMARKS / COMMENTS / OTHER

COMPONENT	SYM	MOL %	VOL %	WT%
Nitrogen	N2	0.052	0.014	0.016
Carbon Dioxide	CO2	0.000	0.000	0.000
Lab Hyd. Sulf.	H2S	----	----	----
Oxygen	O2	----	----	----
Helium	He	----	----	----
Hydrogen	H2	----	----	----
Argon	Ar	----	----	----
Methane	C1	0.000	0.000	0.000
Ethane	C2	0.000	0.000	0.000
Propane	C3	0.019	0.013	0.009
i-Butane	iC4	0.377	0.300	0.246
n-Butane	nC4	3.024	2.320	1.969
i-Pentane	iC5	9.164	8.164	7.408
n-Pentane	nC5	13.026	11.482	10.530
Hexanes+	C6+	74.338	77.707	79.822
Totals:		100.000	100.000	100.000

SCF/GALLON OF LIQUID

Ideal Gas; 14.65 psia and 60F	24.481
Real Gas; 14.65 psia and 60F	22.096

MOLECULAR WEIGHT

Molar Mass	89.255
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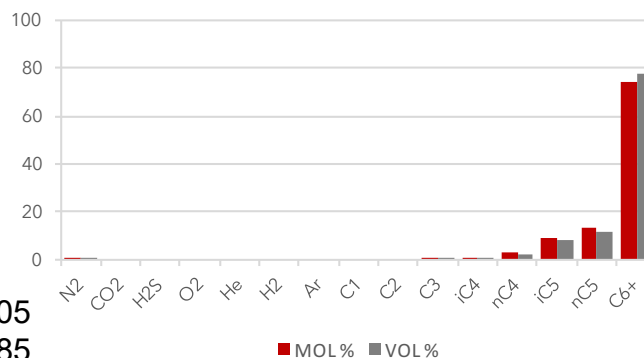
SPECIFIC GRAVITY

Relative Density, 60F/60F	0.6882
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VAPOR PRESSURE

	CALC
Absolute at 100F, psia	11.1
Reid, Equivalent, psi	10.1

RELATIVE CONCENTRATION



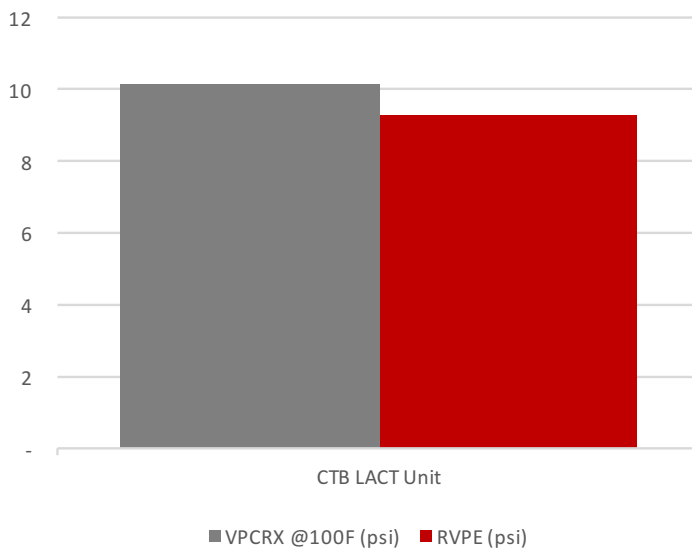
ASTM D6377 VAPOR PRESSURE REPORT

SAMPLE ID

Customer	Pilot Ceritas CO2, LLC
Lease/Unit	Wellman
Sample By	Pantechs-CCS
Analysis By	Pantechs-VM
Method	ASTM D6377
VPCR _x	X=4 Vapor to Liquid Ratio
Sample Date	01/17/18

ANALYSIS RESULTS

SAMPLE ID	VPCR _x @100F (psi)	RVPE (psi)
CTB LACT Unit	10.12	9.26



REMARKS/COMMENTS/OTHER

RVPE is Reid Vapor Pressure Equivalent from D6377
 Transform (VPCR_x X 0.915)

DISTRIBUTION

Pilot Ceritas CO2, LLC
 Coy Gregg; Brownfield, TX