EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10814**	NAME/DESCRIP :	**PCU 297-15A6**
LEASE #:	**COC-47666A**		**INTERMEDIATE CASING**
FIELD/AREA:	**PICEANCE CREEK**		

PROJECT NO. :	**202601123**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	FEBRUARY 07, 2026 15:52
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JANUARY 22, 2026
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	

*****FIELD DATA*****

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	323	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-770
LAB PRES:		psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	41	ºf	SAMPLING COMPANY:	QB ENERGY
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:		#/mmcf	CO2 BY STAIN TUBE:	Mol %

FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0015	0.0028	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.03	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.13	0.20	---	---
CARBON DIOXIDE	0.03	0.07	---	---
METHANE	92.6980	83.3870	---	---
ETHANE	3.9207	6.6108	1.0453	1.0510
PROPANE	1.7019	4.2082	0.4677	0.4703
I-BUTANE	0.3491	1.1378	0.1139	0.1145
N-BUTANE	0.5445	1.7747	0.1709	0.1718
I-PENTANE	0.1879	0.7595	0.0680	0.0683
N-PENTANE	0.1597	0.6461	0.0580	0.0583
HEXANES PLUS	0.2367	1.2001	0.0930	0.0932
TOTALS	100.00000	100.00000	2.0168	2.0274

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0036	0.0158
TOLUENE	0.0014	0.0072
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0001	0.0006
TOTAL BTEX	0.0052	0.0242

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

***(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)*

CALCULATED VALUES**

	BTU @	14.65		14.73	
LHV	NET DRY REAL :	995.4	/scf	1000.8	/scf
	NET WET REAL :	978.0	/scf	983.4	/scf
HHV	GROSS DRY REAL :	1101.8	/scf	1107.8	/scf
	GROSS WET REAL :	1082.5	/scf	1088.5	/scf
	NET HEATING VALUE (60 °F ideal reaction):			21204.5	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			23476.6	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.6154	
	DENSITY			0.04700	lbm/scf
	COMPRESSIBILITY FACTOR :			0.9975	
	REGULAR WOBBE INDEX			1405.4	

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202601123	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	FEBRUARY 07, 2026 15:52
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 22, 2026
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-770
LEASE NO. :	COC-47666A	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	PCU 297-15A6		
	INTERMEDIATE CASING		
FIELD DATA		SAMPLE TEMP. :	41
SAMPLE PRES. :	323	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.03	0.00
Carbon Dioxide	0.03	0.07
Nitrogen	0.13	0.20
Methane	92.6980	83.3870
Ethane	3.9207	6.6108
Propane	1.7019	4.2082
Isobutane	0.3491	1.1378
n-Butane	0.5445	1.7747
Isopentane	0.1813	0.7335
n-Pentane	0.1597	0.6461
Cyclopentane	0.0066	0.0260
n-Hexane	0.0481	0.2324
Cyclohexane	0.0162	0.0764
Other Hexanes	0.0965	0.4640
Heptanes	0.0424	0.2372
Methylcyclohexane	0.0170	0.0936
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0036	0.0158
Toluene	0.0014	0.0072
Ethylbenzene	0.0001	0.0006
Xylenes	0.0001	0.0006
C8+ Heavies	0.0112	0.0717
Subtotal	99.99850	99.99720
Oxygen/Argon	0.00	0.00
Alcohols	0.0015	0.0028
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	995.4	4605.0	5764.4	7168.9	**Btu/scf**
	Net Wet Real:	978.0	4524.5	5663.6	7043.6	**Btu/scf**
HHV	Gross Dry Real:	1101.8	4961.2	6216.9	8464.6	**Btu/scf**
	Gross Wet Real:	1082.5	4874.5	6108.2	8316.6	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1405.4	2788.6	3118.9	3752.5	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21204.5	19360.6	19864.6	17455.2	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23476.6	20856.1	21423.5	20610.0	**Btu/lbm**
Molar Mass (MW):		17.83571	90.464	115.092	148.24	**g/mol**
Relative Density (AIR=1):		0.6154	3.1235	3.9740	5.1183	**SG**
Density:		0.04700	0.23840	0.30330	0.39063	**lbm/scf**
Compressiblity Factor:		0.9975	0.9903	0.9970	0.9998	**Z**
Liquid Volume real gas @:	**14.65**	17.6605	0.0927	0.003	0	**gal/1000 scf**

**** The Wobbe pressure base in the number considered is based upon the given Pb of the HHV above.***

#DIV/0 or 0 (zero) will appear in the Calculated Value Section when there is no C6+, C8+ or C10+ in the sample to calculate these factors.

BDL - Below Detection Limit. The H2S LOS has a detection limit of 0.25 ppm. A _ (an uderscore) indicates there was no tube pulled for H2S.

EMPACT Analytical Systems Inc. 365 S Main St Brighton, CO 80601 303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-103-10814**	NAME/DESCRIP :	**PCU 297-15A6**
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FIELD/AREA:	**PICEANCE CREEK**		
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PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	
FIELD DATA			
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SAMPLE PRES. :	323 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-770
LAB PRES:	psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	41 ºf	SAMPLING COMPANY:	QB ENERGY
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.03	0.00	---	---
Nitrogen	---	0.13	0.20	---	---
Carbon Dioxide	---	0.03	0.07	---	---
Methane	P1	92.6980	83.3870	---	---
Ethane	P2	3.9207	6.6108	1.045	1.051
Propane	P3	1.7019	4.2082	0.468	0.470
i-Butane	I4	0.3491	1.1378	0.114	0.115
Methanol	X1	0.0014	0.0025	0.000	0.000
n-Butane	P4	0.5445	1.7747	0.171	0.172
2,2-Dimethylpropane	I5	0.0028	0.0113	0.001	0.001
i-Pentane	I5	0.1785	0.7222	0.065	0.065
Acetone	X3	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.1597	0.6461	0.058	0.058
2,2-Dimethylbutane	I6	0.0028	0.0135	0.001	0.001
Cyclopentane	N5	0.0066	0.0260	0.002	0.002
2,3-Dimethylbutane	I6	0.0069	0.0334	0.003	0.003
2-Methylpentane	I6	0.0432	0.2088	0.018	0.018
3-Methylpentane	I6	0.0218	0.1054	0.009	0.009
n-Hexane	P6	0.0481	0.2324	0.020	0.020
2,2-Dimethylpentane	I7	0.0007	0.0039	0.000	0.000
Methylcyclopentane	N6	0.0218	0.1029	0.008	0.008
2,4-Dimethylpentane	I7	0.0014	0.0079	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0002	0.0011	0.000	0.000
Benzene	A6	0.0036	0.0158	0.001	0.001
3,3-Dimethylpentane	I7	0.0003	0.0017	0.000	0.000
Cyclohexane	N6	0.0162	0.0764	0.006	0.006

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2-Methylhexane	I7	0.0070	0.0393	0.003	0.003
2,3-Dimethylpentane	I7	0.0024	0.0135	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0012	0.0066	0.000	0.000
3-Methylhexane	I7	0.0063	0.0354	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0027	0.0149	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0023	0.0127	0.001	0.001
3-Ethylpentane	I7	0.0004	0.0022	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0039	0.0215	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0119	0.0668	0.005	0.005
1c,2-Dimethylcyclopentane	N7	0.0006	0.0033	0.000	0.000
Methylcyclohexane	N7	0.0170	0.0936	0.007	0.007
2,2-Dimethylhexane	I8	0.0004	0.0026	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0004	0.0025	0.000	0.000
Ethylcyclopentane	N7	0.0007	0.0039	0.000	0.000
2,5-Dimethylhexane	I8	0.0003	0.0019	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0003	0.0019	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0006	0.0038	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0014	0.0072	0.000	0.000
2,3-Dimethylhexane	I8	0.0003	0.0019	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0015	0.0096	0.001	0.001
4-Methylheptane	I8	0.0003	0.0019	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0007	0.0045	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0013	0.0082	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0006	0.0038	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0004	0.0025	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0017	0.0109	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0007	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0003	0.0021	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
1,3-Methyl-n-butylbenzene	A11	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	2.0168	2.0274

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BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0036	0.0158
TOLUENE	0.0014	0.0072
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0001	0.0006
TOTAL BTEX	0.0052	0.0242

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)
Mod ASTM D6730,GPA 2261 & GPA 2286.

**(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)

CALCULATED VALUES**

	BTU @	14.65	14.73
LHV	NET DRY REAL :	995.4 /scf	1000.8 /scf
	NET WET REAL :	978.0 /scf	983.4 /scf
HHV	GROSS DRY REAL :	1101.8 /scf	1107.8 /scf
	GROSS WET REAL :	1082.5 /scf	1088.5 /scf
	NET HEATING VALUE (60 °F ideal reaction):		21204.5 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23476.6 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6154
	DENSITY		0.04700 lb/scf
	COMPRESSIBILITY FACTOR :		0.9975
	REGULAR WOBBE INDEX		1405.4

C6+ Fraction of DHA Gas Analysis @60°F, 14.696 psia

					C6+factors
Net Dry Ideal BTU	4574.7 /scf	Relative Density - SG (Air=1)	3.1235		0.98974
Gross Dry Ideal BTU	4928.5 /scf	Z Compressiblity Factor	0.9903		
Net Dry Ideal BTU	19360.6 /lb	Density Factor	238.4	lbm/1000 ft3	
Gross Dry Ideal BTU	20856.1 /lb	Molar Mass or MW	90.464	g/mol	
		Volume Liquid Ideal gas	0.093	scf/gal	24.1

This hexanes plus fraction may be applied in place of published C6+ factors. The Z & GPM need additional calc for C6+ factors.
#DIV/0 or 0 (zero) will appear in this section when there is no hexanes plus in the sample to calculate C6+ factors.

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