EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10862**	NAME/DESCRIP :	**PICEANCE CREEK UNIT 297-11A6**
LEASE #:			**SURFACE CASING**
FIELD/AREA:			
PROJECT NO. :	**202509073**	ANALYSIS NO. :	**03**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	SEPTEMBER 20, 2025 15:42
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	SEPTEMBER 08, 2025
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
*****FIELD DATA*****			
SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	443 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	1627
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	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	0.0006	0.0017	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.18	0.30	---	---
NITROGEN	12.74	18.87	---	---
CARBON DIOXIDE	0.01	0.02	---	---
METHANE	81.0801	68.7640	---	---
ETHANE	4.0367	6.4169	1.0758	1.0817
PROPANE	1.1121	2.5925	0.3057	0.3073
I-BUTANE	0.2788	0.8566	0.0909	0.0914
N-BUTANE	0.2157	0.6628	0.0679	0.0683
I-PENTANE	0.1092	0.4162	0.0400	0.0402
N-PENTANE	0.0635	0.2422	0.0230	0.0231
HEXANES PLUS	0.1733	0.8571	0.0680	0.0680
TOTALS	100.00000	100.00000	1.6713	1.6800

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0010	0.0041
TOLUENE	0.0010	0.0049
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0005	0.0029
TOTAL BTEX	0.0026	0.0125

**(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 :	856.4 **/scf**	861.0 **/scf**
	NET WET REAL :	841.4 **/scf**	846.0 **/scf**
HHV	GROSS DRY REAL :	948.3 **/scf**	953.4 **/scf**
	GROSS WET REAL :	931.7 **/scf**	936.8 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		17210.9 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		19063.6 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.6529
	DENSITY		0.04985 **lbm/scf**
	COMPRESSIBILITY FACTOR :		0.9980
	REGULAR WOBBE INDEX		1174.8

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202509073	ANALYSIS NO. :	03
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 20, 2025 15:42
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	1627
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-11A6 SURFACE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	443	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.01	0.02
Nitrogen	12.74	18.87
Methane	81.0801	68.7640
Ethane	4.0367	6.4169
Propane	1.1121	2.5925
Isobutane	0.2788	0.8566
n-Butane	0.2157	0.6628
Isopentane	0.1070	0.4081
n-Pentane	0.0635	0.2422
Cyclopentane	0.0022	0.0081
n-Hexane	0.0275	0.1253
Cyclohexane	0.0089	0.0396
Other Hexanes	0.0598	0.2713
Heptanes	0.0411	0.2167
Methylcyclohexane	0.0169	0.0877
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0010	0.0041
Toluene	0.0010	0.0049
Ethylbenzene	0.0001	0.0006
Xylenes	0.0005	0.0029
C8+ Heavies	0.0165	0.1040
Subtotal	99.81940	99.69830
Oxygen/Argon	0.18	0.30
Alcohols	0.0006	0.0017
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	856.4	4755.2	5919.5	8360.2	**Btu/scf**
	Net Wet Real:	841.4	4672.1	5816.0	8214.1	**Btu/scf**
HHV	Gross Dry Real:	948.3	5123.7	6371.6	8974.2	**Btu/scf**
	Gross Wet Real:	931.7	5034.1	6260.2	8817.3	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1174.8	2834.9	3152.7	3739.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		17210.9	19374.4	19661.5	18959.2	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		19063.6	20874.0	21165.0	20351.5	**Btu/lbm**
Molar Mass (MW):		18.91686	93.527	118.367	167.824	**g/mol**
Relative Density (AIR=1):		0.6529	3.2291	4.0877	5.7946	**SG**
Density:		0.04985	0.24646	0.31193	0.44224	**lbm/scf**
Compressiblity Factor:		0.9980	0.9912	0.9973	0.9999	**Z**
Liquid Volume real gas @:	**14.65**	16.7464	0.0678	0.004	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.

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10862** NAME/DESCRIP : **PICEANCE CREEK UNIT 297-11A6**
LEASE #: **SURFACE CASING**
FIELD/AREA:

PROJECT NO. : **202509073** ANALYSIS NO. : **03**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: SEPTEMBER 20, 2025 15:42
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 443 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : 1627
LAB PRES: psig SAMPLED BY : NICK CROY
SAMPLE TEMP. : 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**
Oxygen/Argon	---	0.18	0.30	---	---
Nitrogen	---	12.74	18.87	---	---
Carbon Dioxide	---	0.01	0.02	---	---
Methane	P1	81.0801	68.7640	---	---
Ethane	P2	4.0367	6.4169	1.076	1.082
Propane	P3	1.1121	2.5925	0.306	0.307
i-Butane	I4	0.2788	0.8566	0.091	0.091
Methanol	X1	0.0001	0.0002	0.000	0.000
n-Butane	P4	0.2154	0.6619	0.068	0.068
2,2-Dimethylpropane	I5	0.0033	0.0126	0.001	0.001
Ethanol	X2	0.0001	0.0003	0.000	0.000
i-Pentane	I5	0.1037	0.3955	0.038	0.038
Acetone	X3	0.0004	0.0012	0.000	0.000
UnknownC4s	U4	0.0003	0.0009	0.000	0.000
n-Pentane	P5	0.0634	0.2418	0.023	0.023
2,2-Dimethylbutane	I6	0.0041	0.0187	0.002	0.002
Cyclopentane	N5	0.0022	0.0081	0.001	0.001
2,3-Dimethylbutane	I6	0.0065	0.0296	0.003	0.003
2-Methylpentane	I6	0.0253	0.1152	0.010	0.010
3-Methylpentane	I6	0.0139	0.0633	0.006	0.006
UnknownC5s	U5	0.0001	0.0004	0.000	0.000
n-Hexane	P6	0.0275	0.1253	0.011	0.011
2,2-Dimethylpentane	I7	0.0011	0.0058	0.001	0.001
Methylcyclopentane	N6	0.0099	0.0440	0.003	0.003
2,4-Dimethylpentane	I7	0.0018	0.0095	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0004	0.0021	0.000	0.000
Benzene	A6	0.0010	0.0041	0.000	0.000
3,3-Dimethylpentane	I7	0.0005	0.0026	0.000	0.000
Cyclohexane	N6	0.0089	0.0396	0.003	0.003

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2-Methylhexane	I7	0.0072	0.0381	0.003	0.003
2,3-Dimethylpentane	I7	0.0018	0.0095	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0014	0.0072	0.001	0.001
3-Methylhexane	I7	0.0062	0.0328	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0019	0.0099	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0016	0.0083	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0016	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0026	0.0135	0.001	0.001
UnknownC6s	U6	0.0001	0.0005	0.000	0.000
n-Heptane	P7	0.0133	0.0705	0.006	0.006
1c,2-Dimethylcyclopentane	N7	0.0003	0.0015	0.000	0.000
Methylcyclohexane	N7	0.0169	0.0877	0.007	0.007
2,2-Dimethylhexane	I8	0.0007	0.0042	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0005	0.0026	0.000	0.000
2,5-Dimethylhexane	I8	0.0009	0.0054	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0007	0.0042	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0005	0.0030	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
Toluene	A7	0.0010	0.0049	0.000	0.000
2,3-Dimethylhexane	I8	0.0004	0.0024	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0022	0.0133	0.001	0.001
4-Methylheptane	I8	0.0007	0.0042	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	0.0014	0.0085	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0016	0.0095	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0007	0.0042	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	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	0.0003	0.0018	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0018	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	0.0001	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	0.0003	0.0017	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	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
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0003	0.0020	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
n-Decane	P10	0.0001	0.0007	0.000	0.000

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UnknownC10s		U10	0.0003	0.0023	0.000	0.000
UnknownC11s		U11	0.0001	0.0009	0.000	0.000
n-Hexylbenzene		A12	0.0001	0.0009	0.000	0.000
UnknownC14s		U14	0.0005	0.0052	0.000	0.000
TOTAL			100.00000	100.00000	1.6713	1.6800

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0010	0.0041
TOLUENE	0.0010	0.0049
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0005	0.0029
TOTAL BTEX	0.0026	0.0125

*(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 :	856.4 /scf	861.0	/scf
	NET WET REAL :	841.4 /scf	846.0	/scf
HHV	GROSS DRY REAL :	948.3 /scf	953.4	/scf
	GROSS WET REAL :	931.7 /scf	936.8	/scf
	NET HEATING VALUE (60 °F ideal reaction):		17210.9	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		19063.6	Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6529	
	DENSITY		0.04985	lb/scf
	COMPRESSIBILITY FACTOR :		0.9980	
	REGULAR WOBBE INDEX		1174.8	

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

Net Dry Ideal BTU	4727.9 /scf	Relative Density - SG (Air=1)	3.2291		***C6+factors***
Gross Dry Ideal BTU	5094.3 /scf	**Z** Compressiblity Factor	0.99115		0.99058
Net Dry Ideal BTU	19374.4 /lb	Density Factor	246.459	lbm/1000 ft3	
Gross Dry Ideal BTU	20874 /lb	Molar Mass or MW	93.527	g/mol	
		Volume Liquid Ideal gas	0.068	scf/gal	23.3

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.*