



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: 05-103-10862	NAME/DESCRIP :	PICEANCE CREEK UNIT 297-11A6
LEASE #:		INTERMEDIATE CASING
FIELD/AREA:		
PROJECT NO. :	202509073	ANALYSIS NO. : 02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE: SEPTEMBER 20, 2025 13:59
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF:		TO:
PRODUCER :		EFFECTIVE DATE:

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	67 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	1914
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	°f	SAMPLING COMPANY:	QB ENERGY
AMBIENT TEMP.:	°f	H2S BY STAIN TUBE:	— ppm mol
H2O BY STAIN TUBE:	- #/mmcf	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.65</u>	<u>GPM @ 14.73</u>
HELIUM	0.02	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.66	1.07	---	---
CARBON DIOXIDE	0.01	0.03	---	---
METHANE	94.7111	87.7375	---	---
ETHANE	2.5834	4.4857	0.6884	0.6922
PROPANE	0.9986	2.5427	0.2738	0.2753
I-BUTANE	0.1850	0.6209	0.0599	0.0603
N-BUTANE	0.3268	1.0968	0.1029	0.1035
I-PENTANE	0.1210	0.5037	0.0440	0.0442
N-PENTANE	0.1136	0.4733	0.0410	0.0412
HEXANES PLUS	0.2605	1.4194	0.0980	0.0982
TOTALS	100.0000	100.0000	1.3080	1.3149

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0123	0.0555
TOLUENE	0.0112	0.0596
ETHYLBENZENE	0.0012	0.0073
<u>XYLENES</u>	<u>0.0039</u>	<u>0.0239</u>
TOTAL BTEX	0.0286	0.1463

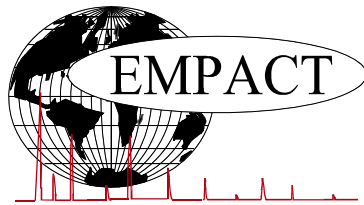
	<u>CALCULATED VALUES**</u>	
<u>BTU @</u>	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	960.9 /scf	966.1 /scf
NET WET REAL :	944.1 /scf	949.3 /scf
HHV GROSS DRY REAL :	1064.7 /scf	1070.5 /scf
GROSS WET REAL :	1046.1 /scf	1051.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		21097.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23379.0 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.5969
DENSITY		0.04563 lbm/scf
COMPRESSIBILITY FACTOR :		0.9977
REGULAR WOBBE INDEX		1379.3

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*

Mod ASTM D6730,GPA 2261 & GPA 2286.

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

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



**EXTENDED NATURAL GAS ANALYSIS (*DHA)
GLYCALC INFORMATION**

PROJECT NO. :	202509073	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE :	SEPTEMBER 20, 2025 13:59
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	1914
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-11A6 INTERMEDIATE CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	67	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.01	0.03
Nitrogen	0.66	1.07
Methane	94.7111	87.7375
Ethane	2.5834	4.4857
Propane	0.9986	2.5427
Isobutane	0.1850	0.6209
n-Butane	0.3268	1.0968
Isopentane	0.1172	0.4883
n-Pentane	0.1136	0.4733
Cyclopentane	0.0038	0.0154
n-Hexane	0.0417	0.2075
Cyclohexane	0.0132	0.0642
Other Hexanes	0.0718	0.3559
Heptanes	0.0462	0.2662
Methylcyclohexane	0.0208	0.1179
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0123	0.0555
Toluene	0.0112	0.0596
Ethylbenzene	0.0012	0.0073
Xylenes	0.0039	0.0239
C8+ Heavies	0.0382	0.2614
<u>Subtotal</u>	<u>99.99000</u>	<u>99.98000</u>
<u>Oxygen/Argon</u>	<u>0.01</u>	<u>0.02</u>
Total	100.00000	100.00000

	Total	C6+	C8+	C10+
Calculated Values BTU @	Sample	Fraction	Fraction	Fraction
LHV Net Dry Real:	960.9	4757.5	5842.4	7038.8 Btu/scf
Net Wet Real:	944.1	4674.3	5740.3	6915.8 Btu/scf
HHV Gross Dry Real:	1064.7	5112.9	6275.0	7563.0 Btu/scf
Gross Wet Real:	1046.1	5023.5	6165.3	7430.8 Btu/scf
Other Calculated Values				
Regualr Wobbe Index*	1379.3	2818.0	3116.9	3429.4 Btu/scf
Net Heating Value (60 °F ideal reaction):	21097.0	19231.6	19466.3	19080.6 Btu/lbm
Gross Heating Value (60°F ideal reaction):	23379.0	20668.1	20911.7	20502.2 Btu/lbm
Molar Mass (MW):	17.31715	94.465	117.632	141.607 g/mol
Relative Density (AIR=1):	0.5969	3.2619	4.0609	4.8894 SG
Density:	0.04563	0.24894	0.30996	0.37315 lbm/scf
Compressibility Factor:	0.9977	0.9923	0.9978	0.9995 Z
Liquid Volume real gas @:	17.3465	0.0977	0.014	0.001 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 underscore) indicates there was no tube pulled for H2S.

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



**EXTENDED NATURAL GAS ANALYSIS (*DHA)
DHA COMPONENT LIST**

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

PROJECT NO. : **202509073** ANALYSIS NO. : **02**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **SEPTEMBER 20, 2025 13:59**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **SEPTEMBER 08, 2025**
 CUSTOMER REF: TO:
 PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : **67** psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : **1914**
 LAB PRES: psig SAMPLED BY : **NICK CROY**
 SAMPLE TEMP. : °f SAMPLING COMPANY: **QB ENERGY**
 AMBIENT TEMP.: °f 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	---	0.02	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.66	1.07	---	---
Carbon Dioxide	---	0.01	0.03	---	---
Methane	P1	94.7111	87.7375	---	---
Ethane	P2	2.5834	4.4857	0.688	0.692
Propane	P3	0.9986	2.5427	0.274	0.275
i-Butane	I4	0.1850	0.6209	0.060	0.060
n-Butane	P4	0.3268	1.0968	0.103	0.104
2,2-Dimethylpropane	I5	0.0046	0.0192	0.002	0.002
i-Pentane	I5	0.1126	0.4691	0.041	0.041
n-Pentane	P5	0.1136	0.4733	0.041	0.041
2,2-Dimethylbutane	I6	0.0043	0.0214	0.002	0.002
Cyclopentane	N5	0.0038	0.0154	0.001	0.001
2,3-Dimethylbutane	I6	0.0054	0.0268	0.002	0.002
2-Methylpentane	I6	0.0332	0.1652	0.014	0.014
3-Methylpentane	I6	0.0174	0.0866	0.007	0.007
n-Hexane	P6	0.0417	0.2075	0.017	0.017
2,2-Dimethylpentane	I7	0.0009	0.0052	0.000	0.000
Methylcyclopentane	N6	0.0115	0.0559	0.004	0.004
2,4-Dimethylpentane	I7	0.0015	0.0087	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0017	0.000	0.000
Benzene	A6	0.0123	0.0555	0.003	0.003
3,3-Dimethylpentane	I7	0.0005	0.0029	0.000	0.000
Cyclohexane	N6	0.0132	0.0642	0.004	0.004
2-Methylhexane	I7	0.0074	0.0428	0.003	0.003
2,3-Dimethylpentane	I7	0.0025	0.0145	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0012	0.0068	0.000	0.000

3-Methylhexane	I7	0.0070	0.0405	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0021	0.0119	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0020	0.0113	0.001	0.001
3-Ethylpentane	I7	0.0005	0.0029	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0036	0.0204	0.002	0.002
n-Heptane	P7	0.0151	0.0874	0.007	0.007
1c,2-Dimethylcyclopentane	N7	0.0004	0.0022	0.000	0.000
Methylcyclohexane	N7	0.0208	0.1179	0.008	0.008
2,2-Dimethylhexane	I8	0.0009	0.0059	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
Ethylcyclopentane	N7	0.0010	0.0057	0.000	0.000
2,5-Dimethylhexane	I8	0.0006	0.0040	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0005	0.0033	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0009	0.0058	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
Toluene	A7	0.0112	0.0596	0.004	0.004
2,3-Dimethylhexane	I8	0.0006	0.0040	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
2-Methylheptane	I8	0.0034	0.0224	0.002	0.002
4-Methylheptane	I8	0.0008	0.0052	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
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0018	0.0119	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0030	0.0195	0.002	0.002
3-Ethylhexane	I8	0.0003	0.0020	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0013	0.0084	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0004	0.0026	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0003	0.0020	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0026	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0013	0.0084	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0054	0.0356	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0006	0.0039	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0003	0.0022	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0011	0.0080	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0004	0.0029	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0010	0.0065	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0026	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0022	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0012	0.0073	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0024	0.0147	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0006	0.0037	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0015	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0003	0.0022	0.000	0.000
2-Methyloctane	I9	0.0005	0.0037	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000

3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0005	0.0036	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0009	0.0055	0.000	0.000
i-Butylcyclopentane	N9	0.0004	0.0029	0.000	0.000
n-Nonane	P9	0.0018	0.0133	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0014	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0022	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0003	0.0021	0.000	0.000
3,6-Dimethyloctane	I10	0.0003	0.0025	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0016	0.000	0.000
1,3-Methylethylbenzene	A9	0.0003	0.0021	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0014	0.000	0.000
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
2-Methylnonane	I10	0.0001	0.0008	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0004	0.0031	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0006	0.0044	0.000	0.000
n-Decane	P10	0.0004	0.0033	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0009	0.0074	0.001	0.001
UnknownC11s	U11	0.0002	0.0018	0.000	0.000
TOTAL		100.00000	100.00000	1.3080	1.3149

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0123	0.0555	LHV NET DRY REAL :	960.9 /scf	966.1 /scf
TOLUENE	0.0112	0.0596	NET WET REAL :	944.1 /scf	949.3 /scf
ETHYLBENZENE	0.0012	0.0073	HHV GROSS DRY REAL :	1064.7 /scf	1070.5 /scf
XYLENES	0.0039	0.0239	GROSS WET REAL :	1046.1 /scf	1051.9 /scf
TOTAL BTEX	0.0286	0.1463	NET HEATING VALUE (60 °F ideal reaction):		21097.0 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23379.0 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.5969
			DENSITY		0.04563 lb/scf
			COMPRESSIBILITY FACTOR :		0.9977
			REGULAR WOBBE INDEX		1379.3

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730, GPA 2261 & GPA 2286.

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

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

Net Dry Ideal BTU	4735.8 /scf	Relative Density - SG (Air=1)	3.2619	C6+ factors
Gross Dry Ideal BTU	5089.6 /scf	Z Compressibility Factor	0.99232	0.99141
Net Dry Ideal BTU	19231.6 /lb	Density Factor	248.937 lbm/1000 ft3	
Gross Dry Ideal BTU	20668.1 /lb	Molar Mass or MW	94.465 g/mol	
		Volume Liquid Ideal gas	0.098 scf/gal	23.5

**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.**

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.