



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: 05-103-11372	NAME/DESCRIP : PICEANCE CREEK UNIT 297-11B7
LEASE #:	PRODUCTION CASING
FIELD/AREA:	
PROJECT NO. : 202509091	ANALYSIS NO. : 01
COMPANY NAME : QB ENERGY OPERATING, LLC	ANALYSIS DATE: SEPTEMBER 29, 2025 08:06
OFFICE / BRANCH: PARACHUTE, CO	SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF:	TO:
PRODUCER :	EFFECTIVE DATE:

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. : 1052 psig		PROBE :	
FLOW PRES. : psig		CYLINDER NO. : TBI-257	
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>
ALCOHOLS	0.3211	0.6020	0.0410	0.0412
HELIUM	0.00	0.00	---	---
HYDROGEN	2.14	0.25	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.11	0.18	---	---
CARBON DIOXIDE	0.20	0.51	---	---
METHANE	90.5966	84.7326	---	---
ETHANE	4.8615	8.5223	1.2960	1.3030
PROPANE	1.1617	2.9865	0.3187	0.3205
I-BUTANE	0.2671	0.9050	0.0869	0.0874
N-BUTANE	0.1949	0.6605	0.0610	0.0613
I-PENTANE	0.0760	0.3196	0.0270	0.0271
N-PENTANE	0.0419	0.1762	0.0150	0.0151
HEXANES PLUS	0.0292	0.1553	0.0100	0.0100
TOTALS	100.0000	100.0000	1.8556	1.8656

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0001	0.0005
TOLUENE	0.0004	0.0022
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0004	0.0024
TOTAL BTEX	0.0009	0.0051

	<u>CALCULATED VALUES**</u>	
<u>BTU @</u>	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	956.5 /scf	961.8 /scf
NET WET REAL :	939.8 /scf	945.1 /scf
HHV GROSS DRY REAL :	1059.9 /scf	1065.7 /scf
GROSS WET REAL :	1041.4 /scf	1047.2 /scf
NET HEATING VALUE (60 °F ideal reaction):		21180.5 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23478.6 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.5921
DENSITY		0.04520 lbm/scf
COMPRESSIBILITY FACTOR :		0.9977
REGULAR WOBBE INDEX		1378.6

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

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

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

PROJECT NO. :	202509091	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 29, 2025 08:06
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	TBI-257
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-11B7 PRODUCTION CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	1052	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	2.14	0.25
Carbon Dioxide	0.20	0.51
Nitrogen	0.11	0.18
Methane	90.5966	84.7326
Ethane	4.8615	8.5223
Propane	1.1617	2.9865
Isobutane	0.2671	0.9050
n-Butane	0.1949	0.6605
Isopentane	0.0757	0.3184
n-Pentane	0.0419	0.1762
Cyclopentane	0.0003	0.0012
n-Hexane	0.0061	0.0307
Cyclohexane	0.0003	0.0015
Other Hexanes	0.0168	0.0842
Heptanes	0.0023	0.0136
Methylcyclohexane	0.0006	0.0034
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0001	0.0005
Toluene	0.0004	0.0022
Ethylbenzene	0.0000	0.0000
Xylenes	0.0004	0.0024
C8+ Heavies	0.0022	0.0168
<u>Subtotal</u>	<u>99.67890</u>	<u>99.39800</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.3211	0.6020
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	14.65				
LHV	Net Dry Real:	956.5	4647.5	6157.8	7485.8 Btu/scf
	Net Wet Real:	939.8	4566.3	6050.2	7354.9 Btu/scf
HHV	Gross Dry Real:	1059.9	5009.5	6592.4	8032.5 Btu/scf
	Gross Wet Real:	1041.4	4921.9	6477.2	7892.1 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*		1378.6	2798.2	3135.9	3533.8 Btu/scf
Net Heating Value (60 °F ideal reaction):		21180.5	19177.7	18185.6	18923.1 Btu/lbm
Gross Heating Value (60 °F ideal reaction):		23478.6	20672.0	19467.9	20302.8 Btu/lbm
Molar Mass (MW):		17.15343	91.277	128.548	150.492 g/mol
Relative Density (AIR=1):		0.5921	3.1514	4.4384	5.1962 SG
Density:		0.04520	0.24054	0.33874	0.39656 lbm/scf
Compressibility Factor:		0.9977	0.9885	0.9990	0.9997 Z
Liquid Volume real gas @:	14.65	17.3605	0.01	0	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 underscore) indicates there was no tube pulled for H2S.

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

PRIMARY DB KEY: **05-103-11372** NAME/DESCRIP : **PICEANCE CREEK UNIT 297-11B7**
 LEASE #: **PRODUCTION CASING**
 FIELD/AREA:

PROJECT NO. : **202509091** ANALYSIS NO. : **01**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **SEPTEMBER 29, 2025 08:06**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **SEPTEMBER 08, 2025**
 CUSTOMER REF: **TO:**
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*****FIELD DATA*****

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 1052 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : TBI-257
 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
Hydrogen	---	2.14	0.25	---	---
Nitrogen	---	0.11	0.18	---	---
Carbon Dioxide	---	0.20	0.51	---	---
Methane	P1	90.5966	84.7326	---	---
Ethane	P2	4.8615	8.5223	1.296	1.303
Propane	P3	1.1617	2.9865	0.319	0.321
i-Butane	I4	0.2671	0.9050	0.087	0.087
Methanol	X1	0.3201	0.5980	0.041	0.041
n-Butane	P4	0.1948	0.6601	0.061	0.061
2,2-Dimethylpropane	I5	0.0034	0.0143	0.001	0.001
i-Pentane	I5	0.0723	0.3041	0.026	0.026
i-Propanol	X3	0.0005	0.0018	0.000	0.000
UnknownC4s	U4	0.0001	0.0004	0.000	0.000
n-Pentane	P5	0.0419	0.1762	0.015	0.015
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,2-Dimethylbutane	I6	0.0020	0.0100	0.001	0.001
Cyclopentane	N5	0.0003	0.0012	0.000	0.000
2,3-Dimethylbutane	I6	0.0020	0.0100	0.001	0.001
2-Methylpentane	I6	0.0086	0.0432	0.004	0.004
3-Methylpentane	I6	0.0035	0.0176	0.001	0.001
n-Hexane	P6	0.0061	0.0307	0.003	0.003
2-Butanol	X4	0.0004	0.0018	0.000	0.000
2,2-Dimethylpentane	I7	0.0002	0.0012	0.000	0.000
Methylcyclopentane	N6	0.0006	0.0029	0.000	0.000
2,4-Dimethylpentane	I7	0.0003	0.0018	0.000	0.000
Benzene	A6	0.0001	0.0005	0.000	0.000
Cyclohexane	N6	0.0003	0.0015	0.000	0.000
2-Methylhexane	I7	0.0005	0.0029	0.000	0.000

2,3-Dimethylpentane	I7	0.0001	0.0006	0.000	0.000
3-Methylhexane	I7	0.0003	0.0018	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
UnknownC6s	U6	0.0001	0.0005	0.000	0.000
n-Heptane	P7	0.0007	0.0041	0.000	0.000
Methylcyclohexane	N7	0.0006	0.0034	0.000	0.000
Toluene	A7	0.0004	0.0022	0.000	0.000
2-Methylheptane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0001	0.0006	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0003	0.0020	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0002	0.0012	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0006	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	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	0.0002	0.0016	0.000	0.000
n-Decane	P10	0.0001	0.0008	0.000	0.000
n-Undecane	P11	0.0002	0.0018	0.000	0.000
n-Dodecane	P12	0.0001	0.0010	0.000	0.000
n-Tridecane	P13	0.0001	0.0011	0.000	0.000
TOTAL		100.00000	100.00000	1.8556	1.8656

CALCULATED VALUES**

BTX COMPONENTS	MOLE%	WT%	BTU @		
			14.65	14.73	
BENZENE	0.0001	0.0005	LHV NET DRY REAL :	956.5 /scf	961.8 /scf
TOLUENE	0.0004	0.0022	NET WET REAL :	939.8 /scf	945.1 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1059.9 /scf	1065.7 /scf
XYLENES	0.0004	0.0024	GROSS WET REAL :	1041.4 /scf	1047.2 /scf
TOTAL BTX	0.0009	0.0051	NET HEATING VALUE (60 °F ideal reaction):		21180.5 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23478.6 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.5921
			DENSITY		0.04520 lb/scf
			COMPRESSIBILITY FACTOR :		0.9977
			REGULAR WOBBE INDEX		1378.6

*(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	4608.6 /scf	Relative Density - SG (Air=1)	3.1514	C6+ factors
Gross Dry Ideal BTU	4967.5 /scf	Z Compressibility Factor	0.98852	0.98763
Net Dry Ideal BTU	19177.7 /lb	Density Factor	240.539 lbm/1000 ft3	
Gross Dry Ideal BTU	20672 /lb	Molar Mass or MW	91.277 g/mol	
		Volume Liquid Ideal gas	0.01 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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