



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-103-10811** NAME/DESCRIP : **PICEANCE CREEK UNIT 297-15A3**
 LEASE #: **PRODUCTION CASING**
 FIELD/AREA:
 PROJECT NO. : **202509077** ANALYSIS NO. : **01**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **SEPTEMBER 22, 2025 07:55**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **SEPTEMBER 08, 2025**
 CUSTOMER REF: TO:
 PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 510 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : ECA-754
 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	MOLE %	MASS %	GPM @	
			14.65	14.73
GLYCOLS	0.0005	0.0025	0.0000	0.0000
ALCOHOLS	0.8100	1.7231	0.1029	0.1034
HELIUM	0.01	0.00	---	---
HYDROGEN	15.30	2.05	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.11	0.20	---	---
CARBON DIOXIDE	0.24	0.70	---	---
METHANE	78.7441	83.8692	---	---
ETHANE	3.5076	7.0023	0.9347	0.9398
PROPANE	0.7757	2.2709	0.2127	0.2139
I-BUTANE	0.1871	0.7220	0.0609	0.0612
N-BUTANE	0.1443	0.5568	0.0449	0.0452
I-PENTANE	0.0710	0.3400	0.0250	0.0251
N-PENTANE	0.0418	0.2002	0.0150	0.0151
HEXANES PLUS	0.0579	0.3630	0.0220	0.0220
TOTALS	100.0000	100.0000	1.4181	1.4257

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0000	0.0000
TOLUENE	0.0001	0.0006
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0001	0.0006

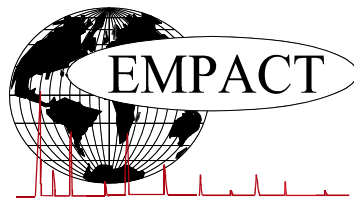
	CALCULATED VALUES**	
	14.65	14.73
BTU @		
LHV NET DRY REAL :	854.3 /scf	859.0 /scf
NET WET REAL :	839.4 /scf	844.1 /scf
HHV GROSS DRY REAL :	950.1 /scf	955.3 /scf
GROSS WET REAL :	933.5 /scf	938.7 /scf
NET HEATING VALUE (60 °F ideal reaction):		21564.6 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23984.3 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.5198
DENSITY		0.03969 lbm/scf
COMPRESSIBILITY FACTOR :		0.9983
REGULAR WOBBE INDEX		1319.6

*(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. :	202509077	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 22, 2025 07:55
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	ECA-754
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-15A3 PRODUCTION CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	510	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	— ppm mol		
COMMENTS :			

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	15.30	2.05
Carbon Dioxide	0.24	0.70
Nitrogen	0.11	0.20
Methane	78.7441	83.8692
Ethane	3.5076	7.0023
Propane	0.7757	2.2709
Isobutane	0.1871	0.7220
n-Butane	0.1443	0.5568
Isopentane	0.0698	0.3344
n-Pentane	0.0418	0.2002
Cyclopentane	0.0012	0.0056
n-Hexane	0.0134	0.0767
Cyclohexane	0.0015	0.0084
Other Hexanes	0.0314	0.1794
Heptanes	0.0070	0.0464
Methylcyclohexane	0.0008	0.0052
2,2,4 Trimethylpentane	0.0002	0.0015
Benzene	0.0000	0.0000
Toluene	0.0001	0.0006
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0035	0.0448
<u>Subtotal</u>	<u>99.18950</u>	<u>98.27440</u>
Oxygen/Argon	0.00	0.00
Glycols	0.0005	0.0025
Alcohols	0.8100	1.7231
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

	<u>Total</u>	<u>C6+</u>	<u>C8+</u>	<u>C10+</u>
<u>Calculated Values BTU @</u>	<u>Sample</u>	<u>Fraction</u>	<u>Fraction</u>	<u>Fraction</u>
LHV Net Dry Real:	854.3	4844.4	9617.0	10934.5 Btu/scf
Net Wet Real:	839.4	4759.7	9448.9	10743.4 Btu/scf
HHV Gross Dry Real:	950.1	5226.8	10366.2	11786.3 Btu/scf
Gross Wet Real:	933.5	5135.4	10185.0	11580.3 Btu/scf

<u>Other Calculated Values</u>				
Regualr Wobbe Index*	1319.6	2870.3	4055.4	4308.2 Btu/scf
Net Heating Value (60 °F ideal reaction):	21564.6	19594.8	21303.9	21565.8 Btu/lbm
Gross Heating Value (60°F ideal reaction):	23984.3	21139.3	22955.9	23237.0 Btu/lbm
Molar Mass (MW):	15.06311	94.502	190.318	218.128 g/mol
Relative Density (AIR=1):	0.5198	3.2629	6.5711	7.5316 SG
Density:	0.03969	0.24904	0.50151	0.57481 lbm/scf
Compressibility Factor:	0.9983	0.9888	0.9997	1.0000 Z
Liquid Volume real gas @:	16.1104	0.0219	0.001	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.

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

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

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 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	---	0.01	0.00	---	---
Hydrogen	---	15.30	2.05	---	---
Nitrogen	---	0.11	0.20	---	---
Carbon Dioxide	---	0.24	0.70	---	---
Methane	P1	78.7441	83.8692	---	---
Ethane	P2	3.5076	7.0023	0.935	0.940
Propane	P3	0.7757	2.2709	0.213	0.214
i-Butane	I4	0.1871	0.7220	0.061	0.061
Methanol	X1	0.8100	1.7231	0.103	0.103
n-Butane	P4	0.1443	0.5568	0.045	0.045
2,2-Dimethylpropane	I5	0.0029	0.0139	0.001	0.001
i-Pentane	I5	0.0669	0.3205	0.024	0.024
n-Pentane	P5	0.0418	0.2002	0.015	0.015
2,2-Dimethylbutane	I6	0.0029	0.0166	0.001	0.001
Cyclopentane	N5	0.0012	0.0056	0.000	0.000
2,3-Dimethylbutane	I6	0.0035	0.0201	0.001	0.001
2-Methylpentane	I6	0.0140	0.0801	0.006	0.006
3-Methylpentane	I6	0.0071	0.0406	0.003	0.003
n-Hexane	P6	0.0134	0.0767	0.005	0.005
2,2-Dimethylpentane	I7	0.0005	0.0033	0.000	0.000
Methylcyclopentane	N6	0.0033	0.0185	0.001	0.001
2,4-Dimethylpentane	I7	0.0007	0.0047	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0001	0.0007	0.000	0.000
3,3-Dimethylpentane	I7	0.0002	0.0013	0.000	0.000
Cyclohexane	N6	0.0015	0.0084	0.001	0.001
2-Methylhexane	I7	0.0015	0.0100	0.001	0.001
2,3-Dimethylpentane	I7	0.0004	0.0027	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000

3-Methylhexane	I7	0.0011	0.0073	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0003	0.0019	0.000	0.000
2,2,4-Trimethylpentane	I8	0.0002	0.0015	0.000	0.000
UnknownC6s	U6	0.0006	0.0035	0.000	0.000
n-Heptane	P7	0.0016	0.0106	0.001	0.001
Methylcyclohexane	N7	0.0008	0.0052	0.000	0.000
Propylene Glycol	GL3	0.0005	0.0025	0.000	0.000
2,5-Dimethylhexane	I8	0.0001	0.0007	0.000	0.000
Toluene	A7	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0001	0.0007	0.000	0.000
3-Methylheptane	I8	0.0001	0.0007	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0001	0.0007	0.000	0.000
n-Octane	P8	0.0002	0.0015	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0016	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0009	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0002	0.0019	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0001	0.0012	0.000	0.000
UnknownC13s	U13	0.0001	0.0012	0.000	0.000
n-Tetradecane	P14	0.0001	0.0013	0.000	0.000
n-Pentadecane	P15	0.0005	0.0070	0.000	0.000
n-Heptadecane	P17	0.0010	0.0159	0.001	0.001
n-Nonadecane	P19	0.0002	0.0036	0.000	0.000
n-Heneicosane	P21	0.0001	0.0020	0.000	0.000
n-Tricosane	P23	0.0001	0.0021	0.000	0.000
TOTAL		100.00000	100.00000	1.4181	1.4257

CALCULATED VALUES**

BTX COMPONENTS	MOLE%	WT%	BTU @		
			14.65	14.73	
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	854.3 /scf	859.0 /scf
TOLUENE	0.0001	0.0006	NET WET REAL :	839.4 /scf	844.1 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	950.1 /scf	955.3 /scf
XYLENES	0.0000	0.0000	GROSS WET REAL :	933.5 /scf	938.7 /scf
TOTAL BTX	0.0001	0.0006	NET HEATING VALUE (60 °F ideal reaction):		21564.6 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23984.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.5198
			DENSITY		0.03969 lb/scf
			COMPRESSIBILITY FACTOR :		0.9983
			REGULAR WOBBE INDEX		1319.6

*(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	4805.4 /scf	Relative Density - SG (Air=1)	3.2629	C6+ factors
Gross Dry Ideal BTU	5184.7 /scf	Z Compressibility Factor	0.98884	0.98799
Net Dry Ideal BTU	19594.8 /lb	Density Factor	249.038 lbm/1000 ft3	
Gross Dry Ideal BTU	21139.3 /lb	Molar Mass or MW	94.502 g/mol	
		Volume Liquid Ideal gas	0.022 scf/gal	23.7

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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