



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-103-10499** NAME/DESCRIP : **PICEANCE CREEK UNIT T87X-3G**
 LEASE #: **INTERMEDIATE CASING**
 FIELD/AREA:

PROJECT NO. : **202507032** ANALYSIS NO. : **02**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **JULY 20, 2025 13:45**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **JUNE 30, 2025**
 CUSTOMER REF: TO:
 PRODUCER : **QB ENERGY OPERATING, LLC** EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 1092 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : ECA-823
 LAB PRES: psig SAMPLED BY : NICK CROY
 SAMPLE TEMP. : °f SAMPLING COMPANY: **QB ENERGY OPERATING, LLC**
 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 @</u>	
			<u>14.65</u>	<u>14.73</u>
ALCOHOLS	0.0008	0.0014	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.02	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.10	0.15	---	---
CARBON DIOXIDE	2.08	4.83	---	---
METHANE	87.7311	74.2562	---	---
ETHANE	6.2245	9.8748	1.6593	1.6683
PROPANE	2.2216	5.1686	0.6097	0.6131
I-BUTANE	0.4776	1.4646	0.1559	0.1568
N-BUTANE	0.5029	1.5422	0.1579	0.1588
I-PENTANE	0.1855	0.7058	0.0680	0.0683
N-PENTANE	0.1303	0.4960	0.0470	0.0472
HEXANES PLUS	0.3155	1.5103	0.1240	0.1244
TOTALS	100.0000	100.0000	2.8218	2.8369

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0093	0.0383
TOLUENE	0.0124	0.0603
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0217	0.0986

	<u>CALCULATED VALUES**</u>	
	<u>BTU @</u>	<u>BTU @</u>
	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	1004.6 /scf	1010.1 /scf
NET WET REAL :	987.0 /scf	992.5 /scf
HHV GROSS DRY REAL :	1111.2 /scf	1117.3 /scf
GROSS WET REAL :	1091.8 /scf	1097.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		20134.5 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		22269.9 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6540
DENSITY		0.04994 lbm/scf
COMPRESSIBILITY FACTOR :		0.9973
REGULAR WOBBE INDEX		1374.7

**(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. :	202507032	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 20, 2025 13:45
ACCOUNT NO. :		SAMPLE DATE :	JUNE 30, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-823
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G INTERMEDIATE CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	1092	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.02	0.00
Carbon Dioxide	2.08	4.83
Nitrogen	0.10	0.15
Methane	87.7311	74.2562
Ethane	6.2245	9.8748
Propane	2.2216	5.1686
Isobutane	0.4776	1.4646
n-Butane	0.5029	1.5422
Isopentane	0.1817	0.6917
n-Pentane	0.1303	0.4960
Cyclopentane	0.0038	0.0141
n-Hexane	0.0545	0.2478
Cyclohexane	0.0255	0.1132
Other Hexanes	0.1010	0.4567
Heptanes	0.0635	0.3343
Methylcyclohexane	0.0438	0.2269
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0093	0.0383
Toluene	0.0124	0.0603
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0055	0.0328
<u>Subtotal</u>	<u>99.99920</u>	<u>99.99860</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.0008	0.0014
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total Sample	C6+ Fraction	C8+ Fraction	C10+ Fraction	
LHV	Net Dry Real:	1004.6	4586.9	5577.6	#DIV/0!	Btu/scf
	Net Wet Real:	987.0	4506.7	5480.1	#DIV/0!	Btu/scf
HHV	Gross Dry Real:	1111.2	4932.6	6014.4	#DIV/0!	Btu/scf
	Gross Wet Real:	1091.8	4846.4	5909.3	#DIV/0!	Btu/scf
Other Calculated Values						
	Regualr Wobbe Index*	1374.7	2770.5	3033.6	#DIV/0!	Btu/scf
	Net Heating Value (60 °F ideal reaction):	20134.5	19203.4	19782.8	#DIV/0!	Btu/lbm
	Gross Heating Value (60 °F ideal reaction):	22269.9	20650.4	21332.7	#DIV/0!	Btu/lbm
	Molar Mass (MW):	18.95406	90.744	113.607	#DIV/0!	g/mol
	Relative Density (AIR=1):	0.6540	3.1340	3.9225	#DIV/0!	SG
	Density:	0.04994	0.23913	0.29937	#DIV/0!	lbm/scf
	Compressibility Factor:	0.9973	0.9912	0.9958	#DIV/0!	Z
	Liquid Volume real gas @:	17.9696	0.1236	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**

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 1092 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : **ECA-823**
 LAB PRES: psig SAMPLED BY : **NICK CROY**
 SAMPLE TEMP. : °f SAMPLING COMPANY: **QB ENERGY OPERATING, LLC**
 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	---	0.02	0.00	---	---
Nitrogen	---	0.10	0.15	---	---
Carbon Dioxide	---	2.08	4.83	---	---
Methane	P1	87.7311	74.2562	---	---
Ethane	P2	6.2245	9.8748	1.659	1.668
Propane	P3	2.2216	5.1686	0.610	0.613
i-Butane	I4	0.4776	1.4646	0.156	0.157
Methanol	X1	0.0008	0.0014	0.000	0.000
n-Butane	P4	0.5029	1.5422	0.158	0.159
2,2-Dimethylpropane	I5	0.0040	0.0153	0.002	0.002
i-Pentane	I5	0.1777	0.6764	0.065	0.065
n-Pentane	P5	0.1303	0.4960	0.047	0.047
2,2-Dimethylbutane	I6	0.0050	0.0227	0.002	0.002
Cyclopentane	N5	0.0038	0.0141	0.001	0.001
2,3-Dimethylbutane	I6	0.0094	0.0427	0.004	0.004
2-Methylpentane	I6	0.0415	0.1887	0.017	0.017
3-Methylpentane	I6	0.0220	0.1000	0.009	0.009
n-Hexane	P6	0.0545	0.2478	0.022	0.022
2,2-Dimethylpentane	I7	0.0013	0.0069	0.001	0.001
Methylcyclopentane	N6	0.0231	0.1026	0.008	0.008
2,4-Dimethylpentane	I7	0.0023	0.0121	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0026	0.000	0.000
Benzene	A6	0.0093	0.0383	0.003	0.003
3,3-Dimethylpentane	I7	0.0007	0.0037	0.000	0.000
Cyclohexane	N6	0.0255	0.1132	0.009	0.009
2-Methylhexane	I7	0.0097	0.0513	0.004	0.004
2,3-Dimethylpentane	I7	0.0025	0.0132	0.001	0.001

1,1-Dimethylcyclopentane	N7	0.0020	0.0103	0.001	0.001
3-Methylhexane	I7	0.0085	0.0450	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0033	0.0171	0.002	0.002
1t,3-Dimethylcyclopentane	N7	0.0030	0.0156	0.001	0.001
3-Ethylpentane	I7	0.0004	0.0021	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0047	0.0243	0.002	0.002
n-Heptane	P7	0.0226	0.1195	0.010	0.010
1c,2-Dimethylcyclopentane	N7	0.0005	0.0026	0.000	0.000
Methylcyclohexane	N7	0.0438	0.2269	0.018	0.018
2,2-Dimethylhexane	I8	0.0009	0.0054	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0013	0.0068	0.001	0.001
2,5-Dimethylhexane	I8	0.0007	0.0042	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0006	0.0036	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0006	0.0035	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
Toluene	A7	0.0124	0.0603	0.004	0.004
2,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
2-Methylheptane	I8	0.0005	0.0030	0.000	0.000
4-Methylheptane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0003	0.0018	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0006	0.0035	0.000	0.000
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0003	0.0018	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0001	0.0006	0.000	0.000
TOTAL		100.00000	100.00000	2.8218	2.8369

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @		
			14.65	14.73	
BENZENE	0.0093	0.0383	LHV NET DRY REAL :	1004.6 /scf	1010.1 /scf
TOLUENE	0.0124	0.0603	NET WET REAL :	987.0 /scf	992.5 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1111.2 /scf	1117.3 /scf
XYLENES	0.0000	0.0000	GROSS WET REAL :	1091.8 /scf	1097.9 /scf
TOTAL BTEX	0.0217	0.0986	NET HEATING VALUE (60 °F ideal reaction):		20134.5 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		22269.9 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6540
			DENSITY		0.04994 lb/scf
			COMPRESSIBILITY FACTOR :		0.9973
			REGULAR WOBBE INDEX		1374.7

*(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	4560.9 /scf	Relative Density - SG (Air=1)	3.134	C6+ factors
Gross Dry Ideal BTU	4904.6 /scf	Z Compressibility Factor	0.99122	0.99069
Net Dry Ideal BTU	19203.4 /lb	Density Factor	239.13 lbm/1000 ft3	
Gross Dry Ideal BTU	20650.4 /lb	Molar Mass or MW	90.744 g/mol	
		Volume Liquid Ideal gas	0.124 scf/gal	25

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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