EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10500**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T87X-3G1**
LEASE #:			**PRODUCTION CASING**
FIELD/AREA:			
PROJECT NO. :	**202507034**	ANALYSIS NO. :	**01**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	JULY 21, 2025 07:39
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. :	1418 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-706
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	ºf	SAMPLING COMPANY:	QB ENERGY OPERATING, LLC
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	0.1323	0.2485	0.0170	0.0171
HELIUM	0.00	0.00	---	---
HYDROGEN	1.07	0.13	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.22	0.36	---	---
CARBON DIOXIDE	0.03	0.08	---	---
METHANE	92.6276	87.0402	---	---
ETHANE	4.3940	7.7390	1.1710	1.1774
PROPANE	1.0769	2.7815	0.2958	0.2974
I-BUTANE	0.2203	0.7500	0.0719	0.0723
N-BUTANE	0.1459	0.4967	0.0460	0.0462
I-PENTANE	0.0467	0.1973	0.0170	0.0171
N-PENTANE	0.0219	0.0925	0.0080	0.0080
HEXANES PLUS	0.0144	0.0844	0.0040	0.0040
TOTALS	100.00000	100.00000	1.6307	1.6395

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0000	0.0000
TOLUENE	0.0001	0.0005
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0001	0.0005

**(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 :	955.5 **/scf**	960.7 **/scf**
	NET WET REAL :	938.8 **/scf**	944.0 **/scf**
HHV	GROSS DRY REAL :	1059.3 **/scf**	1065.1 **/scf**
	GROSS WET REAL :	1040.8 **/scf**	1046.6 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		21264.7 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		23574.6 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.5891
	DENSITY		0.04498 **lbm/scf**
	COMPRESSIBILITY FACTOR :		0.9977
	REGULAR WOBBE INDEX		1381.3

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202507034	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 21, 2025 07:39
ACCOUNT NO. :		SAMPLE DATE :	JUNE 30, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-706
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G1 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	1418	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	1.07	0.13
Carbon Dioxide	0.03	0.08
Nitrogen	0.22	0.36
Methane	92.6276	87.0402
Ethane	4.3940	7.7390
Propane	1.0769	2.7815
Isobutane	0.2203	0.7500
n-Butane	0.1459	0.4967
Isopentane	0.0465	0.1965
n-Pentane	0.0219	0.0925
Cyclopentane	0.0002	0.0008
n-Hexane	0.0023	0.0116
Cyclohexane	0.0001	0.0005
Other Hexanes	0.0074	0.0373
Heptanes	0.0007	0.0042
Methylcyclohexane	0.0001	0.0006
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0000	0.0000
Toluene	0.0001	0.0005
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0037	0.0297
Subtotal	99.86770	99.75150
Oxygen/Argon	0.00	0.00
Alcohols	0.1323	0.2485
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	955.5	5014.2	6577.8	7219.9	**Btu/scf**
	Net Wet Real:	938.8	4926.5	6462.8	7093.7	**Btu/scf**
HHV	Gross Dry Real:	1059.3	5410.4	7092.7	7803.9	**Btu/scf**
	Gross Wet Real:	1040.8	5315.8	6968.7	7667.5	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1381.3	2896.6	3265.4	3474.7	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21264.7	18847.8	17965.8	18724.1	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23574.6	20338.0	19370.7	20237.6	**Btu/lbm**
Molar Mass (MW):		17.07142	99.919	137.378	146.935	**g/mol**
Relative Density (AIR=1):		0.5891	3.4501	4.7436	5.0733	**SG**
Density:		0.04498	0.26331	0.36201	0.38719	**lbm/scf**
Compressiblity Factor:		0.9977	0.9913	0.9996	0.9997	**Z**
Liquid Volume real gas @:	**14.65**	17.3655	0.004	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 uderscore) indicates there was no tube pulled for H2S.

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

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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. :	1418 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-706
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	ºf	SAMPLING COMPANY:	QB ENERGY OPERATING, LLC
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**
Hydrogen	---	1.07	0.13	---	---
Nitrogen	---	0.22	0.36	---	---
Carbon Dioxide	---	0.03	0.08	---	---
Methane	P1	92.6276	87.0402	---	---
Ethane	P2	4.3940	7.7390	1.171	1.177
Propane	P3	1.0769	2.7815	0.296	0.297
i-Butane	I4	0.2203	0.7500	0.072	0.072
Methanol	X1	0.1322	0.2481	0.017	0.017
n-Butane	P4	0.1459	0.4967	0.046	0.046
2,2-Dimethylpropane	I5	0.0028	0.0118	0.001	0.001
i-Pentane	I5	0.0437	0.1847	0.016	0.016
n-Pentane	P5	0.0218	0.0921	0.008	0.008
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,2-Dimethylbutane	I6	0.0012	0.0060	0.000	0.000
Cyclopentane	N5	0.0002	0.0008	0.000	0.000
2,3-Dimethylbutane	I6	0.0010	0.0050	0.000	0.000
2-Methylpentane	I6	0.0037	0.0187	0.002	0.002
3-Methylpentane	I6	0.0014	0.0071	0.001	0.001
UnknownC5s	U5	0.0001	0.0004	0.000	0.000
n-Hexane	P6	0.0023	0.0116	0.001	0.001
2,2-Dimethylpentane	I7	0.0001	0.0006	0.000	0.000
Methylcyclopentane	N6	0.0001	0.0005	0.000	0.000
2,4-Dimethylpentane	I7	0.0001	0.0006	0.000	0.000
Cyclohexane	N6	0.0001	0.0005	0.000	0.000
2-Methylhexane	I7	0.0001	0.0006	0.000	0.000
3-Methylhexane	I7	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0003	0.0018	0.000	0.000
Methylcyclohexane	N7	0.0001	0.0006	0.000	0.000

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Toluene	A7	0.0001	0.0005	0.000	0.000
n-Octane	P8	0.0001	0.0006	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	0.0004	0.0028	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0014	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
3-Ethyloctane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0007	0.0055	0.000	0.000
n-Decane	P10	0.0001	0.0008	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,4-Methyl-n-propylbenzene	A10	0.0001	0.0008	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0008	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Dimethyl-3-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Ethyl-i-propylbenzene	A10	0.0001	0.0009	0.000	0.000
n-Undecane	P11	0.0002	0.0018	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
n-Dodecane	P12	0.0001	0.0010	0.000	0.000
n-Tridecane	P13	0.0002	0.0022	0.000	0.000
n-Tetradecane	P14	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	1.6307	1.6395

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0000	0.0000
TOLUENE	0.0001	0.0005
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0001	0.0005

**(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 :	955.5 /scf	960.7 /scf
	NET WET REAL :	938.8 /scf	944.0 /scf
HHV	GROSS DRY REAL :	1059.3 /scf	1065.1 /scf
	GROSS WET REAL :	1040.8 /scf	1046.6 /scf
	NET HEATING VALUE (60 °F ideal reaction):		21264.7 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23574.6 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.5891
	DENSITY		0.04498 lb/scf
	COMPRESSIBILITY FACTOR :		0.9977
	REGULAR WOBBE INDEX		1381.3

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

Net Dry Ideal BTU	4986.2 /scf	Relative Density - SG (Air=1)	3.4501		***C6+factors***
Gross Dry Ideal BTU	5380.2 /scf	**Z** Compressiblity Factor	0.9913		0.98926
Net Dry Ideal BTU	18847.8 /lb	Density Factor	263.305	lbm/1000 ft3	
Gross Dry Ideal BTU	20338 /lb	Molar Mass or MW	99.919	g/mol	
		Volume Liquid Ideal gas	0.004	scf/gal	22.4

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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