EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-11329**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T25X-25G1 SURFACE CASING**
LEASE #:			
FIELD/AREA:			
PROJECT NO. :	**202507021**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	JULY 10, 2025 13:08
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JUNE 25, 2025 13:30
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	
SAMPLE PRES. :	207	psig	PROBE :	
FLOW PRES. :		psig	CYLINDER NO. :	ECA-730
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	0.0032	0.0053	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.04	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.29	0.42	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	87.3816	72.2684	---	---
ETHANE	5.9646	9.2461	1.5907	1.5994
PROPANE	3.2662	7.4250	0.8978	0.9027
I-BUTANE	0.6194	1.8560	0.2020	0.2031
N-BUTANE	1.0537	3.1573	0.3309	0.3327
I-PENTANE	0.3909	1.4517	0.1410	0.1417
N-PENTANE	0.3491	1.2985	0.1260	0.1267
HEXANES PLUS	0.6014	2.8018	0.2410	0.2420
TOTALS	100.00000	100.00000	3.5294	3.5483

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0174	0.0701
TOLUENE	0.0067	0.0318
ETHYLBENZENE	0.0002	0.0011
XYLENES	0.0008	0.0044
TOTAL BTEX	0.0251	0.1074

**(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 :	1071.4 **/scf**	1077.2 **/scf**
	NET WET REAL :	1052.7 **/scf**	1058.5 **/scf**
HHV	GROSS DRY REAL :	1183.5 **/scf**	1189.9 **/scf**
	GROSS WET REAL :	1162.8 **/scf**	1169.2 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	20974.2 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23167.5 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6689
DENSITY	0.05111 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9971
REGULAR WOBBE INDEX	1447.3

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202507021	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 10, 2025 13:08
ACCOUNT NO. :		SAMPLE DATE :	JUNE 25, 2025 13:30
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-730
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T25X-25G1 SURFACE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	207	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.04	0.00
Carbon Dioxide	0.02	0.05
Nitrogen	0.29	0.42
Methane	87.3816	72.2684
Ethane	5.9646	9.2461
Propane	3.2662	7.4250
Isobutane	0.6194	1.8560
n-Butane	1.0537	3.1573
Isopentane	0.3696	1.3747
n-Pentane	0.3491	1.2985
Cyclopentane	0.0213	0.0770
n-Hexane	0.1169	0.5193
Cyclohexane	0.0494	0.2144
Other Hexanes	0.2298	1.0154
Heptanes	0.1040	0.5346
Methylcyclohexane	0.0491	0.2485
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0174	0.0701
Toluene	0.0067	0.0318
Ethylbenzene	0.0002	0.0011
Xylenes	0.0008	0.0044
C8+ Heavies	0.0271	0.1622
Subtotal	99.98680	99.97470
Oxygen/Argon	0.01	0.02
Alcohols	0.0032	0.0053
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1071.4	4589.0	5779.4	8159.3	**Btu/scf**
	Net Wet Real:	1052.7	4508.8	5678.4	8016.7	**Btu/scf**
HHV	Gross Dry Real:	1183.5	4939.7	6229.8	8995.5	**Btu/scf**
	Gross Wet Real:	1162.8	4853.3	6120.9	8838.2	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1447.3	2778.7	3115.2	3745.8	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20974.2	19306.3	19822.9	18921.8	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23167.5	20784.3	21367.7	20858.8	**Btu/lbm**
Molar Mass (MW):		19.39681	90.38	115.849	168.032	**g/mol**
Relative Density (AIR=1):		0.6689	3.1205	4.0001	5.8017	**SG**
Density:		0.05111	0.23816	0.30528	0.44279	**lbm/scf**
Compressiblity Factor:		0.9971	0.9906	0.9970	0.9999	**Z**
Liquid Volume real gas @:	**14.65**	18.2896	0.2402	0.011	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

PRIMARY DB KEY: **05-103-11329** NAME/DESCRIP : **PICEANCE CREEK UNIT T25X-25G1**
LEASE #: **SURFACE CASING**
FIELD/AREA:

PROJECT NO. : **202507021** ANALYSIS NO. : **02**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: JULY 10, 2025 13:08
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : JUNE 25, 2025 13:30
CUSTOMER REF: TO:
PRODUCER : QB ENERGY OPERATING, LLC EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 207 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-730
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**
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.04	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.29	0.42	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	87.3816	72.2684	---	---
Ethane	P2	5.9646	9.2461	1.591	1.599
Propane	P3	3.2662	7.4250	0.898	0.903
i-Butane	I4	0.6194	1.8560	0.202	0.203
Methanol	X1	0.0032	0.0053	0.000	0.000
n-Butane	P4	1.0537	3.1573	0.331	0.333
2,2-Dimethylpropane	I5	0.0047	0.0175	0.002	0.002
i-Pentane	I5	0.3649	1.3572	0.133	0.134
n-Pentane	P5	0.3491	1.2985	0.126	0.127
2,2-Dimethylbutane	I6	0.0061	0.0271	0.003	0.003
Cyclopentane	N5	0.0213	0.0770	0.006	0.006
2,3-Dimethylbutane	I6	0.0175	0.0777	0.007	0.007
2-Methylpentane	I6	0.1002	0.4452	0.041	0.041
3-Methylpentane	I6	0.0531	0.2359	0.022	0.022
n-Hexane	P6	0.1169	0.5193	0.048	0.048
2,2-Dimethylpentane	I7	0.0019	0.0098	0.001	0.001
Methylcyclopentane	N6	0.0529	0.2295	0.019	0.019
2,4-Dimethylpentane	I7	0.0040	0.0207	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0006	0.0031	0.000	0.000
Benzene	A6	0.0174	0.0701	0.005	0.005
3,3-Dimethylpentane	I7	0.0008	0.0041	0.000	0.000
Cyclohexane	N6	0.0494	0.2144	0.017	0.017
2-Methylhexane	I7	0.0176	0.0909	0.008	0.008
2,3-Dimethylpentane	I7	0.0059	0.0305	0.003	0.003

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1,1-Dimethylcyclopentane	N7	0.0033	0.0167	0.001	0.001
3-Methylhexane	I7	0.0158	0.0816	0.007	0.007
1c,3-Dimethylcyclopentane	N7	0.0063	0.0319	0.003	0.003
1t,3-Dimethylcyclopentane	N7	0.0056	0.0284	0.003	0.003
3-Ethylpentane	I7	0.0010	0.0052	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0094	0.0476	0.004	0.004
n-Heptane	P7	0.0292	0.1508	0.013	0.013
1c,2-Dimethylcyclopentane	N7	0.0006	0.0030	0.000	0.000
Methylcyclohexane	N7	0.0491	0.2485	0.020	0.020
2,2-Dimethylhexane	I8	0.0016	0.0094	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0003	0.0017	0.000	0.000
Ethylcyclopentane	N7	0.0017	0.0086	0.001	0.001
2,5-Dimethylhexane	I8	0.0009	0.0053	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0009	0.0053	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0013	0.0075	0.001	0.001
3,3-Dimethylhexane	I8	0.0003	0.0017	0.000	0.000
Toluene	A7	0.0067	0.0318	0.002	0.002
2,3-Dimethylhexane	I8	0.0008	0.0047	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0012	0.000	0.000
2-Methylheptane	I8	0.0033	0.0194	0.002	0.002
4-Methylheptane	I8	0.0008	0.0047	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	0.0106	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0034	0.0197	0.002	0.002
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0015	0.0087	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0004	0.0023	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0010	0.0058	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0034	0.0200	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0005	0.0029	0.000	0.000
2,2-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0006	0.0039	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0004	0.0023	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
Ethylbenzene	I8	0.0002	0.0011	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0005	0.0027	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0011	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0002	0.0013	0.000	0.000
UnknownC9s	U9	0.0006	0.0040	0.000	0.000
n-Decane	P10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0001	0.0007	0.000	0.000
1,3-Di-i-propylbenzene	A11	0.0002	0.0016	0.000	0.000
UnknownC11s	U11	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
UnknownC16s	U16	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	3.5294	3.5483

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0174	0.0701
TOLUENE	0.0067	0.0318
ETHYLBENZENE	0.0002	0.0011
XYLENES	0.0008	0.0044
TOTAL BTEX	0.0251	0.1074

*(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 :	1071.4 /scf	1077.2 /scf
	NET WET REAL :	1052.7 /scf	1058.5 /scf
HHV	GROSS DRY REAL :	1183.5 /scf	1189.9 /scf
	GROSS WET REAL :	1162.8 /scf	1169.2 /scf
	NET HEATING VALUE (60 °F ideal reaction):		20974.2 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23167.5 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6689
	DENSITY		0.05111 lb/scf
	COMPRESSIBILITY FACTOR :		0.9971
	REGULAR WOBBE INDEX		1447.3

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

Net Dry Ideal BTU	4560 /scf	Relative Density - SG (Air=1)	3.1205	***C6+factors***
Gross Dry Ideal BTU	4908.5 /scf	**Z** Compressiblity Factor	0.99058	0.99013
Net Dry Ideal BTU	19306.3 /lb	Density Factor	238.156 lbm/1000 ft3	
Gross Dry Ideal BTU	20784.3 /lb	Molar Mass or MW	90.38 g/mol	
		Volume Liquid Ideal gas	0.241 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.