EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-103-10500** NAME/DESCRIP : **PICEANCE CREEK UNIT T87X-3G1**
LEASE #: **INTERMEDIATE CASING**
FIELD/AREA:

PROJECT NO. : **202507034** ANALYSIS NO. : **02**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: JULY 21, 2025 09:26
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. : 207 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-772
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	0.0036	0.0068	0.0000	0.0000
HELIUM	0.02	0.00	---	---
HYDROGEN	0.14	0.02	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.72	1.19	---	---
CARBON DIOXIDE	0.06	0.16	---	---
METHANE	95.4288	90.2196	---	---
ETHANE	2.5088	4.4456	0.6684	0.6720
PROPANE	0.5571	1.4477	0.1529	0.1537
I-BUTANE	0.0793	0.2716	0.0260	0.0261
N-BUTANE	0.1616	0.5535	0.0510	0.0512
I-PENTANE	0.0550	0.2338	0.0190	0.0191
N-PENTANE	0.0565	0.2402	0.0200	0.0201
HEXANES PLUS	0.2093	1.2114	0.0830	0.0831
TOTALS	100.00000	100.00000	1.0203	1.0253

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0056	0.0257
TOLUENE	0.0011	0.0059
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0010	0.0062
TOTAL BTEX	0.0079	0.0390

**(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 :	941.4 **/scf**	946.5 **/scf**
	NET WET REAL :	924.9 **/scf**	930.0 **/scf**
HHV	GROSS DRY REAL :	1044.2 **/scf**	1049.9 **/scf**
	GROSS WET REAL :	1025.9 **/scf**	1031.6 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	21103.9 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23402.7 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.5847
DENSITY	0.04471 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9978
REGULAR WOBBE INDEX	1366.9

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202507034	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 21, 2025 09:26
ACCOUNT NO. :		SAMPLE DATE :	JUNE 30, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-772
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G1 INTERMEDIATE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	207	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.14	0.02
Carbon Dioxide	0.06	0.16
Nitrogen	0.72	1.19
Methane	95.4288	90.2196
Ethane	2.5088	4.4456
Propane	0.5571	1.4477
Isobutane	0.0793	0.2716
n-Butane	0.1616	0.5535
Isopentane	0.0541	0.2301
n-Pentane	0.0565	0.2402
Cyclopentane	0.0009	0.0037
n-Hexane	0.0347	0.1762
Cyclohexane	0.0059	0.0293
Other Hexanes	0.0426	0.2158
Heptanes	0.0533	0.3144
Methylcyclohexane	0.0132	0.0764
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0056	0.0257
Toluene	0.0011	0.0059
Ethylbenzene	0.0002	0.0012
Xylenes	0.0010	0.0062
C8+ Heavies	0.0516	0.3597
Subtotal	99.99640	99.99320
Oxygen/Argon	0.00	0.00
Alcohols	0.0036	0.0068
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	941.4	4973.0	5901.1	7215.5	**Btu/scf**
	Net Wet Real:	924.9	4886.1	5797.9	7089.4	**Btu/scf**
HHV	Gross Dry Real:	1044.2	5356.5	6352.3	7772.2	**Btu/scf**
	Gross Wet Real:	1025.9	5262.9	6241.3	7636.3	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1366.9	2896.3	3148.7	3452.5	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21103.9	19336.5	19505.5	19113.7	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23402.7	20827.0	21005.4	20585.5	**Btu/lbm**
Molar Mass (MW):		16.96817	98.248	118.044	147.589	**g/mol**
Relative Density (AIR=1):		0.5847	3.3930	4.0760	5.0959	**SG**
Density:		0.04471	0.25892	0.31108	0.38893	**lbm/scf**
Compressiblity Factor:		0.9978	0.9929	0.9976	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	17.208	0.0827	0.0189	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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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	---	0.02	0.00	---	---
Hydrogen	---	0.14	0.02	---	---
Nitrogen	---	0.72	1.19	---	---
Carbon Dioxide	---	0.06	0.16	---	---
Methane	P1	95.4288	90.2196	---	---
Ethane	P2	2.5088	4.4456	0.668	0.672
Propane	P3	0.5571	1.4477	0.153	0.154
i-Butane	I4	0.0793	0.2716	0.026	0.026
Methanol	X1	0.0036	0.0068	0.000	0.000
n-Butane	P4	0.1616	0.5535	0.051	0.051
2,2-Dimethylpropane	I5	0.0035	0.0149	0.001	0.001
i-Pentane	I5	0.0506	0.2152	0.018	0.018
n-Pentane	P5	0.0565	0.2402	0.020	0.020
2,2-Dimethylbutane	I6	0.0031	0.0157	0.001	0.001
Cyclopentane	N5	0.0009	0.0037	0.000	0.000
2,3-Dimethylbutane	I6	0.0033	0.0167	0.001	0.001
2-Methylpentane	I6	0.0212	0.1077	0.009	0.009
3-Methylpentane	I6	0.0118	0.0599	0.005	0.005
n-Hexane	P6	0.0347	0.1762	0.014	0.014
2,2-Dimethylpentane	I7	0.0011	0.0065	0.001	0.001
Methylcyclopentane	N6	0.0032	0.0158	0.001	0.001
2,4-Dimethylpentane	I7	0.0015	0.0088	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0004	0.0024	0.000	0.000
Benzene	A6	0.0056	0.0257	0.002	0.002
3,3-Dimethylpentane	I7	0.0007	0.0041	0.000	0.000
Cyclohexane	N6	0.0059	0.0293	0.002	0.002
2-Methylhexane	I7	0.0089	0.0526	0.004	0.004
2,3-Dimethylpentane	I7	0.0025	0.0148	0.001	0.001

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1,1-Dimethylcyclopentane	N7	0.0013	0.0075	0.001	0.001
3-Methylhexane	I7	0.0086	0.0508	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0008	0.0047	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0007	0.0041	0.000	0.000
3-Ethylpentane	I7	0.0006	0.0035	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0018	0.0104	0.001	0.001
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0231	0.1364	0.011	0.011
1c,2-Dimethylcyclopentane	N7	0.0006	0.0035	0.000	0.000
Methylcyclohexane	N7	0.0132	0.0764	0.005	0.005
2,2-Dimethylhexane	I8	0.0009	0.0061	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0003	0.0020	0.000	0.000
Ethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
2,5-Dimethylhexane	I8	0.0011	0.0074	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0011	0.0074	0.001	0.001
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0005	0.0033	0.000	0.000
3,3-Dimethylhexane	I8	0.0004	0.0027	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0011	0.0059	0.000	0.000
2,3-Dimethylhexane	I8	0.0009	0.0061	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0003	0.0020	0.000	0.000
2-Methylheptane	I8	0.0064	0.0431	0.003	0.003
4-Methylheptane	I8	0.0016	0.0108	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0002	0.0014	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0014	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0036	0.0242	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0026	0.0172	0.001	0.001
3-Ethylhexane	I8	0.0003	0.0020	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0011	0.0072	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0006	0.0039	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0010	0.0066	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
n-Octane	P8	0.0114	0.0767	0.006	0.006
1c,4-Dimethylcyclohexane	N8	0.0003	0.0020	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0008	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0004	0.0030	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0008	0.0059	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylcyclohexane	N8	0.0019	0.0125	0.001	0.001
n-Propylcyclopentane	N8	0.0005	0.0033	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
2,5-Dimethylheptane	I9	0.0007	0.0053	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0008	0.000	0.000

Ethylbenzene	I8	0.0002	0.0012	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0008	0.0050	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0006	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0008	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0008	0.000	0.000
4-Methyloctane	I9	0.0005	0.0038	0.000	0.000
2-Methyloctane	I9	0.0008	0.0061	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0008	0.000	0.000
3-Methyloctane	I9	0.0001	0.0008	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0007	0.0052	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0008	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0008	0.000	0.000
n-Nonane	P9	0.0021	0.0158	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0008	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0015	0.000	0.000
n-Propylbenzene	A9	0.0004	0.0028	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0016	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0007	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
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0005	0.0038	0.000	0.000
n-Decane	P10	0.0004	0.0034	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0008	0.000	0.000
3-Ethylnonane	I10	0.0002	0.0018	0.000	0.000
n-Butylbenzene	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
UnknownC10s	U10	0.0004	0.0034	0.000	0.000
n-Undecane	P11	0.0001	0.0009	0.000	0.000
1,4-Ethyl-i-propylbenzene	A11	0.0001	0.0009	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0008	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
UnknownC12s	U12	0.0001	0.0009	0.000	0.000
n-Heptadecane	P17	0.0001	0.0014	0.000	0.000
TOTAL		100.00000	100.00000	1.0203	1.0253

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0056	0.0257
TOLUENE	0.0011	0.0059
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0010	0.0062
TOTAL BTEX	0.0079	0.0390

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HHV	GROSS DRY REAL :	1044.2 /scf	1049.9 /scf
	GROSS WET REAL :	1025.9 /scf	1031.6 /scf

NET HEATING VALUE (60 °F ideal reaction):	21103.9 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23402.7 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5847
DENSITY	0.04471 lb/scf
COMPRESSIBILITY FACTOR :	0.9978
REGULAR WOBBE INDEX	1366.9

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

Net Dry Ideal BTU	4953.1 /scf	Relative Density - SG (Air=1)	3.393		***C6+factors***
Gross Dry Ideal BTU	5335.1 /scf	**Z** Compressiblity Factor	0.99289		0.99222
Net Dry Ideal BTU	19336.5 /lb	Density Factor	258.92	lbm/1000 ft3	
Gross Dry Ideal BTU	20827 /lb	Molar Mass or MW	98.248	g/mol	
		Volume Liquid Ideal gas	0.083	scf/gal	22.5

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.