EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10719**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T87X-3G5**
LEASE #:			**INTERMEDIATE CASING**
FIELD/AREA:			
PROJECT NO. :	**202507027**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	JULY 14, 2025 07:56
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 1, 2025
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	
SAMPLE PRES. :	1265	psig	PROBE :	
FLOW PRES. :		psig	CYLINDER NO. :	ECA-733
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	0.0033	0.0054	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.08	0.11	---	---
CARBON DIOXIDE	4.13	9.31	---	---
METHANE	87.1173	71.6238	---	---
ETHANE	5.2940	8.1579	1.4112	1.4189
PROPANE	1.5265	3.4497	0.4188	0.4211
I-BUTANE	0.3658	1.0896	0.1189	0.1196
N-BUTANE	0.3332	0.9925	0.1049	0.1055
I-PENTANE	0.1742	0.6437	0.0640	0.0643
N-PENTANE	0.1162	0.4297	0.0420	0.0422
HEXANES PLUS	0.8496	4.1869	0.3500	0.3515
TOTALS	100.00000	100.00000	2.5098	2.5231

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0266	0.1065
TOLUENE	0.0798	0.3768
ETHYLBENZENE	0.0022	0.0120
XYLENES	0.0204	0.1110
TOTAL BTEX	0.1290	0.6063

**(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 :	984.4 **/scf**	989.7 **/scf**
	NET WET REAL :	967.2 **/scf**	972.5 **/scf**
HHV	GROSS DRY REAL :	1089.0 **/scf**	1094.9 **/scf**
	GROSS WET REAL :	1070.0 **/scf**	1075.9 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	19181.7 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	21212.2 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6728
DENSITY	0.05142 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9974
REGULAR WOBBE INDEX	1328.4

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202507027	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 14, 2025 07:56
ACCOUNT NO. :		SAMPLE DATE :	JULY 1, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-733
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G5 INTERMEDIATE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	1265	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	4.13	9.31
Nitrogen	0.08	0.11
Methane	87.1173	71.6238
Ethane	5.2940	8.1579
Propane	1.5265	3.4497
Isobutane	0.3658	1.0896
n-Butane	0.3332	0.9925
Isopentane	0.1703	0.6297
n-Pentane	0.1162	0.4297
Cyclopentane	0.0039	0.0140
n-Hexane	0.0780	0.3445
Cyclohexane	0.0457	0.1971
Other Hexanes	0.1487	0.6529
Heptanes	0.1757	0.8986
Methylcyclohexane	0.1350	0.6793
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0266	0.1065
Toluene	0.0798	0.3768
Ethylbenzene	0.0022	0.0120
Xylenes	0.0204	0.1110
C8+ Heavies	0.1375	0.8082
Subtotal	99.99670	99.99460
Oxygen/Argon	0.00	0.00
Alcohols	0.0033	0.0054
Total	100.00000	100.00000

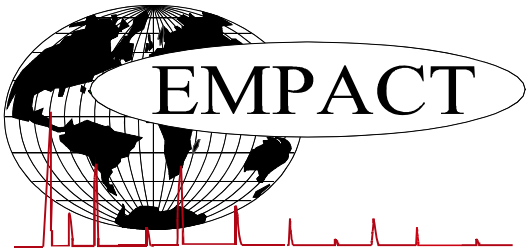
Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	984.4	4811.2	5662.6	7170.4	**Btu/scf**
	Net Wet Real:	967.2	4727.1	5563.6	7045.1	**Btu/scf**
HHV	Gross Dry Real:	1089.0	5161.2	6084.4	7721.8	**Btu/scf**
	Gross Wet Real:	1070.0	5071.0	5978.0	7586.8	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1328.4	2823.9	3075.5	3493.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19181.7	19184.0	19668.9	19176.4	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21212.2	20584.4	21136.5	20651.0	**Btu/lbm**
Molar Mass (MW):		19.51453	96.143	113.428	142.282	**g/mol**
Relative Density (AIR=1):		0.6728	3.3194	3.9167	4.9126	**SG**
Density:		0.05142	0.25337	0.29891	0.37493	**lbm/scf**
Compressiblity Factor:		0.9974	0.9937	0.9972	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	17.8988	0.3489	0.0728	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.

EMPACT Analytical Systems Inc. 365 S Main St Brighton, CO 80601 303-637-0150



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10719** NAME/DESCRIP : **PICEANCE CREEK UNIT T87X-3G5**
LEASE #: **INTERMEDIATE CASING**
FIELD/AREA:

PROJECT NO. : **202507027** ANALYSIS NO. : **02**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: JULY 14, 2025 07:56
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : JULY 1, 2025
CUSTOMER REF: TO:
PRODUCER : QB ENERGY OPERATING, LLC EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 1265 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-733
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	---	0.01	0.00	---	---
Nitrogen	---	0.08	0.11	---	---
Carbon Dioxide	---	4.13	9.31	---	---
Methane	P1	87.1173	71.6238	---	---
Ethane	P2	5.2940	8.1579	1.411	1.419
Propane	P3	1.5265	3.4497	0.419	0.421
i-Butane	I4	0.3658	1.0896	0.119	0.120
Methanol	X1	0.0033	0.0054	0.000	0.000
n-Butane	P4	0.3332	0.9925	0.105	0.106
2,2-Dimethylpropane	I5	0.0042	0.0155	0.002	0.002
i-Pentane	I5	0.1661	0.6142	0.061	0.061
n-Pentane	P5	0.1162	0.4297	0.042	0.042
2,2-Dimethylbutane	I6	0.0075	0.0331	0.003	0.003
Cyclopentane	N5	0.0039	0.0140	0.001	0.001
2,3-Dimethylbutane	I6	0.0136	0.0601	0.006	0.006
2-Methylpentane	I6	0.0571	0.2522	0.024	0.024
3-Methylpentane	I6	0.0332	0.1466	0.014	0.014
n-Hexane	P6	0.0780	0.3445	0.032	0.032
2,2-Dimethylpentane	I7	0.0030	0.0154	0.001	0.001
Methylcyclopentane	N6	0.0373	0.1609	0.013	0.013
2,4-Dimethylpentane	I7	0.0048	0.0247	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0011	0.0056	0.001	0.001
Benzene	A6	0.0266	0.1065	0.007	0.007
3,3-Dimethylpentane	I7	0.0018	0.0092	0.001	0.001
Cyclohexane	N6	0.0457	0.1971	0.016	0.016
2-Methylhexane	I7	0.0261	0.1340	0.012	0.012
2,3-Dimethylpentane	I7	0.0064	0.0329	0.003	0.003
1,1-Dimethylcyclopentane	N7	0.0053	0.0267	0.002	0.002
3-Methylhexane	I7	0.0241	0.1238	0.011	0.011

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

1c,3-Dimethylcyclopentane	N7	0.0085	0.0428	0.004	0.004
1t,3-Dimethylcyclopentane	N7	0.0079	0.0398	0.004	0.004
3-Ethylpentane	I7	0.0013	0.0067	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0125	0.0629	0.006	0.006
n-Heptane	P7	0.0672	0.3451	0.031	0.031
1c,2-Dimethylcyclopentane	N7	0.0009	0.0045	0.000	0.000
Methylcyclohexane	N7	0.1350	0.6793	0.054	0.054
2,2-Dimethylhexane	I8	0.0038	0.0222	0.002	0.002
1,1,3-Trimethylcyclopentane	N7	0.0005	0.0029	0.000	0.000
Ethylcyclopentane	N7	0.0043	0.0216	0.002	0.002
2,5-Dimethylhexane	I8	0.0037	0.0217	0.002	0.002
2,2,3-Trimethylpentane	I8	0.0035	0.0205	0.002	0.002
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0028	0.0161	0.001	0.001
3,3-Dimethylhexane	I8	0.0010	0.0058	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0798	0.3768	0.027	0.027
2,3-Dimethylhexane	I8	0.0027	0.0158	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0002	0.0012	0.000	0.000
2-Methylheptane	I8	0.0153	0.0896	0.008	0.008
4-Methylheptane	I8	0.0045	0.0263	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0003	0.0017	0.000	0.000
3,4-Dimethylhexane	I8	0.0004	0.0024	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0111	0.0650	0.006	0.006
1c,2t,3-Trimethylcyclopentane	N8	0.0199	0.1144	0.010	0.010
3-Ethylhexane	I8	0.0003	0.0017	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0085	0.0489	0.004	0.004
1,1-Dimethylcyclohexane	N8	0.0027	0.0155	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0007	0.0041	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0006	0.0034	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0007	0.0041	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0058	0.0334	0.003	0.003
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0298	0.1744	0.015	0.015
1c,4-Dimethylcyclohexane	N8	0.0036	0.0207	0.002	0.002
i-Propylcyclopentane	I8	0.0002	0.0011	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0011	0.0072	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0033	0.0214	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0005	0.0033	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0023	0.0132	0.001	0.001
n-Propylcyclopentane	N8	0.0008	0.0046	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
2,5-Dimethylheptane	I9	0.0016	0.0105	0.001	0.001
3,3-Dimethylheptane	I9	0.0003	0.0020	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0022	0.0120	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0139	0.0756	0.005	0.005
1,4-Dimethylbenzene (p-Xylene)	A8	0.0050	0.0272	0.002	0.002

3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0004	0.0026	0.000	0.000
2-Methyloctane	I9	0.0006	0.0040	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0005	0.0032	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0015	0.0082	0.001	0.001
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0002	0.0013	0.000	0.000
UnknownC9s	U9	0.0004	0.0026	0.000	0.000
UnknownC10s	U10	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	2.5098	2.5231

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0266	0.1065
TOLUENE	0.0798	0.3768
ETHYLBENZENE	0.0022	0.0120
XYLENES	0.0204	0.1110
TOTAL BTEX	0.1290	0.6063

**(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 :	984.4 /scf	989.7 /scf
NET WET REAL :	967.2 /scf	972.5 /scf
HHV GROSS DRY REAL :	1089.0 /scf	1094.9 /scf
GROSS WET REAL :	1070.0 /scf	1075.9 /scf

NET HEATING VALUE (60 °F ideal reaction):	19181.7 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	21212.2 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.6728
DENSITY	0.05142 lb/scf
COMPRESSIBILITY FACTOR :	0.9974
REGULAR WOBBE INDEX	1328.4

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

Net Dry Ideal BTU	4796 /scf	Relative Density - SG (Air=1)	3.3194	***C6+factors***
Gross Dry Ideal BTU	5144.9 /scf	**Z** Compressiblity Factor	0.99372	0.99313
Net Dry Ideal BTU	19184 /lb	Density Factor	253.365 lbm/1000 ft3	
Gross Dry Ideal BTU	20584.4 /lb	Molar Mass or MW	96.143 g/mol	
		Volume Liquid Ideal gas	0.35 scf/gal	24.4

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.