



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: 05-103-10729	NAME/DESCRIP : PICEANCE CREEK UNIT 297-10A5
LEASE #:	PRODUCTION CASING
FIELD/AREA:	
PROJECT NO. : 202509076	ANALYSIS NO. : 01
COMPANY NAME : QB ENERGY OPERATING, LLC	ANALYSIS DATE: SEPTEMBER 21, 2025 15:13
OFFICE / BRANCH: PARACHUTE, CO	SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF:	TO:
PRODUCER :	EFFECTIVE DATE:

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

SAMPLE CYCLE:	SAMPLE TYPE:
SAMPLE PRES. : 806 psig	PROBE :
FLOW PRES. : psig	CYLINDER NO. : F2319
LAB PRES: psig	SAMPLED BY : NICK CROY
SAMPLE TEMP. : °f	SAMPLING COMPANY: QB ENERGY
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 @ 14.65</u>	<u>GPM @ 14.73</u>
ALCOHOLS	0.0661	0.1124	0.0080	0.0080
HELIUM	0.00	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.08	0.12	---	---
CARBON DIOXIDE	4.53	10.43	---	---
METHANE	87.7087	73.6170	---	---
ETHANE	5.1649	8.1254	1.3771	1.3846
PROPANE	1.3303	3.0691	0.3658	0.3678
I-BUTANE	0.2749	0.8360	0.0899	0.0904
N-BUTANE	0.1833	0.5574	0.0580	0.0583
I-PENTANE	0.0784	0.2955	0.0280	0.0281
N-PENTANE	0.0504	0.1902	0.0180	0.0181
HEXANES PLUS	0.5130	2.6270	0.2100	0.2106
TOTALS	100.0000	100.0000	2.1548	2.1659

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0155	0.0634
TOLUENE	0.0445	0.2145
ETHYLBENZENE	0.0030	0.0167
XYLENES	0.0259	0.1438
TOTAL BTEX	0.0889	0.4384

	<u>CALCULATED VALUES**</u>	
	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	954.6 /scf	959.8 /scf
NET WET REAL :	937.9 /scf	943.1 /scf
HHV GROSS DRY REAL :	1056.9 /scf	1062.7 /scf
GROSS WET REAL :	1038.4 /scf	1044.2 /scf
NET HEATING VALUE (60 °F ideal reaction):		18988.4 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		21018.3 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6593
DENSITY		0.05036 lbm/scf
COMPRESSIBILITY FACTOR :		0.9975
REGULAR WOBBE INDEX		1302.5

**(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. :	202509076	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 21, 2025 15:13
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	F2319
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-10A5 PRODUCTION CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	806	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	4.53	10.43
Nitrogen	0.08	0.12
Methane	87.7087	73.6170
Ethane	5.1649	8.1254
Propane	1.3303	3.0691
Isobutane	0.2749	0.8360
n-Butane	0.1833	0.5574
Isopentane	0.0747	0.2820
n-Pentane	0.0504	0.1902
Cyclopentane	0.0037	0.0135
n-Hexane	0.0455	0.2051
Cyclohexane	0.0255	0.1123
Other Hexanes	0.0882	0.3955
Heptanes	0.0886	0.4627
Methylcyclohexane	0.0581	0.2985
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0155	0.0634
Toluene	0.0445	0.2145
Ethylbenzene	0.0030	0.0167
Xylenes	0.0259	0.1438
C8+ Heavies	0.1181	0.7139
<u>Subtotal</u>	<u>99.92390</u>	<u>99.86760</u>
Oxygen/Argon	0.01	0.02
Alcohols	0.0661	0.1124
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	LHV Net Dry Real:	954.6	4886.3	5638.0	7029.3 Btu/scf
	Net Wet Real:	937.9	4800.9	5539.4	6906.4 Btu/scf
	HHV Gross Dry Real:	1056.9	5240.5	6048.8	7518.3 Btu/scf
	Gross Wet Real:	1038.4	5148.9	5943.1	7386.9 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1302.5	2843.1	3056.0	3395.6	Btu/scf
Net Heating Value (60 °F ideal reaction):	18988.4	19157.8	19409.7	18723.8	Btu/lbm
Gross Heating Value (60 °F ideal reaction):	21018.3	20550.4	20827.7	20022.7	Btu/lbm
Molar Mass (MW):	19.11244	97.863	113.621	142.767	g/mol
Relative Density (AIR=1):	0.6593	3.3790	3.9227	4.9294	SG
Density:	0.05036	0.25788	0.29942	0.37621	lbm/scf
Compressibility Factor:	0.9975	0.9942	0.9975	0.9996	Z
Liquid Volume real gas @:	17.7134	0.2093	0.0658	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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 FLOW PRES. : psig CYLINDER NO. : F2319
 LAB PRES: psig SAMPLED BY : NICK CROY
 SAMPLE TEMP. : °f SAMPLING COMPANY: QB ENERGY
 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
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.08	0.12	---	---
Carbon Dioxide	---	4.53	10.43	---	---
Methane	P1	87.7087	73.6170	---	---
Ethane	P2	5.1649	8.1254	1.377	1.385
Propane	P3	1.3303	3.0691	0.366	0.368
i-Butane	I4	0.2749	0.8360	0.090	0.090
Methanol	X1	0.0650	0.1090	0.008	0.008
n-Butane	P4	0.1833	0.5574	0.058	0.058
2,2-Dimethylpropane	I5	0.0026	0.0098	0.001	0.001
i-Pentane	I5	0.0721	0.2722	0.026	0.026
i-Propanol	X3	0.0011	0.0034	0.000	0.000
n-Pentane	P5	0.0504	0.1902	0.018	0.018
2,2-Dimethylbutane	I6	0.0044	0.0198	0.002	0.002
Cyclopentane	N5	0.0037	0.0135	0.001	0.001
2,3-Dimethylbutane	I6	0.0085	0.0383	0.003	0.003
2-Methylpentane	I6	0.0350	0.1578	0.014	0.014
3-Methylpentane	I6	0.0207	0.0933	0.008	0.008
n-Hexane	P6	0.0455	0.2051	0.019	0.019
2,2-Dimethylpentane	I7	0.0018	0.0094	0.001	0.001
Methylcyclopentane	N6	0.0196	0.0863	0.007	0.007
2,4-Dimethylpentane	I7	0.0029	0.0152	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0007	0.0037	0.000	0.000
Benzene	A6	0.0155	0.0634	0.004	0.004
3,3-Dimethylpentane	I7	0.0011	0.0058	0.000	0.000
Cyclohexane	N6	0.0255	0.1123	0.009	0.009
2-Methylhexane	I7	0.0142	0.0744	0.007	0.007

2,3-Dimethylpentane	I7	0.0034	0.0178	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0030	0.0154	0.001	0.001
3-Methylhexane	I7	0.0128	0.0671	0.006	0.006
1c,3-Dimethylcyclopentane	N7	0.0041	0.0211	0.002	0.002
1t,3-Dimethylcyclopentane	N7	0.0038	0.0195	0.002	0.002
3-Ethylpentane	I7	0.0007	0.0037	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0058	0.0298	0.003	0.003
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0313	0.1641	0.014	0.014
1c,2-Dimethylcyclopentane	N7	0.0006	0.0031	0.000	0.000
Methylcyclohexane	N7	0.0581	0.2985	0.023	0.023
2,2-Dimethylhexane	I8	0.0018	0.0108	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
Ethylcyclopentane	N7	0.0020	0.0103	0.001	0.001
2,5-Dimethylhexane	I8	0.0024	0.0143	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0021	0.0126	0.001	0.001
2,4-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0015	0.0088	0.001	0.001
3,3-Dimethylhexane	I8	0.0008	0.0048	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0445	0.2145	0.015	0.015
2,3-Dimethylhexane	I8	0.0018	0.0108	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0003	0.0018	0.000	0.000
2-Methylheptane	I8	0.0108	0.0646	0.006	0.006
4-Methylheptane	I8	0.0034	0.0203	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0003	0.0018	0.000	0.000
3,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0086	0.0514	0.004	0.004
1c,2t,3-Trimethylcyclopentane	N8	0.0126	0.0740	0.006	0.006
3-Ethylhexane	I8	0.0009	0.0054	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0058	0.0341	0.003	0.003
1,1-Dimethylcyclohexane	N8	0.0022	0.0129	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0004	0.0023	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
1c,2c,3-Trimethylcyclopentane	N8	0.0043	0.0253	0.002	0.002
1t,3-Dimethylcyclohexane	N8	0.0007	0.0041	0.000	0.000
n-Octane	P8	0.0314	0.1877	0.016	0.016
1c,4-Dimethylcyclohexane	N8	0.0032	0.0188	0.002	0.002
i-Propylcyclopentane	I8	0.0002	0.0011	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0005	0.0033	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0014	0.0094	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0042	0.0277	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0011	0.0074	0.001	0.001
2,4-Dimethylheptane	I9	0.0004	0.0027	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0035	0.0206	0.002	0.002
n-Propylcyclopentane	N8	0.0013	0.0076	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0008	0.0053	0.000	0.000
2,5-Dimethylheptane	I9	0.0025	0.0168	0.001	0.001
3,3-Dimethylheptane	I9	0.0005	0.0033	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000

1,1,3-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
Ethylbenzene	I8	0.0030	0.0167	0.001	0.001
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0179	0.0994	0.007	0.007
1,4-Dimethylbenzene (p-Xylene)	A8	0.0073	0.0405	0.003	0.003
3,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0014	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0002	0.0014	0.000	0.000
2-Methyloctane	I9	0.0002	0.0014	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0013	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0007	0.0039	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0002	0.0014	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
2-Methylnonane	I10	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0021	0.000	0.000
UnknownC9s	U9	0.0004	0.0027	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
n-Undecane	P11	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0001	0.0008	0.000	0.000
TOTAL		100.0000	100.0000	2.1548	2.1659

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0155	0.0634	LHV NET DRY REAL :	954.6 /scf	959.8 /scf
TOLUENE	0.0445	0.2145	NET WET REAL :	937.9 /scf	943.1 /scf
ETHYLBENZENE	0.0030	0.0167	HHV GROSS DRY REAL :	1056.9 /scf	1062.7 /scf
XYLENES	0.0259	0.1438	GROSS WET REAL :	1038.4 /scf	1044.2 /scf
TOTAL BTEX	0.0889	0.4384	NET HEATING VALUE (60 °F ideal reaction):		18988.4 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		21018.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6593
			DENSITY		0.05036 lb/scf
			COMPRESSIBILITY FACTOR :		0.9975
			REGULAR WOBBE INDEX		1302.5

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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	4873 /scf	Relative Density - SG (Air=1)	3.379	C6+ factors
Gross Dry Ideal BTU	5226.2 /scf	Z Compressibility Factor	0.99415	0.99333
Net Dry Ideal BTU	19157.8 /lb	Density Factor	257.88 lbm/1000 ft3	
Gross Dry Ideal BTU	20550.4 /lb	Molar Mass or MW	97.863 g/mol	
		Volume Liquid Ideal gas	0.21 scf/gal	23.8
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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