



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: 05-103-10646	NAME/DESCRIP : PICEANCE CREEK UNIT T35X-2G9
LEASE #:	INTERMEDIATE CASING
FIELD/AREA:	
PROJECT NO. : 202509096	ANALYSIS NO. : 02
COMPANY NAME : QB ENERGY OPERATING, LLC	ANALYSIS DATE: OCTOBER 01, 2025 19:33
OFFICE / BRANCH: PARACHUTE, CO	SAMPLE DATE : SEPTEMBER 05, 2025
CUSTOMER REF:	TO:
PRODUCER :	EFFECTIVE DATE:

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

SAMPLE CYCLE:	SAMPLE TYPE:
SAMPLE PRES. : 995 psig	PROBE :
FLOW PRES. : psig	CYLINDER NO. : TBI-260
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	0.1296	0.2364	0.0180	0.0181
HELIUM	0.01	0.00	---	---
HYDROGEN	0.02	0.00	---	---
OXYGEN/ARGON	0.07	0.12	---	---
NITROGEN	0.31	0.47	---	---
CARBON DIOXIDE	5.98	14.35	---	---
METHANE	91.0491	79.6699	---	---
ETHANE	2.0064	3.2906	0.5345	0.5374
PROPANE	0.1349	0.3244	0.0370	0.0372
I-BUTANE	0.0403	0.1277	0.0130	0.0131
N-BUTANE	0.0181	0.0574	0.0060	0.0060
I-PENTANE	0.0115	0.0452	0.0040	0.0040
N-PENTANE	0.0040	0.0158	0.0010	0.0010
HEXANES PLUS	0.2161	1.2925	0.0910	0.0910
TOTALS	100.0000	100.0000	0.7045	0.7078

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0137	0.0584
TOLUENE	0.0298	0.1498
ETHYLBENZENE	0.0017	0.0098
XYLENES	0.0016	0.0093
TOTAL BTEX	0.0468	0.2273

	<u>CALCULATED VALUES**</u>	
<u>BTU @</u>	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	877.1 /scf	881.9 /scf
NET WET REAL :	861.8 /scf	866.6 /scf
HHV GROSS DRY REAL :	972.8 /scf	978.1 /scf
GROSS WET REAL :	955.8 /scf	961.1 /scf
NET HEATING VALUE (60 °F ideal reaction):		18192.7 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		20182.3 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6324
DENSITY		0.04832 lbm/scf
COMPRESSIBILITY FACTOR :		0.9978
REGULAR WOBBE INDEX		1224.4

**(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. :	202509096	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	OCTOBER 01, 2025 19:33
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 05, 2025
PRODUCER :		CYLINDER NO. :	TBI-260
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T35X-2G9 INTERMEDIATE CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	995	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.02	0.00
Carbon Dioxide	5.98	14.35
Nitrogen	0.31	0.47
Methane	91.0491	79.6699
Ethane	2.0064	3.2906
Propane	0.1349	0.3244
Isobutane	0.0403	0.1277
n-Butane	0.0181	0.0574
Isopentane	0.0109	0.0429
n-Pentane	0.0040	0.0158
Cyclopentane	0.0006	0.0023
n-Hexane	0.0022	0.0104
Cyclohexane	0.0043	0.0197
Other Hexanes	0.0088	0.0411
Heptanes	0.0138	0.0751
Methylcyclohexane	0.0193	0.1034
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0137	0.0584
Toluene	0.0298	0.1498
Ethylbenzene	0.0017	0.0098
Xylenes	0.0016	0.0093
C8+ Heavies	0.1209	0.8155
<u>Subtotal</u>	<u>99.80040</u>	<u>99.64360</u>
Oxygen/Argon	0.07	0.12
Alcohols	0.1296	0.2364
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	LHV Net Dry Real:	877.1	5434.5	6175.8	7174.7 Btu/scf
	Net Wet Real:	861.8	5339.5	6067.8	7049.3 Btu/scf
	HHV Gross Dry Real:	972.8	5822.0	6645.8	7731.9 Btu/scf
	Gross Wet Real:	955.8	5720.2	6529.6	7596.7 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1224.4	2993.6	3227.8	3488.0	Btu/scf
Net Heating Value (60 °F ideal reaction):	18192.7	19111.4	19474.4	19287.7	Btu/lbm
Gross Heating Value (60°F ideal reaction):	20182.3	20477.5	20956.1	20783.4	Btu/lbm
Molar Mass (MW):	18.33632	109.61	123.145	143.088	g/mol
Relative Density (AIR=1):	0.6324	3.7839	4.2520	4.9406	SG
Density:	0.04832	0.28884	0.32451	0.37704	lbm/scf
Compressibility Factor:	0.9978	0.9971	0.9984	0.9996	Z
Liquid Volume real gas @:	17.1083	0.0907	0.0568	0.008	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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*****FIELD DATA*****

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 SAMPLE PRES. : 995 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : TBI-260
 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
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.02	0.00	---	---
Oxygen/Argon	---	0.07	0.12	---	---
Nitrogen	---	0.31	0.47	---	---
Carbon Dioxide	---	5.98	14.35	---	---
Methane	P1	91.0491	79.6699	---	---
Ethane	P2	2.0064	3.2906	0.535	0.537
Propane	P3	0.1349	0.3244	0.037	0.037
i-Butane	I4	0.0403	0.1277	0.013	0.013
Methanol	X1	0.1253	0.2190	0.016	0.016
n-Butane	P4	0.0181	0.0574	0.006	0.006
2,2-Dimethylpropane	I5	0.0029	0.0114	0.001	0.001
i-Pentane	I5	0.0080	0.0315	0.003	0.003
n-Pentane	P5	0.0040	0.0158	0.001	0.001
t-Butanol	X4	0.0043	0.0174	0.002	0.002
2,2-Dimethylbutane	I6	0.0019	0.0089	0.001	0.001
Cyclopentane	N5	0.0006	0.0023	0.000	0.000
2,3-Dimethylbutane	I6	0.0007	0.0033	0.000	0.000
2-Methylpentane	I6	0.0023	0.0108	0.001	0.001
3-Methylpentane	I6	0.0014	0.0066	0.001	0.001
n-Hexane	P6	0.0022	0.0104	0.001	0.001
2,2-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
Methylcyclopentane	N6	0.0025	0.0115	0.001	0.001
2,4-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0001	0.0006	0.000	0.000
Benzene	A6	0.0137	0.0584	0.004	0.004
3,3-Dimethylpentane	I7	0.0002	0.0011	0.000	0.000
Cyclohexane	N6	0.0043	0.0197	0.001	0.001

2-Methylhexane	I7	0.0015	0.0082	0.001	0.001
2,3-Dimethylpentane	I7	0.0004	0.0022	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0004	0.0021	0.000	0.000
3-Methylhexane	I7	0.0016	0.0087	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0006	0.0032	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0006	0.0032	0.000	0.000
3-Ethylpentane	I7	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0011	0.0059	0.001	0.001
n-Heptane	P7	0.0055	0.0301	0.003	0.003
1c,2-Dimethylcyclopentane	N7	0.0003	0.0016	0.000	0.000
Methylcyclohexane	N7	0.0193	0.1034	0.008	0.008
2,2-Dimethylhexane	I8	0.0005	0.0031	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0007	0.0038	0.000	0.000
2,5-Dimethylhexane	I8	0.0006	0.0038	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0005	0.0031	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
Toluene	A7	0.0298	0.1498	0.010	0.010
2,3-Dimethylhexane	I8	0.0005	0.0031	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0034	0.0212	0.002	0.002
4-Methylheptane	I8	0.0011	0.0069	0.001	0.001
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
3-Methylheptane	I8	0.0028	0.0175	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0051	0.0312	0.003	0.003
3-Ethylhexane	I8	0.0003	0.0019	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0022	0.0135	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0008	0.0049	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0024	0.0147	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0004	0.0025	0.000	0.000
n-Octane	P8	0.0185	0.1153	0.009	0.009
1c,4-Dimethylcyclohexane	N8	0.0021	0.0129	0.001	0.001
i-Propylcyclopentane	I8	0.0002	0.0012	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0005	0.0035	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	0.0017	0.0119	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0053	0.0365	0.003	0.003
2,2,3-Trimethylhexane	I9	0.0022	0.0154	0.001	0.001
2,4-Dimethylheptane	I9	0.0005	0.0035	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0064	0.0392	0.003	0.003
n-Propylcyclopentane	N8	0.0020	0.0122	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0009	0.0062	0.000	0.000
2,5-Dimethylheptane	I9	0.0043	0.0301	0.002	0.002
3,3-Dimethylheptane	I9	0.0008	0.0056	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0003	0.0021	0.000	0.000
Ethylbenzene	I8	0.0017	0.0098	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000

1,3-Dimethylbenzene (m-Xylene)	A8	0.0013	0.0075	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0012	0.000	0.000
3,4-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0014	0.000	0.000
4-Ethylheptane	I9	0.0003	0.0021	0.000	0.000
4-Methyloctane	I9	0.0019	0.0133	0.001	0.001
2-Methyloctane	I9	0.0029	0.0203	0.002	0.002
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0004	0.0028	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0026	0.0179	0.001	0.001
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3,3-Diethylpentane	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	0.0014	0.0097	0.001	0.001
n-Nonane	P9	0.0143	0.1000	0.008	0.008
1,1-Methylethylcyclohexane	N9	0.0008	0.0055	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0013	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0004	0.0031	0.000	0.000
2,6-Dimethyloctane	I10	0.0002	0.0015	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0016	0.0110	0.001	0.001
3,3-Dimethyloctane	I10	0.0003	0.0024	0.000	0.000
n-Propylbenzene	A9	0.0020	0.0131	0.001	0.001
3,6-Dimethyloctane	I10	0.0002	0.0015	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0006	0.0039	0.000	0.000
2,3-Dimethyloctane	I10	0.0005	0.0039	0.000	0.000
5-Methylnonane	I10	0.0012	0.0093	0.001	0.001
1,2-Methylethylbenzene	A9	0.0016	0.0105	0.001	0.001
3-Ethylheptane	I10	0.0002	0.0015	0.000	0.000
3-Methylnonane	I10	0.0011	0.0086	0.001	0.001
t-Butylbenzene	A10	0.0004	0.0029	0.000	0.000
i-Butylcyclohexane	N10	0.0003	0.0023	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0019	0.0133	0.001	0.001
n-Decane	P10	0.0055	0.0427	0.003	0.003
Sec-Butylcyclohexane	A10	0.0001	0.0008	0.000	0.000
3-Ethylnonane	I10	0.0002	0.0017	0.000	0.000
1,3-Diethylbenzene	A10	0.0006	0.0044	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0002	0.0015	0.000	0.000
1,4-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0041	0.0318	0.003	0.003
n-Undecane	P11	0.0006	0.0051	0.000	0.000
UnknownC11s	U11	0.0005	0.0043	0.000	0.000
n-Dodecane	P12	0.0002	0.0019	0.000	0.000
UnknownC12s	U12	0.0002	0.0017	0.000	0.000
n-Tridecane	P13	0.0001	0.0010	0.000	0.000
TOTAL		100.00000	100.00000	0.7045	0.7078

BTEX COMPONENTS	MOLE%	WT%	CALCULATED VALUES**		
			BTU @	14.65	14.73
BENZENE	0.0137	0.0584	LHV NET DRY REAL :	877.1 /scf	881.9 /scf
TOLUENE	0.0298	0.1498	NET WET REAL :	861.8 /scf	866.6 /scf
ETHYLBENZENE	0.0017	0.0098	HHV GROSS DRY REAL :	972.8 /scf	978.1 /scf
XYLENES	0.0016	0.0093	GROSS WET REAL :	955.8 /scf	961.1 /scf
TOTAL BTEX	0.0468	0.2273	NET HEATING VALUE (60 °F ideal reaction):		18192.7 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		20182.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6324
			DENSITY		0.04832 lb/scf
			COMPRESSIBILITY FACTOR :		0.9978
			REGULAR WOBBE INDEX		1224.4

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)
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	<u>5435.6 /scf</u>	Relative Density - SG (Air=1)	<u>3.7839</u>	C6+factors
Gross Dry Ideal BTU	<u>5823.2 /scf</u>	Z Compressibility Factor	<u>0.99707</u>	<u>0.99641</u>
Net Dry Ideal BTU	<u>19111.4 /lb</u>	Density Factor	<u>288.845 lbm/1000 ft3</u>	
Gross Dry Ideal BTU	<u>20477.5 /lb</u>	Molar Mass or MW	<u>109.61 g/mol</u>	
		Volume Liquid Ideal gas	<u>0.091 scf/gal</u>	<u>22</u>
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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