



**EXTENDED NATURAL GAS ANALYSIS (\*DHA)**

**MAIN PAGE**

PRIMARY DB KEY: <b>05-103-11329</b>	NAME/DESCRIP :	<b>PICEANCE CREEK UNIT T25X-25G1</b>
LEASE #:		<b>PRODUCTION CASING</b>
FIELD/AREA:		
PROJECT NO. :	<b>202507021</b>	ANALYSIS NO. : <b>01</b>
COMPANY NAME :	<b>QB ENERGY OPERATING, LLC</b>	ANALYSIS DATE: JULY 10, 2025 11:23
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. :	psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-750
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	°f	SAMPLING COMPANY:	QB ENERGY OPERATING, LLC
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	0.3781	0.6418	0.0480	0.0482
HELIUM	0.01	0.00	---	---
HYDROGEN	1.76	0.19	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.20	0.30	---	---
CARBON DIOXIDE	0.36	0.84	---	---
METHANE	83.7622	71.1403	---	---
ETHANE	8.9337	14.2215	2.3823	2.3953
PROPANE	2.7880	6.5086	0.7658	0.7700
I-BUTANE	0.7062	2.1730	0.2309	0.2322
N-BUTANE	0.5288	1.6272	0.1660	0.1669
I-PENTANE	0.2536	0.9683	0.0930	0.0935
N-PENTANE	0.1365	0.5214	0.0490	0.0493
HEXANES PLUS	0.1829	0.8681	0.0720	0.0722
<b>TOTALS</b>	<b>100.0000</b>	<b>100.0000</b>	<b>3.8070</b>	<b>3.8276</b>

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0000	0.0000
TOLUENE	0.0001	0.0005
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0001	0.0006
<b>TOTAL BTEX</b>	<b>0.0002</b>	<b>0.0011</b>

	<u>BTU @ 14.65</u>	<u>14.73</u>
<b>LHV NET DRY REAL :</b>	1037.5 /scf	1043.2 /scf
<b>NET WET REAL :</b>	1019.4 /scf	1025.1 /scf
<b>HHV GROSS DRY REAL :</b>	1147.6 /scf	1153.8 /scf
<b>GROSS WET REAL :</b>	1127.5 /scf	1133.7 /scf
<b>NET HEATING VALUE (60 °F ideal reaction):</b>		20864.9 Btu/lbm
<b>GROSS HEATING VALUE (60°F ideal reaction):</b>		23067.3 Btu/lbm
<b>RELATIVE DENSITY (AIR=1):</b>		0.6517
<b>DENSITY</b>		0.04977 lbm/scf
<b>COMPRESSIBILITY FACTOR :</b>		0.9972
<b>REGULAR WOBBE INDEX</b>		1421.9

*\*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)  
Mod ASTM D6730,GPA 2261 & GPA 2286.*

*\*\* (CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)*

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**DHA COMPONENT LIST**

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 LEASE #: PRODUCTION CASING  
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PROJECT NO. : **202507021** ANALYSIS NO. : **01**  
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 PRODUCER : **QB ENERGY OPERATING, LLC** EFFECTIVE DATE:

**\*\*\*FIELD DATA\*\*\***

SAMPLE CYCLE: SAMPLE TYPE:  
 SAMPLE PRES. : psig PROBE :  
 FLOW PRES. : psig CYLINDER NO. : **ECA-750**  
 LAB PRES: psig SAMPLED BY : **NICK CROY**  
 SAMPLE TEMP. : °f SAMPLING COMPANY: **QB ENERGY OPERATING, LLC**  
 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	---	1.76	0.19	---	---
Nitrogen	---	0.20	0.30	---	---
Carbon Dioxide	---	0.36	0.84	---	---
Methane	P1	83.7622	71.1403	---	---
Ethane	P2	8.9337	14.2215	2.382	2.395
Propane	P3	2.7880	6.5086	0.766	0.770
i-Butane	I4	0.7062	2.1730	0.231	0.232
Methanol	X1	0.3779	0.6411	0.048	0.048
n-Butane	P4	0.5288	1.6272	0.166	0.167
2,2-Dimethylpropane	I5	0.0070	0.0267	0.003	0.003
i-Pentane	I5	0.2440	0.9320	0.089	0.090
Acetone	X3	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.1365	0.5214	0.049	0.049
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,2-Dimethylbutane	I6	0.0098	0.0447	0.004	0.004
Cyclopentane	N5	0.0026	0.0096	0.001	0.001
2,3-Dimethylbutane	I6	0.0123	0.0561	0.005	0.005
2-Methylpentane	I6	0.0478	0.2181	0.020	0.020
3-Methylpentane	I6	0.0232	0.1058	0.009	0.009
n-Hexane	P6	0.0414	0.1889	0.017	0.017
2,2-Dimethylpentane	I7	0.0020	0.0106	0.001	0.001
Methylcyclopentane	N6	0.0084	0.0374	0.003	0.003
2,4-Dimethylpentane	I7	0.0027	0.0143	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0006	0.0032	0.000	0.000
3,3-Dimethylpentane	I7	0.0006	0.0032	0.000	0.000
Cyclohexane	N6	0.0041	0.0183	0.001	0.001
2-Methylhexane	I7	0.0067	0.0355	0.003	0.003

2,3-Dimethylpentane	I7	0.0014	0.0074	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0009	0.0047	0.000	0.000
3-Methylhexane	I7	0.0047	0.0249	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0009	0.0047	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0007	0.0036	0.000	0.000
3-Ethylpentane	I7	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0011	0.0057	0.001	0.001
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0063	0.0334	0.003	0.003
Methylcyclohexane	N7	0.0028	0.0146	0.001	0.001
2,2-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
Ethylcyclopentane	N7	0.0001	0.0005	0.000	0.000
2,5-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0002	0.0012	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0001	0.0005	0.000	0.000
2-Methylheptane	I8	0.0003	0.0018	0.000	0.000
4-Methylheptane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0002	0.0012	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0002	0.0012	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0004	0.0026	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0002	0.0015	0.000	0.000
n-Undecane	P11	0.0002	0.0016	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0007	0.000	0.000
UnknownC11s	U11	0.0001	0.0008	0.000	0.000
n-Dodecane	P12	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0002	0.0020	0.000	0.000
n-Tetradecane	P14	0.0001	0.0011	0.000	0.000
n-Heptadecane	P17	0.0004	0.0051	0.000	0.000
UnknownC19s	U19	0.0001	0.0014	0.000	0.000
<b>TOTAL</b>		<b>100.00000</b>	<b>100.00000</b>	<b>3.8070</b>	<b>3.8276</b>

**CALCULATED VALUES\*\***

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	1037.5 /scf	1043.2 /scf
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XYLENES	0.0001	0.0006	GROSS WET REAL :	1127.5 /scf	1133.7 /scf
TOTAL BTEX	0.0002	0.0011	NET HEATING VALUE (60 °F ideal reaction):		20864.9 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23067.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6517
			DENSITY		0.04977 lb/scf
			COMPRESSIBILITY FACTOR :		0.9972
			REGULAR WOBBE INDEX		1421.9

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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	<u>4560.2</u> /scf	Relative Density - SG (Air=1)	<u>3.0965</u>	<b>C6+ factors</b>
Gross Dry Ideal BTU	<u>4920.3</u> /scf	Z Compressibility Factor	<u>0.98795</u>	<u>0.98748</u>
Net Dry Ideal BTU	<u>19372.1</u> /lb	Density Factor	<u>236.318</u> lbm/1000 ft3	
Gross Dry Ideal BTU	<u>20902.9</u> /lb	Molar Mass or MW	<u>89.677</u> g/mol	
		Volume Liquid Ideal gas	<u>0.072</u> scf/gal	<u>23.6</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.**

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.