



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

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

PROJECT NO. : **202507034** ANALYSIS NO. : **03**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **JULY 21, 2025 11:07**
 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. : 208 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : ECA-790
 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 @</u>	
			<u>14.65</u>	<u>14.73</u>
ALCOHOLS	0.0064	0.0120	0.0010	0.0010
HELIUM	0.02	0.00	---	---
HYDROGEN	0.22	0.03	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.72	1.18	---	---
CARBON DIOXIDE	0.04	0.10	---	---
METHANE	95.1766	89.6570	---	---
ETHANE	2.5444	4.4925	0.6784	0.6821
PROPANE	0.5989	1.5507	0.1648	0.1657
I-BUTANE	0.0914	0.3119	0.0300	0.0301
N-BUTANE	0.1937	0.6611	0.0609	0.0613
I-PENTANE	0.0718	0.3040	0.0260	0.0261
N-PENTANE	0.0775	0.3284	0.0280	0.0281
HEXANES PLUS	0.2393	1.3724	0.1020	0.1022
TOTALS	100.00000	100.00000	1.0911	1.0966

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0072	0.0330
TOLUENE	0.0018	0.0098
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0004	0.0026
TOTAL BTEX	0.0096	0.0466

	<u>CALCULATED VALUES**</u>	
	<u>BTU @</u>	<u>BTU @</u>
	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	945.8 /scf	951.0 /scf
NET WET REAL :	929.3 /scf	934.5 /scf
HHV GROSS DRY REAL :	1048.8 /scf	1054.5 /scf
GROSS WET REAL :	1030.5 /scf	1036.2 /scf
NET HEATING VALUE (60 °F ideal reaction):	21109.0 Btu/lbm	21109.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23406.1 Btu/lbm	23406.1 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5874	0.5874
DENSITY	0.04488 lbm/scf	0.04488 lbm/scf
COMPRESSIBILITY FACTOR :	0.9978	0.9978
REGULAR WOBBE INDEX	1369.7	1369.7

**(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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**EXTENDED NATURAL GAS ANALYSIS (*DHA)
GLYCALC INFORMATION**

PROJECT NO. :	202507034	ANALYSIS NO. :	03
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 21, 2025 11:07
ACCOUNT NO. :		SAMPLE DATE :	JUNE 30, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-790
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G1 SURFACE CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	208	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.02	0.00
Hydrogen	0.22	0.03
Carbon Dioxide	0.04	0.10
Nitrogen	0.72	1.18
Methane	95.1766	89.6570
Ethane	2.5444	4.4925
Propane	0.5989	1.5507
Isobutane	0.0914	0.3119
n-Butane	0.1937	0.6611
Isopentane	0.0706	0.2991
n-Pentane	0.0775	0.3284
Cyclopentane	0.0012	0.0049
n-Hexane	0.0387	0.1958
Cyclohexane	0.0065	0.0321
Other Hexanes	0.0513	0.2592
Heptanes	0.0530	0.3114
Methylcyclohexane	0.0160	0.0922
2,2,4 Trimethylpentane	0.0001	0.0007
Benzene	0.0072	0.0330
Toluene	0.0018	0.0098
Ethylbenzene	0.0002	0.0012
Xylenes	0.0004	0.0026
C8+ Heavies	0.0641	0.4344
<u>Subtotal</u>	<u>99.99360</u>	<u>99.98800</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.0064	0.0120
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	LHV Net Dry Real:	945.8	4945.1	5786.4	6311.0 Btu/scf
	Net Wet Real:	929.3	4858.7	5685.2	6200.7 Btu/scf
	HHV Gross Dry Real:	1048.8	5326.6	6233.9	6658.1 Btu/scf
	Gross Wet Real:	1030.5	5233.5	6124.9	6541.7 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1369.7	2889.6	3127.8	3102.0	Btu/scf
Net Heating Value (60 °F ideal reaction):	21109.0	19351.4	19592.2	17895.7	Btu/lbm
Gross Heating Value (60 °F ideal reaction):	23406.1	20842.7	21108.0	18879.9	Btu/lbm
Molar Mass (MW):	17.03143	97.611	115.131	134.221	g/mol
Relative Density (AIR=1):	0.5874	3.3702	3.9756	4.6343	SG
Density:	0.04488	0.25722	0.30338	0.35369	lbm/scf
Compressibility Factor:	0.9978	0.9928	0.9973	0.9998	Z
Liquid Volume real gas @:	17.2399	0.1017	0.0289	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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DHA COMPONENT LIST

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 208 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : **ECA-790**
 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	---	0.02	0.00	---	---
Hydrogen	---	0.22	0.03	---	---
Nitrogen	---	0.72	1.18	---	---
Carbon Dioxide	---	0.04	0.10	---	---
Methane	P1	95.1766	89.6570	---	---
Ethane	P2	2.5444	4.4925	0.678	0.682
Propane	P3	0.5989	1.5507	0.165	0.166
i-Butane	I4	0.0914	0.3119	0.030	0.030
Methanol	X1	0.0064	0.0120	0.001	0.001
n-Butane	P4	0.1937	0.6611	0.061	0.061
2,2-Dimethylpropane	I5	0.0041	0.0174	0.002	0.002
i-Pentane	I5	0.0665	0.2817	0.024	0.024
n-Pentane	P5	0.0775	0.3284	0.028	0.028
2,2-Dimethylbutane	I6	0.0043	0.0218	0.002	0.002
Cyclopentane	N5	0.0012	0.0049	0.000	0.000
2,3-Dimethylbutane	I6	0.0040	0.0203	0.002	0.002
2-Methylpentane	I6	0.0258	0.1305	0.011	0.011
3-Methylpentane	I6	0.0139	0.0703	0.006	0.006
n-Hexane	P6	0.0387	0.1958	0.016	0.016
2,2-Dimethylpentane	I7	0.0012	0.0071	0.001	0.001
Methylcyclopentane	N6	0.0033	0.0163	0.001	0.001
2,4-Dimethylpentane	I7	0.0016	0.0094	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0004	0.0024	0.000	0.000
Benzene	A6	0.0072	0.0330	0.002	0.002
3,3-Dimethylpentane	I7	0.0007	0.0041	0.000	0.000
Cyclohexane	N6	0.0065	0.0321	0.002	0.002
2-Methylhexane	I7	0.0087	0.0512	0.004	0.004
2,3-Dimethylpentane	I7	0.0025	0.0147	0.001	0.001

1,1-Dimethylcyclopentane	N7	0.0013	0.0075	0.001	0.001
3-Methylhexane	I7	0.0084	0.0494	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0008	0.0046	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	0.0007	0.000	0.000
n-Heptane	P7	0.0231	0.1359	0.011	0.011
1c,2-Dimethylcyclopentane	N7	0.0005	0.0029	0.000	0.000
Methylcyclohexane	N7	0.0160	0.0922	0.006	0.006
2,2-Dimethylhexane	I8	0.0010	0.0067	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
Ethylcyclopentane	N7	0.0005	0.0029	0.000	0.000
2,5-Dimethylhexane	I8	0.0010	0.0067	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0010	0.0067	0.001	0.001
2,4-Dimethylhexane	I8	0.0001	0.0007	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	0.0007	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0007	0.000	0.000
Toluene	A7	0.0018	0.0098	0.001	0.001
2,3-Dimethylhexane	I8	0.0010	0.0067	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0003	0.0020	0.000	0.000
2-Methylheptane	I8	0.0073	0.0490	0.004	0.004
4-Methylheptane	I8	0.0019	0.0127	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
3-Methylheptane	I8	0.0045	0.0302	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0043	0.0284	0.002	0.002
3-Ethylhexane	I8	0.0003	0.0020	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0018	0.0119	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0010	0.0066	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	0.0002	0.0013	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0026	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0007	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0020	0.0132	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0007	0.000	0.000
n-Octane	P8	0.0239	0.1603	0.012	0.012
1c,4-Dimethylcyclohexane	N8	0.0008	0.0053	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0007	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0003	0.0022	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
2,2-Dimethylheptane	I9	0.0007	0.0053	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0032	0.0237	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0005	0.0038	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylcyclohexane	N8	0.0012	0.0079	0.001	0.001
n-Propylcyclopentane	N8	0.0011	0.0072	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
2,5-Dimethylheptane	I9	0.0005	0.0038	0.000	0.000
3,3-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
1,3-Dimethylbenzene (m-Xylene)	A8	0.0003	0.0019	0.000	0.000

1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0001	0.0008	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	1.0911	1.0966

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0072	0.0330	LHV NET DRY REAL :	945.8 /scf	951.0 /scf
TOLUENE	0.0018	0.0098	NET WET REAL :	929.3 /scf	934.5 /scf
ETHYLBENZENE	0.0002	0.0012	HHV GROSS DRY REAL :	1048.8 /scf	1054.5 /scf
XYLENES	0.0004	0.0026	GROSS WET REAL :	1030.5 /scf	1036.2 /scf
TOTAL BTEX	0.0096	0.0466	NET HEATING VALUE (60 °F ideal reaction):		21109.0 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23406.1 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.5874
			DENSITY		0.04488 lb/scf
			COMPRESSIBILITY FACTOR :		0.9978
			REGULAR WOBBE INDEX		1369.7

*(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>4924.8</u> /scf	Relative Density - SG (Air=1)	<u>3.3702</u>	C6+factors
Gross Dry Ideal BTU	<u>5304.7</u> /scf	Z Compressibility Factor	<u>0.99278</u>	<u>0.99201</u>
Net Dry Ideal BTU	<u>19351.4</u> /lb	Density Factor	<u>257.219</u> lbm/1000 ft3	
Gross Dry Ideal BTU	<u>20842.7</u> /lb	Molar Mass or MW	<u>97.611</u> g/mol	
		Volume Liquid Ideal gas	<u>0.102</u> scf/gal	<u>22.9</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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