

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

**MAIN PAGE**

PRIMARY DB KEY: <b>05-045-11747</b>	NAME/DESCRIP : <b>110165871 NP D27 EF 12B 595</b>
LEASE #:	<b>PRODUCTION CASING</b>
FIELD/AREA:	
PROJECT NO. : <b>202508087</b>	ANALYSIS NO. : <b>01</b>
COMPANY NAME : <b>QB ENERGY OPERATING, LLC</b>	ANALYSIS DATE: <b>AUGUST 26, 2025 07:35</b>
OFFICE / BRANCH: <b>PARACHUTE, CO</b>	SAMPLE DATE : <b>AUGUST 11, 2025 12:30</b>
CUSTOMER REF:	TO: <b>AUGUST 11, 2025</b>
PRODUCER :	EFFECTIVE DATE: <b>AUGUST 11, 2025</b>

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

SAMPLE CYCLE:	SAMPLE TYPE: <b>SPOT</b>
SAMPLE PRES. : <b>265</b> psig	PROBE : <b>NO</b>
FLOW PRES. :              psig	CYLINDER NO. : <b>ECA-738</b>
LAB PRES:                  psig	SAMPLED BY : <b>ALEX GALLEGOS</b>
SAMPLE TEMP. : <b>56</b> °f	SAMPLING COMPANY: <b>QB ENERGY</b>
AMBIENT TEMP.:            °f	H2S BY STAIN TUBE: <b>-</b> ppm mol
H2O BY STAIN TUBE: <b>-</b> #/mmcf	CO2 BY STAIN TUBE: <b>-</b> 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	0.0009	0.0017	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.08	0.12	---	---
CARBON DIOXIDE	2.19	5.27	---	---
METHANE	90.2521	79.1298	---	---
ETHANE	5.2296	8.5941	1.3941	1.4017
PROPANE	1.1779	2.8387	0.3238	0.3256
I-BUTANE	0.3646	1.1581	0.1189	0.1196
N-BUTANE	0.2269	0.7208	0.0710	0.0713
I-PENTANE	0.1304	0.5138	0.0480	0.0482
N-PENTANE	0.0604	0.2382	0.0220	0.0221
HEXANES PLUS	0.2772	1.4148	0.1120	0.1123
<b>TOTALS</b>	<b>100.0000</b>	<b>100.0000</b>	<b>2.0898</b>	<b>2.1008</b>

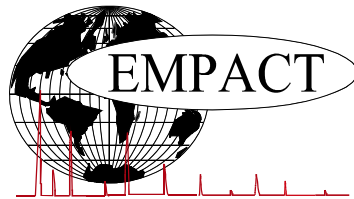
<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0138	0.0589
TOLUENE	0.0196	0.0987
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0014	0.0081
<b>TOTAL BTEX</b>	<b>0.0350</b>	<b>0.1669</b>

	<u>BTU @ 14.65</u>	<u>14.73</u>
<b>LHV NET DRY REAL :</b>	<b>969.4 /scf</b>	<b>974.7 /scf</b>
<b>NET WET REAL :</b>	<b>952.5 /scf</b>	<b>957.8 /scf</b>
<b>HHV GROSS DRY REAL :</b>	<b>1073.4 /scf</b>	<b>1079.2 /scf</b>
<b>GROSS WET REAL :</b>	<b>1054.6 /scf</b>	<b>1060.4 /scf</b>
<b>NET HEATING VALUE (60 °F ideal reaction):</b>		<b>20128.6 Btu/lbm</b>
<b>GROSS HEATING VALUE (60°F ideal reaction):</b>		<b>22288.1 Btu/lbm</b>
<b>RELATIVE DENSITY (AIR=1):</b>		<b>0.6312</b>
<b>DENSITY</b>		<b>0.04821 lbm/scf</b>
<b>COMPRESSIBILITY FACTOR :</b>		<b>0.9975</b>
<b>REGULAR WOBBE INDEX</b>		<b>1352.0</b>

*\*(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. :	202508087	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 26, 2025 07:35
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 11, 2025 12:30
PRODUCER :		CYLINDER NO. :	ECA-738
LEASE NO. :		SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	110165871 NP D27 EF 12B 595 PRODUCTION CASING		

***FIELD DATA***		SAMPLE TEMP. :	56
SAMPLE PRES. :	265	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

—                      ppm mol  
                              SPOT            NO PROBE

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	2.19	5.27
Nitrogen	0.08	0.12
Methane	90.2521	79.1298
Ethane	5.2296	8.5941
Propane	1.1779	2.8387
Isobutane	0.3646	1.1581
n-Butane	0.2269	0.7208
Isopentane	0.1275	0.5027
n-Pentane	0.0604	0.2382
Cyclopentane	0.0029	0.0111
n-Hexane	0.0267	0.1258
Cyclohexane	0.0150	0.0690
Other Hexanes	0.0796	0.3733
Heptanes	0.0603	0.3288
Methylcyclohexane	0.0349	0.1873
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0138	0.0589
Toluene	0.0196	0.0987
Ethylbenzene	0.0002	0.0012
Xylenes	0.0014	0.0081
C8+ Heavies	0.0257	0.1637
<u>Subtotal</u>	<u>99.99910</u>	<u>99.99830</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.0009	0.0017
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	<b>14.65</b>				
LHV	Net Dry Real:	969.4	4695.2	5808.2	9309.3 Btu/scf
	Net Wet Real:	952.5	4613.1	5706.7	9146.6 Btu/scf
HHV	Gross Dry Real:	1073.4	5042.7	6252.7	10000.5 Btu/scf
	Gross Wet Real:	1054.6	4954.5	6143.4	9825.7 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1352.0	2795.0	3124.7	3978.6	Btu/scf
Net Heating Value (60 °F ideal reaction):	20128.6	19165.7	19665.7	17493.8	Btu/lbm
Gross Heating Value (60 °F ideal reaction):	22288.1	20583.0	21170.7	18790.6	Btu/lbm
Molar Mass (MW):	18.29756	93.398	116.014	184.129	g/mol
Relative Density (AIR=1):	0.6312	3.2247	4.0052	6.3575	SG
Density:	0.04821	0.24612	0.30571	0.48521	lbm/scf
Compressibility Factor:	0.9975	0.9922	0.9970	1.0000	Z
Liquid Volume real gas @:	<b>14.65</b>	17.6795	0.1116	0.012	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**

PRIMARY DB KEY: 05-045-11747 NAME/DESCRIP : 110165871 NP D27 EF 12B 595  
 LEASE #: PRODUCTION CASING  
 FIELD/AREA:  
 PROJECT NO. : 202508087 ANALYSIS NO. : 01  
 COMPANY NAME : QB ENERGY OPERATING, LLC ANALYSIS DATE: AUGUST 26, 2025 07:35  
 OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : AUGUST 11, 2025 12:30  
 CUSTOMER REF: TO: AUGUST 11, 2025  
 PRODUCER : EFFECTIVE DATE: AUGUST 11, 2025

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT  
 SAMPLE PRES. : 265 psig PROBE : NO  
 FLOW PRES. : psig CYLINDER NO. : ECA-738  
 LAB PRES: psig SAMPLED BY : ALEX GALLEGOS  
 SAMPLE TEMP. : 56 °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	---	---
Nitrogen	---	0.08	0.12	---	---
Carbon Dioxide	---	2.19	5.27	---	---
Methane	P1	90.2521	79.1298	---	---
Ethane	P2	5.2296	8.5941	1.394	1.402
Propane	P3	1.1779	2.8387	0.324	0.326
i-Butane	I4	0.3646	1.1581	0.119	0.120
Methanol	X1	0.0008	0.0014	0.000	0.000
n-Butane	P4	0.2269	0.7208	0.071	0.071
2,2-Dimethylpropane	I5	0.0066	0.0260	0.003	0.003
i-Pentane	I5	0.1209	0.4767	0.044	0.044
Acetone	X3	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.0604	0.2382	0.022	0.022
2,2-Dimethylbutane	I6	0.0080	0.0377	0.003	0.003
Cyclopentane	N5	0.0029	0.0111	0.001	0.001
2,3-Dimethylbutane	I6	0.0086	0.0405	0.004	0.004
2-Methylpentane	I6	0.0306	0.1441	0.013	0.013
3-Methylpentane	I6	0.0173	0.0815	0.007	0.007
n-Hexane	P6	0.0267	0.1258	0.011	0.011
2,2-Dimethylpentane	I7	0.0020	0.0109	0.001	0.001
Methylcyclopentane	N6	0.0151	0.0695	0.005	0.005
2,4-Dimethylpentane	I7	0.0025	0.0137	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0009	0.0049	0.000	0.000
Benzene	A6	0.0138	0.0589	0.004	0.004
3,3-Dimethylpentane	I7	0.0012	0.0066	0.001	0.001
Cyclohexane	N6	0.0150	0.0690	0.005	0.005
2-Methylhexane	I7	0.0109	0.0597	0.005	0.005
2,3-Dimethylpentane	I7	0.0029	0.0159	0.001	0.001

1,1-Dimethylcyclopentane	N7	0.0020	0.0107	0.001	0.001
3-Methylhexane	I7	0.0100	0.0548	0.005	0.005
1c,3-Dimethylcyclopentane	N7	0.0027	0.0145	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0025	0.0134	0.001	0.001
3-Ethylpentane	I7	0.0005	0.0027	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0040	0.0215	0.002	0.002
n-Heptane	P7	0.0165	0.0903	0.008	0.008
1c,2-Dimethylcyclopentane	N7	0.0004	0.0021	0.000	0.000
Methylcyclohexane	N7	0.0349	0.1873	0.014	0.014
2,2-Dimethylhexane	I8	0.0011	0.0069	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0011	0.0059	0.000	0.000
2,5-Dimethylhexane	I8	0.0013	0.0081	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0011	0.0069	0.001	0.001
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0005	0.0031	0.000	0.000
3,3-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0196	0.0987	0.007	0.007
2,3-Dimethylhexane	I8	0.0007	0.0044	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0033	0.0206	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	0.0027	0.0168	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0033	0.0202	0.002	0.002
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0014	0.0086	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0006	0.0037	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0009	0.0055	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0035	0.0219	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0006	0.0037	0.000	0.000
2,2-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0004	0.0027	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
Ethylbenzene	I8	0.0002	0.0012	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0010	0.0058	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0004	0.0023	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Dodecane	P12	0.0001	0.0009	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0002	0.0020	0.000	0.000
n-Tetradecane	P14	0.0002	0.0022	0.000	0.000
n-Pentadecane	P15	0.0001	0.0012	0.000	0.000
n-Hexadecane	P16	0.0001	0.0013	0.000	0.000
<b>TOTAL</b>		<b>100.00000</b>	<b>100.00000</b>	<b>2.0898</b>	<b>2.1008</b>

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0138	0.0589
TOLUENE	0.0196	0.0987
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0014	0.0081
<b>TOTAL BTEX</b>	<b>0.0350</b>	<b>0.1669</b>

\*(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 :	969.4 /scf	974.7 /scf
NET WET REAL :	952.5 /scf	957.8 /scf
HHV GROSS DRY REAL :	1073.4 /scf	1079.2 /scf
GROSS WET REAL :	1054.6 /scf	1060.4 /scf
NET HEATING VALUE (60 °F ideal reaction):		20128.6 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		22288.1 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6312
DENSITY		0.04821 lb/scf
COMPRESSIBILITY FACTOR :		0.9975
REGULAR WOBBE INDEX		1352.0

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

Net Dry Ideal BTU	<u>4673.2 /scf</u>	Relative Density - SG (Air=1)	<u>3.2247</u>	<b>C6+ factors</b>
Gross Dry Ideal BTU	<u>5019.1 /scf</u>	Z Compressibility Factor	<u>0.9922</u>	<u>0.99152</u>
Net Dry Ideal BTU	<u>19165.7 /lb</u>	Density Factor	<u>246.121 lbm/1000 ft3</u>	
Gross Dry Ideal BTU	<u>20583 /lb</u>	Molar Mass or MW	<u>93.398 g/mol</u>	
		Volume Liquid Ideal gas	<u>0.112 scf/gal</u>	<u>24.4</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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