



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-045-15107** NAME/DESCRIP : **110165726 NP I30A EF14D-19 595**
 LEASE #: **BRADEN HEAD**
 FIELD/AREA:

PROJECT NO. : **202508033** ANALYSIS NO. : **02**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **AUGUST 12, 2025 20:30**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **JULY 31, 2025 10:00**
 CUSTOMER REF: TO:
 PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
 SAMPLE PRES. : 191 psig PROBE : NO
 FLOW PRES. : psig CYLINDER NO. : 138
 LAB PRES: psig SAMPLED BY : ALEX GALLEGOS
 SAMPLE TEMP. : 68 °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	0.0002	0.0003	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.25	0.40	---	---
CARBON DIOXIDE	0.24	0.60	---	---
METHANE	93.7732	85.3667	---	---
ETHANE	3.2274	5.5070	0.8603	0.8650
PROPANE	1.3017	3.2571	0.3577	0.3597
I-BUTANE	0.2256	0.7440	0.0739	0.0743
N-BUTANE	0.3827	1.2622	0.1199	0.1206
I-PENTANE	0.1291	0.5278	0.0470	0.0472
N-PENTANE	0.1093	0.4475	0.0400	0.0402
HEXANES PLUS	0.3508	1.8874	0.1400	0.1402
TOTALS	100.00000	100.00000	1.6388	1.6472

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0269	0.1192
TOLUENE	0.0182	0.0952
ETHYLBENZENE	0.0020	0.0120
XYLENES	0.0078	0.0469
TOTAL BTEX	0.0549	0.2733

	<u>CALCULATED VALUES**</u>	
	<u>BTU @</u>	<u>BTU @</u>
	<u>14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	977.6 /scf	983.0 /scf
NET WET REAL :	960.5 /scf	965.9 /scf
HHV GROSS DRY REAL :	1082.9 /scf	1088.8 /scf
GROSS WET REAL :	1064.0 /scf	1069.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		21083.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23351.6 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6077
DENSITY		0.04643 lbm/scf
COMPRESSIBILITY FACTOR :		0.9976
REGULAR WOBBE INDEX		1390.2

**(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. :	202508033	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 12, 2025 20:30
ACCOUNT NO. :		SAMPLE DATE :	JULY 31, 2025 10:00
PRODUCER :		CYLINDER NO. :	138
LEASE NO. :		SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	110165726 NP I30A EF14D-19 595 BRADEN HEAD		

FIELD DATA		SAMPLE TEMP. :	68
SAMPLE PRES. :	191	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	—		

— ppm mol
 SPOT NO PROBE

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.24	0.60
Nitrogen	0.25	0.40
Methane	93.7732	85.3667
Ethane	3.2274	5.5070
Propane	1.3017	3.2571
Isobutane	0.2256	0.7440
n-Butane	0.3827	1.2622
Isopentane	0.1223	0.5007
n-Pentane	0.1093	0.4475
Cyclopentane	0.0068	0.0271
n-Hexane	0.0406	0.1985
Cyclohexane	0.0233	0.1113
Other Hexanes	0.0802	0.3898
Heptanes	0.0712	0.4022
Methylcyclohexane	0.0249	0.1387
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0269	0.1192
Toluene	0.0182	0.0952
Ethylbenzene	0.0020	0.0120
Xylenes	0.0078	0.0469
C8+ Heavies	0.0557	0.3736
<u>Subtotal</u>	<u>99.99980</u>	<u>99.99970</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.0002	0.0003
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	LHV Net Dry Real:	977.6	4755.4	5786.0	7072.9 Btu/scf
	Net Wet Real:	960.5	4672.3	5684.9	6949.3 Btu/scf
	HHV Gross Dry Real:	1082.9	5102.7	6212.5	7611.3 Btu/scf
	Gross Wet Real:	1064.0	5013.5	6103.9	7478.2 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1390.2	2809.1	3099.7	3440.0	Btu/scf
Net Heating Value (60 °F ideal reaction):	21083.0	19182.9	19524.5	19220.6	Btu/lbm
Gross Heating Value (60 °F ideal reaction):	23351.6	20587.1	20968.3	20685.9	Btu/lbm
Molar Mass (MW):	17.62238	94.876	116.554	142.542	g/mol
Relative Density (AIR=1):	0.6077	3.2751	4.0243	4.9217	SG
Density:	0.04643	0.24998	0.30714	0.37562	lbm/scf
Compressibility Factor:	0.9976	0.9932	0.9978	0.9995	Z
Liquid Volume real gas @:	17.511	0.1396	0.0279	0.001	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: 05-045-15107 NAME/DESCRIP : 110165726 NP I30A EF14D-19 595
 LEASE #: BRADEN HEAD
 FIELD/AREA:
 PROJECT NO. : 202508033 ANALYSIS NO. : 02
 COMPANY NAME : QB ENERGY OPERATING, LLC ANALYSIS DATE: AUGUST 12, 2025 20:30
 OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : JULY 31, 2025 10:00
 CUSTOMER REF: TO:
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FIELD DATA

SAMPLE CYCLE: SAMPLE TYPE: SPOT
 SAMPLE PRES. : 191 psig PROBE : NO
 FLOW PRES. : psig CYLINDER NO. : 138
 LAB PRES: psig SAMPLED BY : ALEX GALLEGOS
 SAMPLE TEMP. : 68 °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	---	---
Nitrogen	---	0.25	0.40	---	---
Carbon Dioxide	---	0.24	0.60	---	---
Methane	P1	93.7732	85.3667	---	---
Ethane	P2	3.2274	5.5070	0.860	0.865
Propane	P3	1.3017	3.2571	0.358	0.360
i-Butane	I4	0.2256	0.7440	0.074	0.074
Methanol	X1	0.0002	0.0003	0.000	0.000
n-Butane	P4	0.3826	1.2619	0.120	0.121
2,2-Dimethylpropane	I5	0.0021	0.0086	0.001	0.001
i-Pentane	I5	0.1202	0.4921	0.044	0.044
UnknownC4s	U4	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.1093	0.4475	0.040	0.040
2,2-Dimethylbutane	I6	0.0026	0.0127	0.001	0.001
Cyclopentane	N5	0.0068	0.0271	0.002	0.002
2,3-Dimethylbutane	I6	0.0062	0.0303	0.003	0.003
2-Methylpentane	I6	0.0332	0.1623	0.014	0.014
3-Methylpentane	I6	0.0180	0.0880	0.007	0.007
n-Hexane	P6	0.0406	0.1985	0.017	0.017
2,2-Dimethylpentane	I7	0.0009	0.0051	0.000	0.000
Methylcyclopentane	N6	0.0202	0.0965	0.007	0.007
2,4-Dimethylpentane	I7	0.0018	0.0102	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0017	0.000	0.000
Benzene	A6	0.0269	0.1192	0.008	0.008
3,3-Dimethylpentane	I7	0.0005	0.0028	0.000	0.000
Cyclohexane	N6	0.0233	0.1113	0.008	0.008
2-Methylhexane	I7	0.0102	0.0580	0.005	0.005
2,3-Dimethylpentane	I7	0.0034	0.0193	0.002	0.002

1,1-Dimethylcyclopentane	N7	0.0018	0.0100	0.001	0.001
3-Methylhexane	I7	0.0097	0.0552	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0032	0.0178	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0029	0.0162	0.001	0.001
3-Ethylpentane	I7	0.0007	0.0040	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0049	0.0273	0.002	0.002
n-Heptane	P7	0.0197	0.1120	0.009	0.009
1c,2-Dimethylcyclopentane	N7	0.0095	0.0529	0.004	0.004
Methylcyclohexane	N7	0.0249	0.1387	0.010	0.010
2,2-Dimethylhexane	I8	0.0011	0.0071	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0003	0.0019	0.000	0.000
Ethylcyclopentane	N7	0.0014	0.0078	0.001	0.001
2,5-Dimethylhexane	I8	0.0010	0.0065	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0008	0.0052	0.000	0.000
2,4-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0011	0.0070	0.001	0.001
3,3-Dimethylhexane	I8	0.0003	0.0019	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0182	0.0952	0.006	0.006
2,3-Dimethylhexane	I8	0.0009	0.0058	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
2-Methylheptane	I8	0.0051	0.0331	0.003	0.003
4-Methylheptane	I8	0.0014	0.0091	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0013	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	0.0032	0.0208	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0041	0.0261	0.002	0.002
3-Ethylhexane	I8	0.0006	0.0039	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0019	0.0121	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0007	0.0045	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0003	0.0019	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0003	0.0019	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
1,1-Methylethylcyclopentane	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	0.0016	0.0102	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0023	0.0146	0.001	0.001
n-Octane	P8	0.0062	0.0402	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0009	0.0057	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0005	0.0036	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0018	0.0129	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0006	0.0044	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0017	0.0108	0.001	0.001
n-Propylcyclopentane	N8	0.0006	0.0038	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0004	0.0028	0.000	0.000
2,5-Dimethylheptane	I9	0.0008	0.0058	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0015	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	0.0014	0.000	0.000

Ethylbenzene	I8	0.0020	0.0120	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	0.0050	0.0301	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0012	0.0072	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0015	0.000	0.000
4-Ethylheptane	I9	0.0002	0.0015	0.000	0.000
4-Methyloctane	I9	0.0007	0.0051	0.000	0.000
2-Methyloctane	I9	0.0011	0.0080	0.001	0.001
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	0.0002	0.0015	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0010	0.0071	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	0.0016	0.0096	0.001	0.001
i-Butylcyclopentane	N9	0.0006	0.0043	0.000	0.000
n-Nonane	P9	0.0022	0.0160	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0003	0.0022	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0022	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0002	0.0014	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0016	0.000	0.000
1,3-Methylethylbenzene	A9	0.0003	0.0020	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0014	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0013	0.0095	0.001	0.001
n-Decane	P10	0.0003	0.0024	0.000	0.000
UnknownC10s	U10	0.0011	0.0089	0.001	0.001
n-Undecane	P11	0.0001	0.0009	0.000	0.000
<u>TOTAL</u>		<u>100.00000</u>	<u>100.00000</u>	<u>1.6388</u>	<u>1.6472</u>

BTEX COMPONENTS	MOLE%	WT%	CALCULATED VALUES**		
			BTU @	14.65	14.73
BENZENE	0.0269	0.1192	LHV NET DRY REAL :	977.6 /scf	983.0 /scf
TOLUENE	0.0182	0.0952	NET WET REAL :	960.5 /scf	965.9 /scf
ETHYLBENZENE	0.0020	0.0120	HHV GROSS DRY REAL :	1082.9 /scf	1088.8 /scf
XYLENES	0.0078	0.0469	GROSS WET REAL :	1064.0 /scf	1069.9 /scf
TOTAL BTEX	0.0549	0.2733	NET HEATING VALUE (60 °F ideal reaction):		21083.0 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23351.6 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6077
			DENSITY		0.04643 lb/scf
			COMPRESSIBILITY FACTOR :		0.9976
			REGULAR WOBBE INDEX		1390.2

*(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>4737.7 /scf</u>	Relative Density - SG (Air=1)	<u>3.2751</u>	C6+ factors
Gross Dry Ideal BTU	<u>5083.7 /scf</u>	Z Compressibility Factor	<u>0.99316</u>	<u>0.99224</u>
Net Dry Ideal BTU	<u>19182.9 /lb</u>	Density Factor	<u>249.981 lbm/1000 ft3</u>	
Gross Dry Ideal BTU	<u>20587.1 /lb</u>	Molar Mass or MW	<u>94.876 g/mol</u>	
		Volume Liquid Ideal gas	<u>0.14 scf/gal</u>	<u>24.3</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.