



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

**MAIN PAGE**

PRIMARY DB KEY: <b>05-103-08676</b>	NAME/DESCRIP : <b>CORRAL CREEK 4505</b>
LEASE #:	<b>PRODUCTION CASING</b>
FIELD/AREA:	
PROJECT NO. : <b>202508081</b>	ANALYSIS NO. : <b>01</b>
COMPANY NAME : <b>QB ENERGY OPERATING, LLC</b>	ANALYSIS DATE: <b>AUGUST 23, 2025 16:31</b>
OFFICE / BRANCH: <b>PARACHUTE, CO</b>	SAMPLE DATE : <b>AUGUST 08, 2025 11:30</b>
CUSTOMER REF:	TO:
PRODUCER :	EFFECTIVE DATE:

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

SAMPLE CYCLE:	SAMPLE TYPE:
SAMPLE PRES. :                   psig	PROBE :
FLOW PRES. :                   psig	CYLINDER NO. :           ECA-821
LAB PRES:                       psig	SAMPLED BY :           NICK CROY
SAMPLE TEMP. :                °F	SAMPLING COMPANY: <b>QB ENERGY</b>
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>
GLYCOLS	0.0001	0.0006	0.0000	0.0000
ALCOHOLS	0.0030	0.0054	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.13	0.21	---	---
CARBON DIOXIDE	1.54	3.84	---	---
METHANE	93.6793	85.1184	---	---
ETHANE	2.7157	4.6250	0.7234	0.7274
PROPANE	1.0247	2.5591	0.2818	0.2833
I-BUTANE	0.1514	0.4984	0.0490	0.0492
N-BUTANE	0.2978	0.9803	0.0939	0.0944
I-PENTANE	0.1068	0.4359	0.0390	0.0392
N-PENTANE	0.0966	0.3948	0.0350	0.0352
HEXANES PLUS	0.2445	1.3323	0.0950	0.0952
<b>TOTALS</b>	<b>100.0000</b>	<b>100.0000</b>	<b>1.3171</b>	<b>1.3239</b>

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0137	0.0606
TOLUENE	0.0124	0.0647
ETHYLBENZENE	0.0005	0.0030
XYLENES	0.0043	0.0259
<b>TOTAL BTEX</b>	<b>0.0309</b>	<b>0.1542</b>

**CALCULATED VALUES\*\***

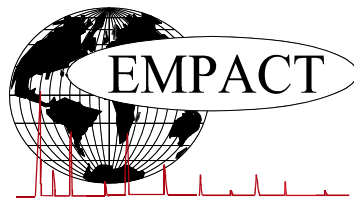
	<u>BTU @ 14.65</u>	<u>14.73</u>
<b>LHV NET DRY REAL :</b>	<b>950.7 /scf</b>	<b>955.9 /scf</b>
<b>NET WET REAL :</b>	<b>934.1 /scf</b>	<b>939.3 /scf</b>
<b>HHV GROSS DRY REAL :</b>	<b>1053.5 /scf</b>	<b>1059.3 /scf</b>
<b>GROSS WET REAL :</b>	<b>1035.1 /scf</b>	<b>1040.9 /scf</b>
<b>NET HEATING VALUE (60 °F ideal reaction):</b>		<b>20472.9 Btu/lbm</b>
<b>GROSS HEATING VALUE (60°F ideal reaction):</b>		<b>22687.0 Btu/lbm</b>
<b>RELATIVE DENSITY (AIR=1):</b>		<b>0.6088</b>
<b>DENSITY</b>		<b>0.04652 lbm/scf</b>
<b>COMPRESSIBILITY FACTOR :</b>		<b>0.9977</b>
<b>REGULAR WOBBE INDEX</b>		<b>1351.4</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. :	202508081	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 23, 2025 16:31
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 08, 2025 11:30
PRODUCER :		CYLINDER NO. :	ECA-821
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	CORRAL CREEK 4505 PRODUCTION CASING		

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

SAMPLE PRES. :		SAMPLE TEMP. :	
H2S BY STAIN TUBE:	— ppm mol	AMBIENT TEMP.:	
COMMENTS :			

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	1.54	3.84
Nitrogen	0.13	0.21
Methane	93.6793	85.1184
Ethane	2.7157	4.6250
Propane	1.0247	2.5591
Isobutane	0.1514	0.4984
n-Butane	0.2978	0.9803
Isopentane	0.1021	0.4172
n-Pentane	0.0966	0.3948
Cyclopentane	0.0047	0.0187
n-Hexane	0.0353	0.1723
Cyclohexane	0.0240	0.1144
Other Hexanes	0.0489	0.2385
Heptanes	0.0538	0.3039
Methylcyclohexane	0.0215	0.1196
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0137	0.0606
Toluene	0.0124	0.0647
Ethylbenzene	0.0005	0.0030
Xylenes	0.0043	0.0259
C8+ Heavies	0.0301	0.2294
<u>Subtotal</u>	<u>99.99690</u>	<u>99.99400</u>
Oxygen/Argon	0.00	0.00
Glycols	0.0001	0.0006
Alcohols	0.0030	0.0054
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

	<u>Total</u>	<u>C6+</u>	<u>C8+</u>	<u>C10+</u>
<u>Calculated Values BTU @</u> <b>14.65</b>	<u>Sample</u>	<u>Fraction</u>	<u>Fraction</u>	<u>Fraction</u>
LHV Net Dry Real:	950.7	4839.1	6511.3	9464.6 Btu/scf
Net Wet Real:	934.1	4754.5	6397.5	9299.1 Btu/scf
HHV Gross Dry Real:	1053.5	5198.7	6990.1	10173.1 Btu/scf
Gross Wet Real:	1035.1	5107.8	6867.9	9995.3 Btu/scf

**Other Calculated Values**

Regualr Wobbe Index*	1351.4	2840.0	3288.7	3997.3 Btu/scf
Net Heating Value (60 °F ideal reaction):	20472.9	19180.0	19394.5	19420.8 Btu/lbm
Gross Heating Value (60°F ideal reaction):	22687.0	20600.1	20823.3	20874.5 Btu/lbm
Molar Mass (MW):	17.65584	96.311	131.224	188.761 g/mol
Relative Density (AIR=1):	0.6088	3.3252	4.5320	6.5171 SG
Density:	0.04652	0.25381	0.34582	0.49742 lbm/scf
Compressibility Factor:	0.9977	0.9930	0.9985	1.0000 Z
Liquid Volume real gas @:	<b>14.65</b>	17.3814	0.0947	0.011
				0.002 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.

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)**

**DHA COMPONENT LIST**

PRIMARY DB KEY: **05-103-08676** NAME/DESCRIP : **CORRAL CREEK 4505**  
 LEASE #: **PRODUCTION CASING**  
 FIELD/AREA:  
 PROJECT NO. : **202508081** ANALYSIS NO. : **01**  
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **AUGUST 23, 2025 16:31**  
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **AUGUST 08, 2025 11:30**  
 CUSTOMER REF: **TO:**  
 PRODUCER : **EFFECTIVE DATE:**

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

SAMPLE CYCLE: SAMPLE TYPE:  
 SAMPLE PRES. : **psig** PROBE :  
 FLOW PRES. : **psig** CYLINDER NO. : **ECA-821**  
 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	---	---
Nitrogen	---	0.13	0.21	---	---
Carbon Dioxide	---	1.54	3.84	---	---
Methane	P1	93.6793	85.1184	---	---
Ethane	P2	2.7157	4.6250	0.723	0.727
Propane	P3	1.0247	2.5591	0.282	0.283
i-Butane	I4	0.1514	0.4984	0.049	0.049
Methanol	X1	0.0030	0.0054	0.000	0.000
n-Butane	P4	0.2978	0.9803	0.094	0.094
2,2-Dimethylpropane	I5	0.0015	0.0061	0.001	0.001
i-Pentane	I5	0.1006	0.4111	0.037	0.037
n-Pentane	P5	0.0966	0.3948	0.035	0.035
2,2-Dimethylbutane	I6	0.0028	0.0136	0.001	0.001
Cyclopentane	N5	0.0047	0.0187	0.001	0.001
2,3-Dimethylbutane	I6	0.0045	0.0220	0.002	0.002
2-Methylpentane	I6	0.0259	0.1264	0.011	0.011
3-Methylpentane	I6	0.0146	0.0712	0.006	0.006
n-Hexane	P6	0.0353	0.1723	0.014	0.014
Methylcyclopentane	N6	0.0011	0.0053	0.000	0.000
2,4-Dimethylpentane	I7	0.0015	0.0085	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0002	0.0011	0.000	0.000
Benzene	A6	0.0137	0.0606	0.004	0.004
3,3-Dimethylpentane	I7	0.0004	0.0023	0.000	0.000
Cyclohexane	N6	0.0240	0.1144	0.008	0.008
2-Methylhexane	I7	0.0061	0.0346	0.003	0.003
2,3-Dimethylpentane	I7	0.0015	0.0085	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0018	0.0100	0.001	0.001
3-Methylhexane	I7	0.0057	0.0323	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0022	0.0122	0.001	0.001

1t,3-Dimethylcyclopentane	N7	0.0020	0.0111	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0017	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0031	0.0172	0.001	0.001
n-Heptane	P7	0.0113	0.0641	0.005	0.005
1c,2-Dimethylcyclopentane	N7	0.0007	0.0039	0.000	0.000
Methylcyclohexane	N7	0.0215	0.1196	0.009	0.009
2,2-Dimethylhexane	I8	0.0007	0.0045	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0006	0.0033	0.000	0.000
2,5-Dimethylhexane	I8	0.0004	0.0026	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0004	0.0026	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0006	0.0038	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	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	0.0124	0.0647	0.004	0.004
2,3-Dimethylhexane	I8	0.0004	0.0026	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0017	0.0110	0.001	0.001
4-Methylheptane	I8	0.0006	0.0039	0.000	0.000
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	0.0013	0.0084	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0022	0.0140	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0010	0.0063	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0004	0.0025	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	0.0057	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
UnknownC7s	U7	0.0163	0.0925	0.008	0.008
n-Octane	P8	0.0030	0.0194	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0004	0.0025	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	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
2,2-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0010	0.0071	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0003	0.0019	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0025	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0005	0.0030	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0027	0.0163	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0008	0.0048	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0002	0.0015	0.000	0.000
2-Methyloctane	I9	0.0002	0.0015	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0003	0.0021	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0008	0.0048	0.000	0.000
i-Butylcyclopentane	N9	0.0003	0.0021	0.000	0.000

n-Nonane	P9	0.0009	0.0065	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	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
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0021	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
Diethylene glycol	GL4	0.0001	0.0006	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0014	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
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0004	0.0031	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0004	0.0029	0.000	0.000
n-Decane	P10	0.0002	0.0016	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0006	0.0048	0.000	0.000
n-Undecane	P11	0.0001	0.0009	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
n-Dodecane	P12	0.0002	0.0019	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0009	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0001	0.0008	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0008	0.000	0.000
UnknownC12s	U12	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0006	0.0063	0.000	0.000
UnknownC13s	U13	0.0001	0.0010	0.000	0.000
n-Tetradecane	P14	0.0010	0.0112	0.001	0.001
UnknownC14s	U14	0.0002	0.0023	0.000	0.000
n-Pentadecane	P15	0.0009	0.0108	0.001	0.001
UnknownC15s	U15	0.0004	0.0048	0.000	0.000
n-Hexadecane	P16	0.0005	0.0064	0.000	0.000
UnknownC16s	U16	0.0005	0.0064	0.000	0.000
n-Heptadecane	P17	0.0003	0.0041	0.000	0.000
UnknownC17s	U17	0.0002	0.0027	0.000	0.000
n-Octadecane	P18	0.0001	0.0014	0.000	0.000
n-Nonadecane	P19	0.0001	0.0015	0.000	0.000
<u>TOTAL</u>		<u>100.00000</u>	<u>100.00000</u>	<u>1.3171</u>	<u>1.3239</u>

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0137	0.0606
TOLUENE	0.0124	0.0647
ETHYLBENZENE	0.0005	0.0030
XYLENES	0.0043	0.0259
TOTAL BTEX	0.0309	0.1542

\*(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 :	950.7 /scf	955.9 /scf
NET WET REAL :	934.1 /scf	939.3 /scf
HHV GROSS DRY REAL :	1053.5 /scf	1059.3 /scf
GROSS WET REAL :	1035.1 /scf	1040.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		20472.9 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		22687.0 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6088
DENSITY		0.04652 lb/scf
COMPRESSIBILITY FACTOR :		0.9977
REGULAR WOBBE INDEX		1351.4

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

Net Dry Ideal BTU	<u>4820.5</u> /scf	Relative Density - SG (Air=1)	<u>3.3252</u>	<b>C6+ factors</b>
Gross Dry Ideal BTU	<u>5178.7</u> /scf	Z Compressibility Factor	<u>0.99303</u>	<u>0.9923</u>
Net Dry Ideal BTU	<u>19180</u> /lb	Density Factor	<u>253.805</u> lbm/1000 ft3	
Gross Dry Ideal BTU	<u>20600.1</u> /lb	Molar Mass or MW	<u>96.311</u> g/mol	
		Volume Liquid Ideal gas	<u>0.095</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.**

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