



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-045-07292** NAME/DESCRIP : **300107075 F33 BOULTON 33-6**
 LEASE #: **COC-56608A** CASING
 FIELD/AREA:

PROJECT NO. : **202503051** ANALYSIS NO. : **01**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **MARCH 14, 2025 09:23**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **MARCH 10, 2025**
 CUSTOMER REF: TO:
 PRODUCER : **QB ENERGY OPERATING, LLC** EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
 SAMPLE PRES. : 410 psig PROBE : NO
 FLOW PRES. : psig CYLINDER NO. : ECA-800
 LAB PRES: psig SAMPLED BY : JOEY GRACEY
 SAMPLE TEMP. : 50 °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 | MOLE % | MASS % | GPM @ | |
|----------------|------------------|------------------|---------------|---------------|
| | | | 14.65 | 14.73 |
| ALCOHOLS | 0.0017 | 0.0034 | 0.0000 | 0.0000 |
| HELIUM | 0.01 | 0.00 | --- | --- |
| HYDROGEN | 0.01 | 0.00 | --- | --- |
| OXYGEN/ARGON | 0.00 | 0.00 | --- | --- |
| NITROGEN | 0.21 | 0.29 | --- | --- |
| CARBON DIOXIDE | 0.06 | 0.13 | --- | --- |
| METHANE | 83.3437 | 66.6546 | --- | --- |
| ETHANE | 8.9647 | 13.4382 | 2.3912 | 2.4043 |
| PROPANE | 4.1837 | 9.1969 | 1.1501 | 1.1564 |
| I-BUTANE | 0.9907 | 2.8706 | 0.3230 | 0.3248 |
| N-BUTANE | 1.1297 | 3.2734 | 0.3550 | 0.3570 |
| I-PENTANE | 0.4362 | 1.5675 | 0.1590 | 0.1598 |
| N-PENTANE | 0.3573 | 1.2852 | 0.1290 | 0.1297 |
| HEXANES PLUS | 0.3023 | 1.2902 | 0.1180 | 0.1187 |
| TOTALS | 100.00000 | 100.00000 | 4.6253 | 4.6507 |

| BTEX COMPONENTS | MOLE% | WT% |
|-------------------|---------------|---------------|
| BENZENE | 0.0147 | 0.0572 |
| TOLUENE | 0.0000 | 0.0000 |
| ETHYLBENZENE | 0.0000 | 0.0000 |
| XYLENES | 0.0000 | 0.0000 |
| TOTAL BTEX | 0.0147 | 0.0572 |

| | CALCULATED VALUES** | |
|--|---------------------|-----------------|
| | 14.65 | 14.73 |
| BTU @ | | |
| LHV NET DRY REAL : | 1106.1 /scf | 1112.2 /scf |
| NET WET REAL : | 1086.8 /scf | 1092.9 /scf |
| HHV GROSS DRY REAL : | 1220.6 /scf | 1227.3 /scf |
| GROSS WET REAL : | 1199.3 /scf | 1206.0 /scf |
| NET HEATING VALUE (60 °F ideal reaction): | | 20925.5 Btu/lbm |
| GROSS HEATING VALUE (60°F ideal reaction): | | 23092.3 Btu/lbm |
| RELATIVE DENSITY (AIR=1): | | 0.6926 |
| DENSITY | | 0.05286 lbm/scf |
| COMPRESSIBILITY FACTOR : | | 0.9968 |
| REGULAR WOBBE INDEX | | 1466.5 |

*(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. : | 202503051 | ANALYSIS NO. : | 01 |
| COMPANY NAME : | QB ENERGY OPERATING, LLC | ANALYSIS DATE: | MARCH 14, 2025 09:23 |
| ACCOUNT NO. : | | SAMPLE DATE : | MARCH 10, 2025 |
| PRODUCER : | QB ENERGY OPERATING, LLC | CYLINDER NO. : | ECA-800 |
| LEASE NO. : | COC-56608A | SAMPLED BY : | JOEY GRACEY |
| NAME/DESCRIP : | 300107075 F33 BOULTON 33-6 CASING | | |

FIELD DATA

| | | | |
|--------------------|---|----------------|----|
| SAMPLE PRES. : | 410 | SAMPLE TEMP. : | 50 |
| H2S BY STAIN TUBE: | — | AMBIENT TEMP.: | |
| COMMENTS : | <i>SPOT</i> <i>ppm mol</i> <i>NO PROBE</i> | | |

| <u>Componet</u> | <u>Mole %</u> | <u>Wt %</u> |
|------------------------|------------------|------------------|
| Helium | 0.01 | 0.00 |
| Hydrogen | 0.01 | 0.00 |
| Carbon Dioxide | 0.06 | 0.13 |
| Nitrogen | 0.21 | 0.29 |
| Methane | 83.3437 | 66.6546 |
| Ethane | 8.9647 | 13.4382 |
| Propane | 4.1837 | 9.1969 |
| Isobutane | 0.9907 | 2.8706 |
| n-Butane | 1.1297 | 3.2734 |
| Isopentane | 0.4223 | 1.5189 |
| n-Pentane | 0.3573 | 1.2852 |
| Cyclopentane | 0.0139 | 0.0486 |
| n-Hexane | 0.0888 | 0.3815 |
| Cyclohexane | 0.0281 | 0.1179 |
| Other Hexanes | 0.1667 | 0.7136 |
| Heptanes | 0.0040 | 0.0200 |
| Methylcyclohexane | 0.0000 | 0.0000 |
| 2,2,4 Trimethylpentane | 0.0000 | 0.0000 |
| Benzene | 0.0147 | 0.0572 |
| Toluene | 0.0000 | 0.0000 |
| Ethylbenzene | 0.0000 | 0.0000 |
| Xylenes | 0.0000 | 0.0000 |
| C8+ Heavies | 0.0000 | 0.0000 |
| <u>Subtotal</u> | <u>99.99830</u> | <u>99.99660</u> |
| Oxygen/Argon | 0.00 | 0.00 |
| Alcohols | 0.0017 | 0.0034 |
| <u>Total</u> | <u>100.00000</u> | <u>100.00000</u> |

| | <u>Total</u> | <u>C6+</u> | <u>C8+</u> | <u>C10+</u> | |
|---|---------------|-----------------|-----------------|-----------------|----------------|
| Calculated Values BTU @ 14.65 | Sample | Fraction | Fraction | Fraction | |
| LHV Net Dry Real: | 1106.1 | 4368.4 | #DIV/0! | #DIV/0! | Btu/scf |
| Net Wet Real: | 1086.8 | 4292.0 | #DIV/0! | #DIV/0! | Btu/scf |
| HHV Gross Dry Real: | 1220.6 | 4705.2 | #DIV/0! | #DIV/0! | Btu/scf |
| Gross Wet Real: | 1199.3 | 4622.9 | #DIV/0! | #DIV/0! | Btu/scf |
| Other Calculated Values | | | | | |
| Regualr Wobbe Index* | 1466.5 | 2712.4 | #DIV/0! | #DIV/0! | Btu/scf |
| Net Heating Value (60 °F ideal reaction): | 20925.5 | 19195.1 | #DIV/0! | #DIV/0! | Btu/lbm |
| Gross Heating Value (60°F ideal reaction): | 23092.3 | 20674.6 | #DIV/0! | #DIV/0! | Btu/lbm |
| Molar Mass (MW): | 20.06076 | 85.577 | #DIV/0! | #DIV/0! | g/mol |
| Relative Density (AIR=1): | 0.6926 | 2.9550 | #DIV/0! | #DIV/0! | SG |
| Density: | 0.05286 | 0.22552 | #DIV/0! | #DIV/0! | lbm/scf |
| Compressibility Factor: | 0.9968 | 0.9878 | #DIV/0! | #DIV/0! | Z |
| Liquid Volume real gas @: | 14.65 | 18.6943 | 0.1176 | 0 | 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: **05-045-07292** NAME/DESCRIP : **300107075 F33 BOULTON 33-6**
 LEASE #: **COC-56608A** CASING
 FIELD/AREA:
 PROJECT NO. : **202503051** ANALYSIS NO. : **01**
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 PRODUCER : **QB ENERGY OPERATING, LLC** EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: **SPOT**
 SAMPLE PRES. : **410** psig PROBE : **NO**
 FLOW PRES. : psig CYLINDER NO. : **ECA-800**
 LAB PRES: psig SAMPLED BY : **JOEY GRACEY**
 SAMPLE TEMP. : **50** °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 | --- | --- |
| Hydrogen | --- | 0.01 | 0.00 | --- | --- |
| Nitrogen | --- | 0.21 | 0.29 | --- | --- |
| Carbon Dioxide | --- | 0.06 | 0.13 | --- | --- |
| Methane | P1 | 83.3437 | 66.6546 | --- | --- |
| Ethane | P2 | 8.9647 | 13.4382 | 2.391 | 2.404 |
| Propane | P3 | 4.1837 | 9.1969 | 1.150 | 1.156 |
| i-Butane | I4 | 0.9907 | 2.8706 | 0.323 | 0.325 |
| Methanol | X1 | 0.0012 | 0.0019 | 0.000 | 0.000 |
| n-Butane | P4 | 1.1296 | 3.2731 | 0.355 | 0.357 |
| 2,2-Dimethylpropane | I5 | 0.0066 | 0.0237 | 0.003 | 0.003 |
| Ethanol | X2 | 0.0003 | 0.0007 | 0.000 | 0.000 |
| i-Pentane | I5 | 0.4157 | 1.4952 | 0.152 | 0.153 |
| UnknownC4s | U4 | 0.0001 | 0.0003 | 0.000 | 0.000 |
| n-Pentane | P5 | 0.3569 | 1.2837 | 0.129 | 0.130 |
| t-Butanol | X4 | 0.0002 | 0.0008 | 0.000 | 0.000 |
| 2,2-Dimethylbutane | I6 | 0.0069 | 0.0297 | 0.003 | 0.003 |
| Cyclopentane | N5 | 0.0139 | 0.0486 | 0.004 | 0.004 |
| 2,3-Dimethylbutane | I6 | 0.0154 | 0.0662 | 0.006 | 0.006 |
| 2-Methylpentane | I6 | 0.0814 | 0.3497 | 0.034 | 0.034 |
| 3-Methylpentane | I6 | 0.0353 | 0.1517 | 0.014 | 0.014 |
| UnknownC5s | U5 | 0.0004 | 0.0015 | 0.000 | 0.000 |
| n-Hexane | P6 | 0.0888 | 0.3815 | 0.036 | 0.036 |
| 2,2-Dimethylpentane | I7 | 0.0006 | 0.0030 | 0.000 | 0.000 |
| Methylcyclopentane | N6 | 0.0274 | 0.1150 | 0.010 | 0.010 |
| 2,4-Dimethylpentane | I7 | 0.0023 | 0.0115 | 0.001 | 0.001 |

| | | | | | |
|--------------------------|----|------------------|------------------|---------------|---------------|
| 2,2,3-Trimethylbutane | I7 | 0.0003 | 0.0015 | 0.000 | 0.000 |
| Benzene | A6 | 0.0147 | 0.0572 | 0.004 | 0.004 |
| 3,3-Dimethylpentane | I7 | 0.0004 | 0.0020 | 0.000 | 0.000 |
| Cyclohexane | N6 | 0.0281 | 0.1179 | 0.010 | 0.010 |
| 2,3-Dimethylpentane | I7 | 0.0001 | 0.0005 | 0.000 | 0.000 |
| 1,1-Dimethylcyclopentane | N7 | 0.0003 | 0.0015 | 0.000 | 0.000 |
| UnknownC6s | U6 | 0.0003 | 0.0013 | 0.000 | 0.000 |
| TOTAL | | 100.00000 | 100.00000 | 4.6253 | 4.6507 |

CALCULATED VALUES**

| BTEX COMPONENTS | MOLE% | WT% | BTU @ | 14.65 | 14.73 |
|------------------------|---------------|---------------|--|--------------|-----------------|
| BENZENE | 0.0147 | 0.0572 | LHV NET DRY REAL : | 1106.1 /scf | 1112.2 /scf |
| TOLUENE | 0.0000 | 0.0000 | NET WET REAL : | 1086.8 /scf | 1092.9 /scf |
| ETHYLBENZENE | 0.0000 | 0.0000 | HHV GROSS DRY REAL : | 1220.6 /scf | 1227.3 /scf |
| XYLENES | 0.0000 | 0.0000 | GROSS WET REAL : | 1199.3 /scf | 1206.0 /scf |
| TOTAL BTEX | 0.0147 | 0.0572 | NET HEATING VALUE (60 °F ideal reaction): | | 20925.5 Btu/lbm |
| | | | GROSS HEATING VALUE (60°F ideal reaction): | | 23092.3 Btu/lbm |
| | | | RELATIVE DENSITY (AIR=1): | | 0.6926 |
| | | | DENSITY | | 0.05286 lb/scf |
| | | | COMPRESSIBILITY FACTOR : | | 0.9968 |
| | | | REGULAR WOBBE INDEX | | 1466.5 |

*(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>4328.8</u> /scf | Relative Density - SG (Air=1) | <u>2.955</u> | C6+ factors |
| Gross Dry Ideal BTU | <u>4662.6</u> /scf | Z Compressibility Factor | <u>0.98784</u> | <u>0.98756</u> |
| Net Dry Ideal BTU | <u>19195.1</u> /lb | Density Factor | <u>225.52</u> lbm/1000 ft3 | |
| Gross Dry Ideal BTU | <u>20674.6</u> /lb | Molar Mass or MW | <u>85.577</u> g/mol | |
| | | Volume Liquid Ideal gas | <u>0.118</u> scf/gal | <u>25.5</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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