

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: 05-103-10974	NAME/DESCRIP : YCF 32-33-1
LEASE #:	PRODUCTION CASING
FIELD/AREA	
PROJECT NO. : 202510008	ANALYSIS NO. : 01
COMPANY NAME : QB ENERGY OPERATING, LLC	ANALYSIS DATE: OCTOBER 04, 2025 16:41
OFFICE / BRANCH: PARACHUTE, CO	SAMPLE DATE : SEPTEMBER 19, 2025
CUSTOMER REF:	TO:
PRODUCER :	EFFECTIVE DATE:

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

SAMPLE CYCLE:	SAMPLE TYPE:
SAMPLE PRES. : 987 psig	PROBE :
FLOW PRES. : psig	CYLINDER NO. : ECA-794
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:	

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.65</u>	<u>GPM @ 14.73</u>
ALCOHOLS	0.0755	0.1289	0.0100	0.0101
HELIUM	0.01	0.00	---	---
HYDROGEN	0.02	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.59	0.87	---	---
CARBON DIOXIDE	0.19	0.44	---	---
METHANE	86.7522	73.1485	---	---
ETHANE	7.0388	11.1242	1.8775	1.8878
PROPANE	3.3172	7.6881	0.9118	0.9167
I-BUTANE	0.7350	2.2453	0.2399	0.2412
N-BUTANE	0.7290	2.2270	0.2289	0.2302
I-PENTANE	0.2551	0.9670	0.0930	0.0935
N-PENTANE	0.1613	0.6117	0.0580	0.0583
HEXANES PLUS	0.1159	0.5293	0.0440	0.0442
TOTALS	100.0000	100.0000	3.4631	3.4820

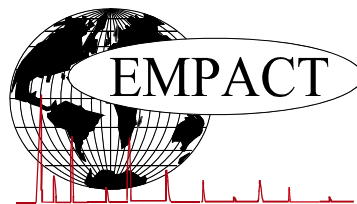
<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>	<u>CALCULATED VALUES**</u>		
			<u>BTU @</u>	<u>14.65</u>	<u>14.73</u>
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	1044.5 /scf	1050.2 /scf
TOLUENE	0.0000	0.0000	NET WET REAL :	1026.2 /scf	1031.9 /scf
ETHYLBENZENE	0.0001	0.0006	HHV GROSS DRY REAL :	1154.4 /scf	1160.7 /scf
XYLENES	0.0007	0.0039	GROSS WET REAL :	1134.2 /scf	1140.5 /scf
TOTAL BTEX	0.0008	0.0045	NET HEATING VALUE (60 °F ideal reaction):	20838.7 Btu/lbm	
			GROSS HEATING VALUE (60°F ideal reaction):	23032.8 Btu/lbm	
			RELATIVE DENSITY (AIR=1):	0.6564	
			DENSITY	0.05013 lbm/scf	
			COMPRESSIBILITY FACTOR :	0.9971	
			REGULAR WOBBE INDEX	1425.2	

**(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. :	202510008	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	OCTOBER 04, 2025 16:41
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 19, 2025
PRODUCER :		CYLINDER NO. :	ECA-794
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	YCF 32-33-1 PRODUCTION CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	987	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	— ppm mol		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.02	0.00
Carbon Dioxide	0.19	0.44
Nitrogen	0.59	0.87
Methane	86.7522	73.1485
Ethane	7.0388	11.1242
Propane	3.3172	7.6881
Isobutane	0.7350	2.2453
n-Butane	0.7290	2.2270
Isopentane	0.2516	0.9541
n-Pentane	0.1613	0.6117
Cyclopentane	0.0035	0.0129
n-Hexane	0.0345	0.1563
Cyclohexane	0.0040	0.0177
Other Hexanes	0.0707	0.3193
Heptanes	0.0053	0.0276
Methylcyclohexane	0.0003	0.0015
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0001	0.0006
Xylenes	0.0007	0.0039
C8+ Heavies	0.0003	0.0024
Subtotal	99.91450	99.85110
Oxygen/Argon	0.01	0.02
Alcohols	0.0755	0.1289
Total	100.00000	100.00000

	Total	C6+	C8+	C10+
Calculated Values BTU @	Sample	Fraction	Fraction	Fraction
LHV Net Dry Real:	1044.5	4462.1	5806.7	8091.9 Btu/scf
Net Wet Real:	1026.2	4384.1	5705.2	7950.4 Btu/scf
HHV Gross Dry Real:	1154.4	4813.3	6158.1	8710.5 Btu/scf
Gross Wet Real:	1134.2	4729.2	6050.4	8558.2 Btu/scf
Other Calculated Values				
Regualr Wobbe Index*	1425.2	2751.2	3018.1	3705.6 Btu/scf
Net Heating Value (60 °F ideal reaction):	20838.7	19303.8	18213.5	19131.6 Btu/lbm
Gross Heating Value (60°F ideal reaction):	23032.8	20824.3	19309.1	20594.3 Btu/lbm
Molar Mass (MW):	19.0259	86.917	121.118	160.987 g/mol
Relative Density (AIR=1):	0.6564	3.0014	4.1818	5.5585 SG
Density:	0.05013	0.22904	0.31917	0.42422 lbm/scf
Compressibility Factor:	0.9971	0.9872	0.9991	0.9999 Z
Liquid Volume real gas @:	18.1769	0.0439	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: **05-103-10974** NAME/DESCRIP : **YCF 32-33-1**
 LEASE #: **PRODUCTION CASING**
 FIELD/AREA:
 PROJECT NO. : **202510008** ANALYSIS NO. : **01**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **OCTOBER 04, 2025 16:41**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **SEPTEMBER 19, 2025**
 CUSTOMER REF: **TO:**
 PRODUCER : **EFFECTIVE DATE:**

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 987 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : ECA-794
 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	---	---
Hydrogen	---	0.02	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.59	0.87	---	---
Carbon Dioxide	---	0.19	0.44	---	---
Methane	P1	86.7522	73.1485	---	---
Ethane	P2	7.0388	11.1242	1.878	1.888
Propane	P3	3.3172	7.6881	0.912	0.917
i-Butane	I4	0.7350	2.2453	0.240	0.241
Methanol	X1	0.0747	0.1258	0.010	0.010
n-Butane	P4	0.7290	2.2270	0.229	0.230
2,2-Dimethylpropane	I5	0.0056	0.0212	0.002	0.002
i-Pentane	I5	0.2460	0.9329	0.090	0.091
n-Pentane	P5	0.1613	0.6117	0.058	0.058
t-Butanol	X4	0.0008	0.0031	0.000	0.000
2,2-Dimethylbutane	I6	0.0047	0.0213	0.002	0.002
Cyclopentane	N5	0.0035	0.0129	0.001	0.001
2,3-Dimethylbutane	I6	0.0077	0.0349	0.003	0.003
2-Methylpentane	I6	0.0320	0.1450	0.013	0.013
3-Methylpentane	I6	0.0158	0.0716	0.006	0.006
n-Hexane	P6	0.0345	0.1563	0.014	0.014
2,2-Dimethylpentane	I7	0.0008	0.0042	0.000	0.000
Methylcyclopentane	N6	0.0105	0.0465	0.004	0.004
2,4-Dimethylpentane	I7	0.0012	0.0063	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0002	0.0010	0.000	0.000
3,3-Dimethylpentane	I7	0.0001	0.0005	0.000	0.000
Cyclohexane	N6	0.0040	0.0177	0.001	0.001
2-Methylhexane	I7	0.0010	0.0053	0.000	0.000

2,3-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
3-Methylhexane	I7	0.0006	0.0031	0.000	0.000
1c,3-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
n-Heptane	P7	0.0004	0.0021	0.000	0.000
Methylcyclohexane	N7	0.0003	0.0015	0.000	0.000
Ethylbenzene	I8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0004	0.0022	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0011	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
3-Methylnonane	I10	0.0001	0.0007	0.000	0.000
n-Undecane	P11	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
TOTAL		100.00000	100.00000	3.4631	3.4820

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	1044.5 /scf	1050.2 /scf
TOLUENE	0.0000	0.0000	NET WET REAL :	1026.2 /scf	1031.9 /scf
ETHYLBENZENE	0.0001	0.0006	HHV GROSS DRY REAL :	1154.4 /scf	1160.7 /scf
XYLENES	0.0007	0.0039	GROSS WET REAL :	1134.2 /scf	1140.5 /scf
TOTAL BTEX	0.0008	0.0045	NET HEATING VALUE (60 °F ideal reaction):		20838.7 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		23032.8 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6564
			DENSITY		0.05013 lb/scf
			COMPRESSIBILITY FACTOR :		0.9971
			REGULAR WOBBE INDEX		1425.2

*(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>4418.6</u> /scf	Relative Density - SG (Air=1)	<u>3.0014</u>	C6+ factors
Gross Dry Ideal BTU	<u>4766.4</u> /scf	Z Compressibility Factor	<u>0.98716</u>	<u>0.98689</u>
Net Dry Ideal BTU	<u>19303.8</u> /lb	Density Factor	<u>229.042</u> lbm/1000 ft3	
Gross Dry Ideal BTU	<u>20824.3</u> /lb	Molar Mass or MW	<u>86.917</u> g/mol	
		Volume Liquid Ideal gas	<u>0.044</u> scf/gal	<u>24.5</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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