EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10405**	NAME/DESCRIP :	**YCF 34-44-1**
LEASE #:			**INTERMEDIATE CASING**
FIELD/AREA:			
PROJECT NO. :	**202508035**	ANALYSIS NO. :	**03**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	AUGUST 13, 2025 13:50
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	AUGUST 01, 2025 09:00
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
*****FIELD DATA*****			
SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-776
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	ºf	SAMPLING COMPANY:	QB ENERGY OPERATING LLC
AMBIENT TEMP.:	ºf	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	GPM @ 14.73
ALCOHOLS	0.0003	0.0006	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.03	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.41	0.63	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	90.6497	80.3417	---	---
ETHANE	5.6697	9.4184	1.5111	1.5194
PROPANE	1.8889	4.6015	0.5187	0.5215
I-BUTANE	0.3697	1.1871	0.1209	0.1216
N-BUTANE	0.4112	1.3203	0.1289	0.1296
I-PENTANE	0.1552	0.6180	0.0560	0.0563
N-PENTANE	0.1124	0.4480	0.0410	0.0412
HEXANES PLUS	0.2729	1.3844	0.1060	0.1062
TOTALS	100.00000	100.00000	2.4826	2.4958

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0116	0.0501
TOLUENE	0.0058	0.0295
ETHYLBENZENE	0.0005	0.0029
XYLENES	0.0019	0.0112
TOTAL BTEX	0.0198	0.0937

**(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 :	1004.8 **/scf**	1010.3 **/scf**
	NET WET REAL :	987.2 **/scf**	992.7 **/scf**
HHV	GROSS DRY REAL :	1111.9 **/scf**	1117.9 **/scf**
	GROSS WET REAL :	1092.5 **/scf**	1098.5 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		21089.1 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		23338.8 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.6243
	DENSITY		0.04770 **lbm/scf**
	COMPRESSIBILITY FACTOR :		0.9975
	REGULAR WOBBE INDEX		1408.0

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202508035	ANALYSIS NO. :	03
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 13, 2025 13:50
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 01, 2025 09:00
PRODUCER :		CYLINDER NO. :	ECA-776
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	YCF 34-44-1 INTERMEDIATE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :		AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.03	0.00
Carbon Dioxide	0.02	0.05
Nitrogen	0.41	0.63
Methane	90.6497	80.3417
Ethane	5.6697	9.4184
Propane	1.8889	4.6015
Isobutane	0.3697	1.1871
n-Butane	0.4112	1.3203
Isopentane	0.1504	0.5994
n-Pentane	0.1124	0.4480
Cyclopentane	0.0048	0.0186
n-Hexane	0.0418	0.1990
Cyclohexane	0.0286	0.1330
Other Hexanes	0.0843	0.3991
Heptanes	0.0516	0.2838
Methylcyclohexane	0.0245	0.1329
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0116	0.0501
Toluene	0.0058	0.0295
Ethylbenzene	0.0005	0.0029
Xylenes	0.0019	0.0112
C8+ Heavies	0.0223	0.1429
Subtotal	99.99970	99.99940
Oxygen/Argon	0.00	0.00
Alcohols	0.0003	0.0006
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**	**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV Net Dry Real:	1004.8	4641.7	5746.0	7066.8	**Btu/scf**
Net Wet Real:	987.2	4560.6	5645.6	6943.3	**Btu/scf**
HHV Gross Dry Real:	1111.9	4991.7	6176.7	7518.2	**Btu/scf**
Gross Wet Real:	1092.5	4904.4	6068.7	7386.8	**Btu/scf**
Other Calculated Values					
Regualr Wobbe Index*	1408.0	2789.1	3100.4	3355.1	**Btu/scf**
Net Heating Value (60 °F ideal reaction):	21089.1	19253.3	19823.2	18398.9	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):	23338.8	20703.1	21310.9	19578.1	**Btu/lbm**
Molar Mass (MW):	18.10242	91.825	115.082	146.259	**g/mol**
Relative Density (AIR=1):	0.6243	3.1699	3.9732	5.0499	**SG**
Density:	0.04770	0.24198	0.30325	0.38541	**lbm/scf**
Compressiblity Factor:	0.9975	0.9917	0.9974	0.9997	**Z**
Liquid Volume real gas @: **14.65**	17.8091	0.1057	0.008	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 uderscore) indicates there was no tube pulled for H2S.

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10405** NAME/DESCRIP : **YCF 34-44-1**
LEASE #: **INTERMEDIATE CASING**
FIELD/AREA:

PROJECT NO. : **202508035** ANALYSIS NO. : **03**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: AUGUST 13, 2025 13:50
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : AUGUST 01, 2025 09:00
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-776
LAB PRES: psig SAMPLED BY : NICK CROY
SAMPLE TEMP. : ºf SAMPLING COMPANY: QB ENERGY OPERATING LLC
AMBIENT TEMP.: ºf 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	---	0.03	0.00	---	---
Nitrogen	---	0.41	0.63	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	90.6497	80.3417	---	---
Ethane	P2	5.6697	9.4184	1.511	1.519
Propane	P3	1.8889	4.6015	0.519	0.522
i-Butane	I4	0.3697	1.1871	0.121	0.122
Methanol	X1	0.0002	0.0003	0.000	0.000
n-Butane	P4	0.4111	1.3200	0.129	0.130
2,2-Dimethylpropane	I5	0.0055	0.0219	0.002	0.002
i-Pentane	I5	0.1449	0.5775	0.053	0.053
Acetone	X3	0.0001	0.0003	0.000	0.000
UnknownC4s	U4	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.1124	0.4480	0.041	0.041
2,2-Dimethylbutane	I6	0.0052	0.0248	0.002	0.002
Cyclopentane	N5	0.0048	0.0186	0.001	0.001
2,3-Dimethylbutane	I6	0.0078	0.0371	0.003	0.003
2-Methylpentane	I6	0.0336	0.1600	0.014	0.014
3-Methylpentane	I6	0.0177	0.0842	0.007	0.007
n-Hexane	P6	0.0418	0.1990	0.017	0.017
2,2-Dimethylpentane	I7	0.0011	0.0061	0.001	0.001
Methylcyclopentane	N6	0.0200	0.0930	0.007	0.007
2,4-Dimethylpentane	I7	0.0018	0.0099	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0004	0.0022	0.000	0.000
Benzene	A6	0.0116	0.0501	0.003	0.003
3,3-Dimethylpentane	I7	0.0007	0.0039	0.000	0.000
Cyclohexane	N6	0.0286	0.1330	0.010	0.010

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2-Methylhexane	I7	0.0072	0.0398	0.003	0.003
2,3-Dimethylpentane	I7	0.0019	0.0105	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0015	0.0081	0.001	0.001
3-Methylhexane	I7	0.0063	0.0349	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0023	0.0125	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0020	0.0108	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0017	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0032	0.0174	0.001	0.001
n-Heptane	P7	0.0147	0.0814	0.007	0.007
1c,2-Dimethylcyclopentane	N7	0.0072	0.0391	0.003	0.003
Methylcyclohexane	N7	0.0245	0.1329	0.010	0.010
2,2-Dimethylhexane	I8	0.0006	0.0038	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0009	0.0049	0.000	0.000
2,5-Dimethylhexane	I8	0.0006	0.0038	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0004	0.0025	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0058	0.0295	0.002	0.002
2,3-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0021	0.0133	0.001	0.001
4-Methylheptane	I8	0.0006	0.0038	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
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0014	0.0088	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0025	0.0155	0.001	0.001
3-Ethylhexane	I8	0.0003	0.0019	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0011	0.0068	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0004	0.0025	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
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	0.0010	0.0062	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0013	0.0081	0.001	0.001
n-Octane	P8	0.0028	0.0177	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0005	0.0031	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0007	0.0049	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0004	0.0025	0.000	0.000
n-Propylcyclopentane	N8	0.0002	0.0012	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
Ethylbenzene	I8	0.0005	0.0029	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0013	0.0076	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0003	0.0018	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0002	0.0014	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0014	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0003	0.0018	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0007	0.0050	0.000	0.000

1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0001	0.0008	0.000	0.000
1-t-Butyl-3,5-dimethylbenzene	A12	0.0001	0.0009	0.000	0.000
TOTAL		100.00000	100.00000	2.4826	2.4958

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0116	0.0501
TOLUENE	0.0058	0.0295
ETHYLBENZENE	0.0005	0.0029
XYLENES	0.0019	0.0112
TOTAL BTEX	0.0198	0.0937

**(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 :	1004.8 /scf	1010.3 /scf
	NET WET REAL :	987.2 /scf	992.7 /scf
HHV	GROSS DRY REAL :	1111.9 /scf	1117.9 /scf
	GROSS WET REAL :	1092.5 /scf	1098.5 /scf
	NET HEATING VALUE (60 °F ideal reaction):		21089.1 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23338.8 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6243
	DENSITY		0.04770 lb/scf
	COMPRESSIBILITY FACTOR :		0.9975
	REGULAR WOBBE INDEX		1408.0

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

Net Dry Ideal BTU	4617.6 /scf	Relative Density - SG (Air=1)	3.1699	***C6+factors***
Gross Dry Ideal BTU	4965.8 /scf	**Z** Compressiblity Factor	0.99169	0.99108
Net Dry Ideal BTU	19253.3 /lb	Density Factor	241.975 lbm/1000 ft3	
Gross Dry Ideal BTU	20703.1 /lb	Molar Mass or MW	91.825 g/mol	
		Volume Liquid Ideal gas	0.106 scf/gal	24.3

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.