EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-21605**	NAME/DESCRIP :	**300108685 J6SEB 6-12DD**
LEASE #:	**COC-55972E**		**CASING**
FIELD/AREA:	**MAMM CREEK**		

PROJECT NO. :	**202511013**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	NOVEMBER 18, 2025 13:20
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	OCTOBER 15, 2025
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	800	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	TBI-551
LAB PRES:		psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	57	ºf	SAMPLING COMPANY:	QB ENERGY
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:		#/mmcf	CO2 BY STAIN TUBE:	Mol %

FIELD COMMENTS:

LAB COMMENTS: ***Low sample volume.***

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
GLYCOLS	0.0002	0.0007	0.0000	0.0000
ALCOHOLS	0.0917	0.1969	0.0180	0.0180
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	1.25	2.11	---	---
NITROGEN	4.76	7.05	---	---
CARBON DIOXIDE	2.73	6.35	---	---
METHANE	85.3340	72.3517	---	---
ETHANE	3.8853	6.1744	1.0351	1.0407
PROPANE	1.0807	2.5186	0.2967	0.2984
I-BUTANE	0.2375	0.7296	0.0779	0.0784
N-BUTANE	0.2161	0.6638	0.0679	0.0683
I-PENTANE	0.1050	0.4000	0.0380	0.0382
N-PENTANE	0.0642	0.2448	0.0230	0.0231
HEXANES PLUS	0.2453	1.2095	0.0960	0.0963
TOTALS	100.00000	100.00000	1.6526	1.6614

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0083	0.0343
TOLUENE	0.0122	0.0594
ETHYLBENZENE	0.0003	0.0017
XYLENES	0.0019	0.0106
TOTAL BTEX	0.0227	0.1060

**(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 :	895.3 /scf	900.2 /scf
	NET WET REAL :	879.6 /scf	884.5 /scf
HHV	GROSS DRY REAL :	991.8 /scf	997.2 /scf
	GROSS WET REAL :	974.5 /scf	979.9 /scf

NET HEATING VALUE (60 °F ideal reaction):	17989.7	**Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	19927.0	**Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6528	
DENSITY	0.04986	**lbm/scf**
COMPRESSIBILITY FACTOR :	0.9978	
REGULAR WOBBE INDEX	1228.6	

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202511013	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	NOVEMBER 18, 2025 13:20
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2025
PRODUCER :	QB ENERGY OPERATING LLC	CYLINDER NO. :	TBI-551
LEASE NO. :	COC-55972E	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	300108685 J6SEB 6-12DD CASING		
FIELD DATA		SAMPLE TEMP. :	57
SAMPLE PRES. :	800	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	***SPOT*** ***NO PROBE*** ***Low sample volume.***		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.73	6.35
Nitrogen	4.76	7.05
Methane	85.3340	72.3517
Ethane	3.8853	6.1744
Propane	1.0807	2.5186
Isobutane	0.2375	0.7296
n-Butane	0.2161	0.6638
Isopentane	0.1015	0.3870
n-Pentane	0.0642	0.2448
Cyclopentane	0.0035	0.0130
n-Hexane	0.0301	0.1371
Cyclohexane	0.0168	0.0747
Other Hexanes	0.0703	0.3184
Heptanes	0.0507	0.2674
Methylcyclohexane	0.0306	0.1588
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0083	0.0343
Toluene	0.0122	0.0594
Ethylbenzene	0.0003	0.0017
Xylenes	0.0019	0.0106
C8+ Heavies	0.0240	0.1465
Subtotal	98.65810	97.69240
Oxygen/Argon	1.25	2.11
Glycols	0.0002	0.0007
Alcohols	0.0917	0.1969
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	895.3	4700.7	5726.6	7582.5	**Btu/scf**
	Net Wet Real:	879.6	4618.5	5626.5	7449.9	**Btu/scf**
HHV	Gross Dry Real:	991.8	5051.1	6163.7	8365.3	**Btu/scf**
	Gross Wet Real:	974.5	4962.8	6056.0	8219.1	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1228.6	2801.6	3102.1	3619.7	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		17989.7	19251.3	19793.2	18262.4	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		19927.0	20691.4	21304.4	20106.9	**Btu/lbm**
Molar Mass (MW):		18.92114	93.251	114.408	155.609	**g/mol**
Relative Density (AIR=1):		0.6528	3.2201	3.9498	5.3727	**SG**
Density:		0.04986	0.24574	0.30147	0.41005	**lbm/scf**
Compressiblity Factor:		0.9978	0.9922	0.9971	0.9998	**Z**
Liquid Volume real gas @:	**14.65**	17.1282	0.0957	0.009	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:	**05-045-21605**	NAME/DESCRIP :	**300108685 J6SEB 6-12DD**
LEASE #:	**COC-55972E**		**CASING**
FIELD/AREA:	**MAMM CREEK**		
PROJECT NO. :	**202511013**	ANALYSIS NO. :	**02**
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OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	OCTOBER 15, 2025
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	
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SAMPLE PRES. :	800 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	TBI-551
LAB PRES:	psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	57 ºf	SAMPLING COMPANY:	QB ENERGY
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:	***Low sample volume.***		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Oxygen/Argon	---	1.25	2.11	---	---
Nitrogen	---	4.76	7.05	---	---
Carbon Dioxide	---	2.73	6.35	---	---
Methane	P1	85.3340	72.3517	---	---
Ethane	P2	3.8853	6.1744	1.035	1.041
Propane	P3	1.0807	2.5186	0.297	0.298
i-Butane	I4	0.2375	0.7296	0.078	0.078
Methanol	X1	0.0636	0.1077	0.008	0.008
n-Butane	P4	0.2161	0.6638	0.068	0.068
2,2-Dimethylpropane	I5	0.0031	0.0118	0.001	0.001
Ethanol	X2	0.0001	0.0003	0.000	0.000
i-Pentane	I5	0.0984	0.3752	0.036	0.036
Acetone	X3	0.0011	0.0034	0.000	0.000
i-Propanol	X3	0.0269	0.0855	0.010	0.010
n-Pentane	P5	0.0642	0.2448	0.023	0.023
2,2-Dimethylbutane	I6	0.0039	0.0178	0.002	0.002
Cyclopentane	N5	0.0035	0.0130	0.001	0.001
2,3-Dimethylbutane	I6	0.0070	0.0319	0.003	0.003
2-Methylpentane	I6	0.0266	0.1211	0.011	0.011
3-Methylpentane	I6	0.0153	0.0697	0.006	0.006
n-Hexane	P6	0.0301	0.1371	0.012	0.012
2,2-Dimethylpentane	I7	0.0011	0.0058	0.001	0.001
Methylcyclopentane	N6	0.0174	0.0774	0.006	0.006
2,4-Dimethylpentane	I7	0.0020	0.0106	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0026	0.000	0.000
Benzene	A6	0.0083	0.0343	0.002	0.002
3,3-Dimethylpentane	I7	0.0006	0.0032	0.000	0.000

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Cyclohexane	N6	0.0168	0.0747	0.006	0.006
2-Methylhexane	I7	0.0084	0.0445	0.004	0.004
2,3-Dimethylpentane	I7	0.0023	0.0122	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0018	0.0094	0.001	0.001
3-Methylhexane	I7	0.0077	0.0408	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0028	0.0145	0.001	0.001
Ethylene glycol	GL2	0.0001	0.0003	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0025	0.0130	0.001	0.001
3-Ethylpentane	I7	0.0004	0.0021	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0039	0.0202	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
UnknownC6s	U6	0.0001	0.0005	0.000	0.000
n-Heptane	P7	0.0151	0.0800	0.007	0.007
1c,2-Dimethylcyclopentane	N7	0.0004	0.0021	0.000	0.000
Methylcyclohexane	N7	0.0306	0.1588	0.012	0.012
2,2-Dimethylhexane	I8	0.0007	0.0042	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Propylene Glycol	GL3	0.0001	0.0004	0.000	0.000
Ethylcyclopentane	N7	0.0010	0.0052	0.000	0.000
2,5-Dimethylhexane	I8	0.0008	0.0048	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0008	0.0048	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0006	0.0035	0.000	0.000
3,3-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
Toluene	A7	0.0122	0.0594	0.004	0.004
2,3-Dimethylhexane	I8	0.0006	0.0037	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0027	0.0163	0.001	0.001
4-Methylheptane	I8	0.0009	0.0054	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	0.0020	0.0121	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0033	0.0196	0.002	0.002
3-Ethylhexane	I8	0.0003	0.0018	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0016	0.0095	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0030	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
1t,2-Dimethylcyclohexane	N8	0.0010	0.0059	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0037	0.0224	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0007	0.0042	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0004	0.0026	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0003	0.0018	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0006	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
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0003	0.0017	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0013	0.0073	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0004	0.0022	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0007	0.000	0.000

1,2-Dimethylbenzene (o-Xylene)	A8	0.0002	0.0011	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
1,3-Methyl-n-butylbenzene	A11	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
1,2,4-Triethylbenzene	A12	0.0001	0.0009	0.000	0.000
TOTAL		100.00000	100.00000	1.6526	1.6614

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0083	0.0343
TOLUENE	0.0122	0.0594
ETHYLBENZENE	0.0003	0.0017
XYLENES	0.0019	0.0106
TOTAL BTEX	0.0227	0.1060

**(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 :	895.3 /scf	900.2	/scf
	NET WET REAL :	879.6 /scf	884.5	/scf
HHV	GROSS DRY REAL :	991.8 /scf	997.2	/scf
	GROSS WET REAL :	974.5 /scf	979.9	/scf
	NET HEATING VALUE (60 °F ideal reaction):		17989.7	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		19927.0	Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6528	
	DENSITY		0.04986	lb/scf
	COMPRESSIBILITY FACTOR :		0.9978	
	REGULAR WOBBE INDEX		1228.6	

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

Net Dry Ideal BTU	4678.6 /scf	Relative Density - SG (Air=1)	3.2201		***C6+factors***
Gross Dry Ideal BTU	5027.4 /scf	**Z** Compressiblity Factor	0.99219		0.99163
Net Dry Ideal BTU	19251.3 /lb	Density Factor	245.737	lbm/1000 ft3	
Gross Dry Ideal BTU	20691.4 /lb	Molar Mass or MW	93.251	g/mol	
		Volume Liquid Ideal gas	0.096	scf/gal	24.2

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.