



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	05-045-09947	NAME/DESCRIP :	M27NW GMR 28-16D
LEASE #:	05-045-09947		SURFACE CASING
FIELD/AREA:	MAMM CREEK		
PROJECT NO. :	202601073	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JANUARY 26, 2026 11:03
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JANUARY 14, 2026 9:29
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	236 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	QB-1002
LAB PRES:	psig	SAMPLED BY :	ERIC CHARLESWORTH
SAMPLE TEMP. :	30 °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	0.0007	0.0013	0.0000	0.0000
HELIUM	0.11	0.03	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.03	0.05	---	---
NITROGEN	6.35	10.16	---	---
CARBON DIOXIDE	0.04	0.10	---	---
METHANE	90.1821	82.6385	---	---
ETHANE	2.4022	4.1259	0.6403	0.6438
PROPANE	0.5427	1.3669	0.1488	0.1496
I-BUTANE	0.1067	0.3543	0.0350	0.0352
N-BUTANE	0.0916	0.3041	0.0290	0.0291
I-PENTANE	0.0347	0.1429	0.0120	0.0120
N-PENTANE	0.0232	0.0956	0.0080	0.0080
HEXANES PLUS	0.0761	0.6305	0.0340	0.0340
TOTALS	100.00000	100.00000	0.9071	0.9117

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0004	0.0018
TOLUENE	0.0002	0.0010
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0001	0.0006
TOTAL BTEX	0.0007	0.0034

	<u>BTU @ 14.65</u>	<u>14.73</u>
LHV NET DRY REAL :	883.7 /scf	888.5 /scf
NET WET REAL :	868.3 /scf	873.1 /scf
HHV GROSS DRY REAL :	979.9 /scf	985.2 /scf
GROSS WET REAL :	962.8 /scf	968.1 /scf
NET HEATING VALUE (60 °F ideal reaction):		19210.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		21305.5 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6037
DENSITY		0.04613 lbm/scf
COMPRESSIBILITY FACTOR :		0.9980
REGULAR WOBBE INDEX		1262.6

*(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. :	202601073	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JANUARY 26, 2026 11:03
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 14, 2026 9:29
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	QB-1002
LEASE NO. :	05-045-09947	SAMPLED BY :	ERIC CHARLESWORTH
NAME/DESCRIP :	M27NW GMR 28-16D SURFACE CASING		

FIELD DATA

SAMPLE PRES. :	236	SAMPLE TEMP. :	30
H2S BY STAIN TUBE:	— ppm mol	AMBIENT TEMP.:	
COMMENTS :			

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.11	0.03
Hydrogen	0.01	0.00
Carbon Dioxide	0.04	0.10
Nitrogen	6.35	10.16
Methane	90.1821	82.6385
Ethane	2.4022	4.1259
Propane	0.5427	1.3669
Isobutane	0.1067	0.3543
n-Butane	0.0916	0.3041
Isopentane	0.0344	0.1417
n-Pentane	0.0232	0.0956
Cyclopentane	0.0003	0.0012
n-Hexane	0.0095	0.0468
Cyclohexane	0.0022	0.0106
Other Hexanes	0.0172	0.0846
Heptanes	0.0125	0.0715
Methylcyclohexane	0.0036	0.0202
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0004	0.0018
Toluene	0.0002	0.0010
Ethylbenzene	0.0000	0.0000
Xylenes	0.0001	0.0006
C8+ Heavies	0.0304	0.3934
<u>Subtotal</u>	<u>99.96930</u>	<u>99.94870</u>
Oxygen/Argon	0.03	0.05
Alcohols	0.0007	0.0013
Total	100.00000	100.00000

Calculated Values BTU @		Total	C6+ C8+ C10+		
			Sample	Fraction	Fraction
LHV	Net Dry Real:	883.7	7316.5	11317.7	13921.1 Btu/scf
	Net Wet Real:	868.3	7188.6	11119.9	13677.7 Btu/scf
HHV	Gross Dry Real:	979.9	7876.2	12171.8	14967.6 Btu/scf
	Gross Wet Real:	962.8	7738.5	11959.0	14705.9 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1262.6	3513.5	4366.4	4841.4	Btu/scf
Net Heating Value (60 °F ideal reaction):	19210.0	22677.7	24722.8	25761.9	Btu/lbm
Gross Heating Value (60°F ideal reaction):	21305.5	24404.8	26584.5	27696.2	Btu/lbm
Molar Mass (MW):	17.50731	145.113	226.361	278.562	g/mol
Relative Density (AIR=1):	0.6037	5.0104	7.8152	9.6181	SG
Density:	0.04613	0.38238	0.59649	0.73406	lbm/scf
Compressibility Factor:	0.9980	0.9954	0.9997	1.0000	Z
Liquid Volume real gas @:	14.65	16.8232	0.0339	0.0169	0.015 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: 05-045-09947 NAME/DESCRIP : M27NW GMR 28-16D
 LEASE #: 05-045-09947 SURFACE CASING
 FIELD/AREA: MAMM CREEK
 PROJECT NO. : 202601073 ANALYSIS NO. : 02
 COMPANY NAME : QB ENERGY OPERATING, LLC ANALYSIS DATE: JANUARY 26, 2026 11:03
 OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : JANUARY 14, 2026 9:29
 CUSTOMER REF: TO:
 PRODUCER : QB ENERGY OPERATING, LLC EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : 236 psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : QB-1002
 LAB PRES: psig SAMPLED BY : ERIC CHARLESWORTH
 SAMPLE TEMP. : 30 °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	---	0.11	0.03	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.03	0.05	---	---
Nitrogen	---	6.35	10.16	---	---
Carbon Dioxide	---	0.04	0.10	---	---
Methane	P1	90.1821	82.6385	---	---
Ethane	P2	2.4022	4.1259	0.640	0.644
Propane	P3	0.5427	1.3669	0.149	0.150
i-Butane	I4	0.1067	0.3543	0.035	0.035
Methanol	X1	0.0007	0.0013	0.000	0.000
n-Butane	P4	0.0916	0.3041	0.029	0.029
2,2-Dimethylpropane	I5	0.0062	0.0255	0.002	0.002
i-Pentane	I5	0.0282	0.1162	0.010	0.010
n-Pentane	P5	0.0232	0.0956	0.008	0.008
2,2-Dimethylbutane	I6	0.0034	0.0167	0.001	0.001
Cyclopentane	N5	0.0003	0.0012	0.000	0.000
2,3-Dimethylbutane	I6	0.0018	0.0089	0.001	0.001
2-Methylpentane	I6	0.0071	0.0350	0.003	0.003
3-Methylpentane	I6	0.0039	0.0192	0.002	0.002
n-Hexane	P6	0.0095	0.0468	0.004	0.004
2,2-Dimethylpentane	I7	0.0006	0.0034	0.000	0.000
Methylcyclopentane	N6	0.0008	0.0038	0.000	0.000
2,4-Dimethylpentane	I7	0.0005	0.0029	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0004	0.0023	0.000	0.000
Benzene	A6	0.0004	0.0018	0.000	0.000
3,3-Dimethylpentane	I7	0.0004	0.0023	0.000	0.000
Cyclohexane	N6	0.0022	0.0106	0.001	0.001

2-Methylhexane	I7	0.0020	0.0114	0.001	0.001
2,3-Dimethylpentane	I7	0.0006	0.0034	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0004	0.0022	0.000	0.000
3-Methylhexane	I7	0.0019	0.0109	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
3-Ethylpentane	I7	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0002	0.0011	0.000	0.000
UnknownC6s	U6	0.0002	0.0010	0.000	0.000
n-Heptane	P7	0.0047	0.0269	0.002	0.002
1c,2-Dimethylcyclopentane	N7	0.0003	0.0017	0.000	0.000
Methylcyclohexane	N7	0.0036	0.0202	0.001	0.001
2,2-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
2,5-Dimethylhexane	I8	0.0003	0.0019	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0002	0.0013	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0002	0.0010	0.000	0.000
2,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
2-Methylheptane	I8	0.0009	0.0059	0.000	0.000
4-Methylheptane	I8	0.0003	0.0019	0.000	0.000
3-Methylheptane	I8	0.0006	0.0039	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0006	0.0038	0.000	0.000
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0018	0.0118	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0002	0.0013	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	0.0001	0.0007	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0002	0.0015	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0014	0.000	0.000
i-Butylcyclopentane	N9	0.0010	0.0072	0.001	0.001
UnknownC8s	U8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0007	0.0051	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
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
n-Decane	P10	0.0002	0.0016	0.000	0.000
UnknownC10s	U10	0.0005	0.0041	0.000	0.000
1,3-Methyl-n-butylbenzene	A11	0.0001	0.0009	0.000	0.000
UnknownC11s	U11	0.0003	0.0027	0.000	0.000
UnknownC12s	U12	0.0002	0.0018	0.000	0.000
n-Pentadecane	P15	0.0003	0.0037	0.000	0.000
n-Hexadecane	P16	0.0003	0.0039	0.000	0.000
UnknownC16s	U16	0.0001	0.0013	0.000	0.000
n-Heptadecane	P17	0.0010	0.0137	0.001	0.001

UnknownC17s	U17	0.0001	0.0014	0.000	0.000
n-Octadecane	P18	0.0017	0.0247	0.001	0.001
UnknownC18s	U18	0.0004	0.0058	0.000	0.000
n-Nonadecane	P19	0.0020	0.0307	0.002	0.002
UnknownC19s	U19	0.0005	0.0077	0.000	0.000
n-Eicosane	P20	0.0015	0.0241	0.001	0.001
UnknownC20s	U20	0.0020	0.0320	0.002	0.002
n-Heneicosane	P21	0.0011	0.0186	0.001	0.001
UnknownC21s	U21	0.0019	0.0322	0.002	0.002
n-Docosane	P22	0.0005	0.0089	0.000	0.000
UnknownC22s	U22	0.0023	0.0408	0.002	0.002
n-Tricosane	P23	0.0001	0.0018	0.000	0.000
UnknownC23s	U23	0.0031	0.0575	0.003	0.003
UnknownC25s	U25	0.0004	0.0081	0.000	0.000
TOTAL		100.00000	100.00000	0.9071	0.9117

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0004	0.0018	LHV NET DRY REAL :	883.7 /scf	888.5 /scf
TOLUENE	0.0002	0.0010	NET WET REAL :	868.3 /scf	873.1 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	979.9 /scf	985.2 /scf
XYLENES	0.0001	0.0006	GROSS WET REAL :	962.8 /scf	968.1 /scf
TOTAL BTEX	0.0007	0.0034	NET HEATING VALUE (60 °F ideal reaction):		19210.0 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		21305.5 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6037
			DENSITY		0.04613 lb/scf
			COMPRESSIBILITY FACTOR :		0.9980
			REGULAR WOBBE INDEX		1262.6

*(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>7305.6</u> /scf	Relative Density - SG (Air=1)	<u>5.0104</u>	C6+ factors
Gross Dry Ideal BTU	<u>7864.5</u> /scf	Z Compressibility Factor	<u>0.99539</u>	<u>0.99307</u>
Net Dry Ideal BTU	<u>22677.7</u> /lb	Density Factor	<u>382.384</u> lbm/1000 ft3	
Gross Dry Ideal BTU	<u>24404.8</u> /lb	Molar Mass or MW	<u>145.113</u> g/mol	
		Volume Liquid Ideal gas	<u>0.034</u> scf/gal	<u>20.3</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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