EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-13622**	NAME/DESCRIP :	**300105084 PG16 SHORE 16-7BB**
LEASE #:	**71238**		**BRADEN HEAD**
FIELD/AREA:	**PARACHUTE**		
PROJECT NO. :	**202603051**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	MARCH 30, 2026 10:47
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	FEBRUARY 28, 2026 8:30
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	105	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-807
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	38	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:

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0002	0.0004	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.10	0.16	---	---
CARBON DIOXIDE	0.06	0.15	---	---
METHANE	94.6999	88.0871	---	---
ETHANE	3.5779	6.2379	0.9532	0.9584
PROPANE	0.8287	2.1188	0.2278	0.2290
I-BUTANE	0.1771	0.5968	0.0580	0.0583
N-BUTANE	0.1561	0.5261	0.0490	0.0492
I-PENTANE	0.0749	0.3129	0.0270	0.0271
N-PENTANE	0.0480	0.2008	0.0170	0.0171
HEXANES PLUS	0.2772	1.6092	0.1110	0.1111
TOTALS	100.00000	100.00000	1.4430	1.4502

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0048	0.0217
TOLUENE	0.0035	0.0187
ETHYLBENZENE	0.0022	0.0136
XYLENES	0.0084	0.0517
TOTAL BTEX	0.0189	0.1057

**(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 :	965.7 /scf	970.9 /scf
	NET WET REAL :	948.8 /scf	954.0 /scf
HHV	GROSS DRY REAL :	1070.2 /scf	1076.0 /scf
	GROSS WET REAL :	1051.5 /scf	1057.3 /scf

NET HEATING VALUE (60 °F ideal reaction):	21277.3 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23579.8 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.5949
DENSITY	0.04545 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9977
REGULAR WOBBE INDEX	1388.7

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202603051	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	MARCH 30, 2026 10:47
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 28, 2026 8:30
PRODUCER :	QB ENERGY OPERATING LLC	CYLINDER NO. :	ECA-807
LEASE NO. :	71238	SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	300105084 PG16 SHORE 16-7BB BRADEN HEAD		
FIELD DATA		SAMPLE TEMP. :	38
SAMPLE PRES. :	105	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.06	0.15
Nitrogen	0.10	0.16
Methane	94.6999	88.0871
Ethane	3.5779	6.2379
Propane	0.8287	2.1188
Isobutane	0.1771	0.5968
n-Butane	0.1561	0.5261
Isopentane	0.0725	0.3032
n-Pentane	0.0480	0.2008
Cyclopentane	0.0024	0.0097
n-Hexane	0.0243	0.1214
Cyclohexane	0.0162	0.0790
Other Hexanes	0.0517	0.2570
Heptanes	0.0486	0.2812
Methylcyclohexane	0.0375	0.2135
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0048	0.0217
Toluene	0.0035	0.0187
Ethylbenzene	0.0022	0.0136
Xylenes	0.0084	0.0517
C8+ Heavies	0.0799	0.5508
Subtotal	99.99980	99.99960
Oxygen/Argon	0.00	0.00
Alcohols	0.0002	0.0004
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	965.7	5037.3	5858.7	6932.9	**Btu/scf**
	Net Wet Real:	948.8	4949.2	5756.3	6811.7	**Btu/scf**
HHV	Gross Dry Real:	1070.2	5416.1	6295.4	7468.4	**Btu/scf**
	Gross Wet Real:	1051.5	5321.4	6185.3	7337.8	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1388.7	2905.3	3129.9	3377.2	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21277.3	19370.0	19610.8	19164.7	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23579.8	20827.2	21074.2	20645.2	**Btu/lbm**
Molar Mass (MW):		17.24772	100.116	117.394	142.285	**g/mol**
Relative Density (AIR=1):		0.5949	3.4566	4.0537	4.9128	**SG**
Density:		0.04545	0.26383	0.30935	0.37494	**lbm/scf**
Compressiblity Factor:		0.9977	0.9942	0.9979	0.9992	**Z**
Liquid Volume real gas @:	**14.65**	17.4233	0.1107	0.0369	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

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PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	
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FLOW PRES. :	psig	CYLINDER NO. :	ECA-807
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	38 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:			

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Nitrogen	---	0.10	0.16	---	---
Carbon Dioxide	---	0.06	0.15	---	---
Methane	P1	94.6999	88.0871	---	---
Ethane	P2	3.5779	6.2379	0.953	0.958
Propane	P3	0.8287	2.1188	0.228	0.229
i-Butane	I4	0.1771	0.5968	0.058	0.058
Methanol	X1	0.0002	0.0004	0.000	0.000
n-Butane	P4	0.1561	0.5261	0.049	0.049
2,2-Dimethylpropane	I5	0.0034	0.0142	0.001	0.001
i-Pentane	I5	0.0691	0.2890	0.025	0.025
n-Pentane	P5	0.0480	0.2008	0.017	0.017
2,2-Dimethylbutane	I6	0.0035	0.0175	0.001	0.001
Cyclopentane	N5	0.0024	0.0097	0.001	0.001
2,3-Dimethylbutane	I6	0.0049	0.0245	0.002	0.002
2-Methylpentane	I6	0.0197	0.0985	0.008	0.008
3-Methylpentane	I6	0.0113	0.0565	0.005	0.005
n-Hexane	P6	0.0243	0.1214	0.010	0.010
2,2-Dimethylpentane	I7	0.0010	0.0058	0.000	0.000
Methylcyclopentane	N6	0.0123	0.0600	0.004	0.004
2,4-Dimethylpentane	I7	0.0016	0.0093	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0029	0.000	0.000
Benzene	A6	0.0048	0.0217	0.001	0.001
3,3-Dimethylpentane	I7	0.0007	0.0041	0.000	0.000
Cyclohexane	N6	0.0162	0.0790	0.006	0.006
2-Methylhexane	I7	0.0075	0.0436	0.003	0.003
2,3-Dimethylpentane	I7	0.0021	0.0122	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0016	0.0091	0.001	0.001

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3-Methylhexane	I7	0.0069	0.0401	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0024	0.0137	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0022	0.0125	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0017	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0034	0.0194	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0164	0.0953	0.008	0.008
1c,2-Dimethylcyclopentane	N7	0.0005	0.0028	0.000	0.000
Methylcyclohexane	N7	0.0375	0.2135	0.015	0.015
2,2-Dimethylhexane	I8	0.0009	0.0060	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
Ethylcyclopentane	N7	0.0012	0.0068	0.000	0.000
2,5-Dimethylhexane	I8	0.0010	0.0066	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0009	0.0060	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0007	0.0046	0.000	0.000
3,3-Dimethylhexane	I8	0.0003	0.0020	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0035	0.0187	0.001	0.001
2,3-Dimethylhexane	I8	0.0009	0.0060	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0046	0.0304	0.002	0.002
4-Methylheptane	I8	0.0015	0.0099	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0036	0.0238	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0067	0.0436	0.003	0.003
3-Ethylhexane	I8	0.0005	0.0033	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0028	0.0182	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0011	0.0071	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0003	0.0020	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0023	0.0150	0.001	0.001
1c,2c,3-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0007	0.0046	0.000	0.000
UnknownC7s	U7	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0121	0.0801	0.006	0.006
1c,4-Dimethylcyclohexane	N8	0.0021	0.0137	0.001	0.001
i-Propylcyclopentane	I8	0.0002	0.0013	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0003	0.0022	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
2,2-Dimethylheptane	I9	0.0009	0.0067	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0027	0.0198	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0009	0.0067	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
Ethylcyclohexane	N8	0.0026	0.0169	0.001	0.001
n-Propylcyclopentane	N8	0.0012	0.0078	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0004	0.0029	0.000	0.000
2,5-Dimethylheptane	I9	0.0023	0.0171	0.001	0.001
3,3-Dimethylheptane	I9	0.0004	0.0030	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
Ethylbenzene	I8	0.0022	0.0136	0.001	0.001

1c,2t,4t-Trimethylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,3-Dimethylheptane	I9	0.0003	0.0022	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0051	0.0314	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0014	0.0086	0.001	0.001
3,4-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0015	0.000	0.000
4-Ethylheptane	I9	0.0004	0.0030	0.000	0.000
4-Methyloctane	I9	0.0025	0.0186	0.001	0.001
2-Methyloctane	I9	0.0035	0.0260	0.002	0.002
1c,2t,3-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
3-Ethylheptane	I9	0.0005	0.0037	0.000	0.000
3-Methyloctane	I9	0.0002	0.0015	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0030	0.0220	0.002	0.002
1,1,2-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
3,3-Diethylpentane	I9	0.0003	0.0022	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0019	0.0117	0.001	0.001
i-Butylcyclopentane	N9	0.0022	0.0161	0.001	0.001
UnknownC8s	U8	0.0004	0.0027	0.000	0.000
n-Nonane	P9	0.0028	0.0208	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0007	0.0051	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0014	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0022	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0037	0.0275	0.002	0.002
TOTAL		100.00000	100.00000	1.4430	1.4502

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0048	0.0217
TOLUENE	0.0035	0.0187
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HHV	GROSS DRY REAL :	1070.2 /scf	1076.0 /scf
	GROSS WET REAL :	1051.5 /scf	1057.3 /scf
	NET HEATING VALUE (60 °F ideal reaction):		21277.3 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23579.8 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.5949
	DENSITY		0.04545 lb/scf
	COMPRESSIBILITY FACTOR :		0.9977
	REGULAR WOBBE INDEX		1388.7

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

Net Dry Ideal BTU	5023.8 /scf	Relative Density - SG (Air=1)	3.4566	***C6+factors***
Gross Dry Ideal BTU	5401.6 /scf	**Z** Compressiblity Factor	0.9942	0.99335
Net Dry Ideal BTU	19370 /lb	Density Factor	263.832 lbm/1000 ft3	
Gross Dry Ideal BTU	20827.2 /lb	Molar Mass or MW	100.116 g/mol	
		Volume Liquid Ideal gas	0.111 scf/gal	22.9

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.