EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10877**	NAME/DESCRIP :	**125190189 PCU 297-13A9**
LEASE #:	**COD052141**		**PRODUCTION CASING**
FIELD/AREA:	**PICEANCE CREEK**		

PROJECT NO. :	**202603077**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	APRIL 10, 2026 06:54
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 5, 2026
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	433	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-768
LAB PRES:		psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	46	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	0.1202	0.2105	0.0150	0.0151
HELIUM	0.00	0.00	---	---
HYDROGEN	0.06	0.01	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.09	0.14	---	---
CARBON DIOXIDE	1.50	3.59	---	---
METHANE	89.0858	77.5994	---	---
ETHANE	6.2571	10.2158	1.6681	1.6772
PROPANE	1.7311	4.1447	0.4757	0.4783
I-BUTANE	0.4171	1.3163	0.1359	0.1367
N-BUTANE	0.3351	1.0575	0.1049	0.1055
I-PENTANE	0.1637	0.6411	0.0600	0.0603
N-PENTANE	0.1002	0.3925	0.0360	0.0362
HEXANES PLUS	0.1397	0.6822	0.0570	0.0572
TOTALS	100.00000	100.00000	2.5526	2.5665

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0004
TOLUENE	0.0002	0.0010
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0003	0.0014

CALCULATED VALUES**

	BTU @	14.65		14.73	
LHV	NET DRY REAL :	990.6	/scf	996.0	/scf
	NET WET REAL :	973.3	/scf	978.7	/scf
HHV	GROSS DRY REAL :	1096.5	/scf	1102.5	/scf
	GROSS WET REAL :	1077.3	/scf	1083.3	/scf
	NET HEATING VALUE (60 °F ideal reaction):			20428.6	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			22611.7	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.6354	
	DENSITY			0.04852	lbm/scf
	COMPRESSIBILITY FACTOR :			0.9974	
	REGULAR WOBBE INDEX			1376.3	

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

***(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)*

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202603077	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	APRIL 10, 2026 06:54
ACCOUNT NO. :		SAMPLE DATE :	MARCH 5, 2026
PRODUCER :	QB ENERGY OPERATING LLC	CYLINDER NO. :	ECA-768
LEASE NO. :	COD052141	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	125190189 PCU 297-13A9 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	46
SAMPLE PRES. :	433	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.06	0.01
Carbon Dioxide	1.50	3.59
Nitrogen	0.09	0.14
Methane	89.0858	77.5994
Ethane	6.2571	10.2158
Propane	1.7311	4.1447
Isobutane	0.4171	1.3163
n-Butane	0.3351	1.0575
Isopentane	0.1616	0.6331
n-Pentane	0.1002	0.3925
Cyclopentane	0.0021	0.0080
n-Hexane	0.0316	0.1479
Cyclohexane	0.0047	0.0215
Other Hexanes	0.0666	0.3107
Heptanes	0.0282	0.1529
Methylcyclohexane	0.0057	0.0304
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0001	0.0004
Toluene	0.0002	0.0010
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0025	0.0168
Subtotal	99.87980	99.78950
Oxygen/Argon	0.00	0.00
Alcohols	0.1202	0.2105
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	990.6	4598.9	5743.2	6519.6	**Btu/scf**
	Net Wet Real:	973.3	4518.5	5642.8	6405.6	**Btu/scf**
HHV	Gross Dry Real:	1096.5	4959.6	6141.1	6915.3	**Btu/scf**
	Gross Wet Real:	1077.3	4872.9	6033.7	6794.4	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1376.3	2791.9	2974.5	3210.1	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20428.6	19312.8	17463.2	18231.4	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		22611.7	20827.4	18671.5	19335.9	**Btu/lbm**
Molar Mass (MW):		18.41494	89.967	123.908	135.117	**g/mol**
Relative Density (AIR=1):		0.6354	3.1059	4.2781	4.6653	**SG**
Density:		0.04852	0.23708	0.32651	0.35605	**lbm/scf**
Compressiblity Factor:		0.9974	0.9890	0.9987	0.9995	**Z**
Liquid Volume real gas @:	**14.65**	17.832	0.0568	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 uderscore) indicates there was no tube pulled for H2S.

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-103-10877**	NAME/DESCRIP :	**125190189 PCU 297-13A9**
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FIELD/AREA:	**PICEANCE CREEK**		
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PRODUCER :	QB ENERGY OPERATING LLC	EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	433 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-768
LAB PRES:	psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	46 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**
Hydrogen	---	0.06	0.01	---	---
Nitrogen	---	0.09	0.14	---	---
Carbon Dioxide	---	1.50	3.59	---	---
Methane	P1	89.0858	77.5994	---	---
Ethane	P2	6.2571	10.2158	1.668	1.677
Propane	P3	1.7311	4.1447	0.476	0.478
i-Butane	I4	0.4171	1.3163	0.136	0.137
Methanol	X1	0.1193	0.2076	0.015	0.015
n-Butane	P4	0.3351	1.0575	0.105	0.106
2,2-Dimethylpropane	I5	0.0037	0.0145	0.001	0.001
i-Pentane	I5	0.1579	0.6186	0.058	0.058
i-Propanol	X3	0.0009	0.0029	0.000	0.000
n-Pentane	P5	0.1002	0.3925	0.036	0.036
2,2-Dimethylbutane	I6	0.0045	0.0211	0.002	0.002
Cyclopentane	N5	0.0021	0.0080	0.001	0.001
2,3-Dimethylbutane	I6	0.0074	0.0346	0.003	0.003
2-Methylpentane	I6	0.0313	0.1464	0.013	0.013
3-Methylpentane	I6	0.0156	0.0730	0.006	0.006
n-Hexane	P6	0.0316	0.1479	0.013	0.013
2,2-Dimethylpentane	I7	0.0010	0.0054	0.000	0.000
Methylcyclopentane	N6	0.0078	0.0356	0.003	0.003
2,4-Dimethylpentane	I7	0.0015	0.0081	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0016	0.000	0.000
Benzene	A6	0.0001	0.0004	0.000	0.000
3,3-Dimethylpentane	I7	0.0004	0.0022	0.000	0.000
Cyclohexane	N6	0.0047	0.0215	0.002	0.002
2-Methylhexane	I7	0.0055	0.0299	0.003	0.003

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2,3-Dimethylpentane	I7	0.0013	0.0071	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0008	0.0043	0.000	0.000
3-Methylhexane	I7	0.0046	0.0250	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0011	0.0059	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0009	0.0048	0.000	0.000
3-Ethylpentane	I7	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0013	0.0069	0.001	0.001
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0088	0.0479	0.004	0.004
1c,2-Dimethylcyclopentane	N7	0.0003	0.0016	0.000	0.000
Methylcyclohexane	N7	0.0057	0.0304	0.002	0.002
2,2-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0001	0.0005	0.000	0.000
2,5-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0002	0.0010	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0005	0.0033	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
t-Butylbenzene	A10	0.0007	0.0051	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	2.5526	2.5665

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0004
TOLUENE	0.0002	0.0010
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0003	0.0014

**(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 :	990.6 /scf	996.0 /scf
	NET WET REAL :	973.3 /scf	978.7 /scf
HHV	GROSS DRY REAL :	1096.5 /scf	1102.5 /scf
	GROSS WET REAL :	1077.3 /scf	1083.3 /scf
	NET HEATING VALUE (60 °F ideal reaction):		20428.6 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		22611.7 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6354
	DENSITY		0.04852 lb/scf
	COMPRESSIBILITY FACTOR :		0.9974
	REGULAR WOBBE INDEX		1376.3

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

Net Dry Ideal BTU	4562.5 /scf	Relative Density - SG (Air=1)	3.1059		***C6+factors***
Gross Dry Ideal BTU	4920.3 /scf	**Z** Compressiblity Factor	0.98898		0.98848
Net Dry Ideal BTU	19312.8 /lb	Density Factor	237.08	lbm/1000 ft3	
Gross Dry Ideal BTU	20827.4 /lb	Molar Mass or MW	89.967	g/mol	
		Volume Liquid Ideal gas	0.057	scf/gal	23.7

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.