EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10729**	NAME/DESCRIP :	**PICEANCE CREEK UNIT 297-10A5**
LEASE #:			**INTERMEDIATE CASING**
FIELD/AREA:			

PROJECT NO. :	**202509076**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	SEPTEMBER 21, 2025 16:56
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	SEPTEMBER 08, 2025
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	
SAMPLE PRES. :	126	psig	PROBE :	
FLOW PRES. :		psig	CYLINDER NO. :	QB-1003
LAB PRES:		psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :		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	0.8135	1.5851	0.1049	0.1055
HELIUM	0.02	0.00	---	---
HYDROGEN	0.21	0.03	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	1.22	2.07	---	---
CARBON DIOXIDE	0.01	0.03	---	---
METHANE	96.5851	93.6699	---	---
ETHANE	0.8881	1.6143	0.2368	0.2381
PROPANE	0.0975	0.2599	0.0270	0.0271
I-BUTANE	0.0104	0.0365	0.0030	0.0030
N-BUTANE	0.0280	0.0984	0.0090	0.0090
I-PENTANE	0.0159	0.0693	0.0050	0.0050
N-PENTANE	0.0158	0.0689	0.0060	0.0060
HEXANES PLUS	0.0757	0.4477	0.0270	0.0270
TOTALS	100.00000	100.00000	0.4187	0.4207

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0005
TOLUENE	0.0069	0.0384
ETHYLBENZENE	0.0001	0.0007
XYLENES	0.0005	0.0033
TOTAL BTEX	0.0076	0.0429

**(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 :	906.4 **/scf**	911.3 **/scf**
	NET WET REAL :	890.6 **/scf**	895.5 **/scf**
HHV	GROSS DRY REAL :	1006.5 **/scf**	1012.0 **/scf**
	GROSS WET REAL :	988.9 **/scf**	994.4 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	20832.7 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23130.7 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.5704
DENSITY	0.04358 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9979
REGULAR WOBBE INDEX	1334.0

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202509076	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 21, 2025 16:56
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	QB-1003
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-10A5 INTERMEDIATE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	126	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.21	0.03
Carbon Dioxide	0.01	0.03
Nitrogen	1.22	2.07
Methane	96.5851	93.6699
Ethane	0.8881	1.6143
Propane	0.0975	0.2599
Isobutane	0.0104	0.0365
n-Butane	0.0280	0.0984
Isopentane	0.0158	0.0689
n-Pentane	0.0158	0.0689
Cyclopentane	0.0001	0.0004
n-Hexane	0.0102	0.0531
Cyclohexane	0.0015	0.0076
Other Hexanes	0.0143	0.0743
Heptanes	0.0190	0.1150
Methylcyclohexane	0.0091	0.0540
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0001	0.0005
Toluene	0.0069	0.0384
Ethylbenzene	0.0001	0.0007
Xylenes	0.0005	0.0033
C8+ Heavies	0.0140	0.1008
Subtotal	99.17650	98.39490
Oxygen/Argon	0.01	0.02
Alcohols	0.8135	1.5851
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	906.4	4922.0	5940.6	8772.7	**Btu/scf**
	Net Wet Real:	890.6	4836.0	5836.8	8619.3	**Btu/scf**
HHV	Gross Dry Real:	1006.5	5293.3	6395.9	9424.4	**Btu/scf**
	Gross Wet Real:	988.9	5200.8	6284.1	9259.6	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1334.0	2870.8	3164.4	3848.3	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20832.7	19198.4	19565.0	19005.4	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23130.7	20642.3	21066.0	20416.3	**Btu/lbm**
Molar Mass (MW):		16.54048	97.751	118.434	174.781	**g/mol**
Relative Density (AIR=1):		0.5704	3.3746	4.0891	6.0346	**SG**
Density:		0.04358	0.25757	0.31210	0.46057	**lbm/scf**
Compressiblity Factor:		0.9979	0.9932	0.9973	1.0000	**Z**
Liquid Volume real gas @:	**14.65**	16.8561	0.0269	0.004	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.

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10729** NAME/DESCRIP : **PICEANCE CREEK UNIT 297-10A5**
LEASE #: **INTERMEDIATE CASING**
FIELD/AREA:

PROJECT NO. : **202509076** ANALYSIS NO. : **02**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: SEPTEMBER 21, 2025 16:56
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 126 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : QB-1003
LAB PRES: psig SAMPLED BY : NICK CROY
SAMPLE TEMP. : 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**
Helium	---	0.02	0.00	---	---
Hydrogen	---	0.21	0.03	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	1.22	2.07	---	---
Carbon Dioxide	---	0.01	0.03	---	---
Methane	P1	96.5851	93.6699	---	---
Ethane	P2	0.8881	1.6143	0.237	0.238
Propane	P3	0.0975	0.2599	0.027	0.027
i-Butane	I4	0.0104	0.0365	0.003	0.003
Methanol	X1	0.8081	1.5653	0.103	0.104
n-Butane	P4	0.0280	0.0984	0.009	0.009
2,2-Dimethylpropane	I5	0.0013	0.0057	0.000	0.000
i-Pentane	I5	0.0145	0.0632	0.005	0.005
i-Propanol	X3	0.0052	0.0189	0.002	0.002
n-Pentane	P5	0.0156	0.0681	0.006	0.006
2,2-Dimethylbutane	I6	0.0012	0.0062	0.000	0.000
Cyclopentane	N5	0.0001	0.0004	0.000	0.000
2,3-Dimethylbutane	I6	0.0013	0.0068	0.001	0.001
2-Methylpentane	I6	0.0073	0.0380	0.003	0.003
3-Methylpentane	I6	0.0039	0.0203	0.002	0.002
UnknownC5s	U5	0.0002	0.0008	0.000	0.000
n-Hexane	P6	0.0102	0.0531	0.004	0.004
2-Butanol	X4	0.0002	0.0009	0.000	0.000
2,2-Dimethylpentane	I7	0.0004	0.0024	0.000	0.000
Methylcyclopentane	N6	0.0006	0.0030	0.000	0.000
2,4-Dimethylpentane	I7	0.0006	0.0036	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0001	0.0006	0.000	0.000
Benzene	A6	0.0001	0.0005	0.000	0.000

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3,3-Dimethylpentane	I7	0.0002	0.0012	0.000	0.000
Cyclohexane	N6	0.0015	0.0076	0.001	0.001
2-Methylhexane	I7	0.0031	0.0188	0.001	0.001
2,3-Dimethylpentane	I7	0.0009	0.0054	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0004	0.0024	0.000	0.000
3-Methylhexane	I7	0.0031	0.0188	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
3-Ethylpentane	I7	0.0002	0.0012	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0005	0.0030	0.000	0.000
n-Heptane	P7	0.0084	0.0509	0.004	0.004
1c,2-Dimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Methylcyclohexane	N7	0.0091	0.0540	0.004	0.004
2,2-Dimethylhexane	I8	0.0005	0.0034	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0007	0.000	0.000
Ethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
2,5-Dimethylhexane	I8	0.0007	0.0048	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0007	0.0048	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0007	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0014	0.000	0.000
Toluene	A7	0.0069	0.0384	0.002	0.002
2,3-Dimethylhexane	I8	0.0004	0.0028	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0007	0.000	0.000
2-Methylheptane	I8	0.0020	0.0138	0.001	0.001
4-Methylheptane	I8	0.0006	0.0042	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0007	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0007	0.000	0.000
3-Methylheptane	I8	0.0014	0.0097	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0011	0.0074	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0007	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0004	0.0027	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0001	0.0007	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0003	0.0021	0.000	0.000
UnknownC7s	U7	0.0002	0.0012	0.000	0.000
n-Octane	P8	0.0020	0.0138	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0003	0.0021	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
Ethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0007	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylbenzene	I8	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0003	0.0019	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0001	0.0008	0.000	0.000
2-Methyloctane	I9	0.0002	0.0016	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0015	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0003	0.0023	0.000	0.000
UnknownC9s	U9	0.0001	0.0008	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0008	0.000	0.000
UnknownC10s	U10	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0001	0.0010	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0010	0.000	0.000
n-Tridecane	P13	0.0001	0.0011	0.000	0.000
UnknownC14s	U14	0.0004	0.0048	0.000	0.000
TOTAL		100.00000	100.00000	0.4187	0.4207

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0005
TOLUENE	0.0069	0.0384
ETHYLBENZENE	0.0001	0.0007
XYLENES	0.0005	0.0033
TOTAL BTEX	0.0076	0.0429

**(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 :	906.4 /scf	911.3 /scf
	NET WET REAL :	890.6 /scf	895.5 /scf
HHV	GROSS DRY REAL :	1006.5 /scf	1012.0 /scf
	GROSS WET REAL :	988.9 /scf	994.4 /scf

NET HEATING VALUE (60 °F ideal reaction):	20832.7 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23130.7 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5704
DENSITY	0.04358 lb/scf
COMPRESSIBILITY FACTOR :	0.9979
REGULAR WOBBE INDEX	1334.0

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

Net Dry Ideal BTU	4903.7 /scf	Relative Density - SG (Air=1)	3.3746	***C6+factors***
Gross Dry Ideal BTU	5273.6 /scf	**Z** Compressiblity Factor	0.99316	0.99239
Net Dry Ideal BTU	19198.4 /lb	Density Factor	257.574 lbm/1000 ft3	
Gross Dry Ideal BTU	20642.3 /lb	Molar Mass or MW	97.751 g/mol	
		Volume Liquid Ideal gas	0.027 scf/gal	23.5

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.