EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10729**	NAME/DESCRIP :	**PICEANCE CREEK UNIT 297-10A5**
LEASE #:			**SURFACE CASING**
FIELD/AREA:			
PROJECT NO. :	**202509076**	ANALYSIS NO. :	**03**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	SEPTEMBER 21, 2025 18:46
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	SEPTEMBER 08, 2025
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	144 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-780
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	0.0051	0.0152	0.0010	0.0010
HELIUM	0.02	0.00	---	---
HYDROGEN	0.02	0.00	---	---
OXYGEN/ARGON	0.04	0.08	---	---
NITROGEN	1.57	2.66	---	---
CARBON DIOXIDE	0.08	0.21	---	---
METHANE	97.1591	94.4030	---	---
ETHANE	0.8688	1.5822	0.2317	0.2330
PROPANE	0.0920	0.2457	0.0250	0.0251
I-BUTANE	0.0094	0.0331	0.0030	0.0030
N-BUTANE	0.0240	0.0845	0.0080	0.0080
I-PENTANE	0.0114	0.0498	0.0040	0.0040
N-PENTANE	0.0106	0.0463	0.0040	0.0040
HEXANES PLUS	0.0896	0.5902	0.0280	0.0280
TOTALS	100.00000	100.00000	0.3047	0.3061

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0005
TOLUENE	0.0005	0.0028
ETHYLBENZENE	0.0004	0.0025
XYLENES	0.0029	0.0186
TOTAL BTEX	0.0039	0.0244

*(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 :	904.4 /scf	909.3 /scf
	NET WET REAL :	888.6 /scf	893.5 /scf
HHV	GROSS DRY REAL :	1003.9 /scf	1009.4 /scf
	GROSS WET REAL :	986.4 /scf	991.9 /scf

NET HEATING VALUE (60 °F ideal reaction):	20837.1 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23131.4 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5692
DENSITY	0.04351 lbm/scf
COMPRESSIBILITY FACTOR :	0.9980
REGULAR WOBBE INDEX	1332.1

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202509076	ANALYSIS NO. :	03
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 21, 2025 18:46
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 08, 2025
PRODUCER :		CYLINDER NO. :	ECA-780
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT 297-10A5 SURFACE CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	144	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.02	0.00
Carbon Dioxide	0.08	0.21
Nitrogen	1.57	2.66
Methane	97.1591	94.4030
Ethane	0.8688	1.5822
Propane	0.0920	0.2457
Isobutane	0.0094	0.0331
n-Butane	0.0240	0.0845
Isopentane	0.0113	0.0494
n-Pentane	0.0106	0.0463
Cyclopentane	0.0001	0.0004
n-Hexane	0.0086	0.0449
Cyclohexane	0.0014	0.0072
Other Hexanes	0.0113	0.0589
Heptanes	0.0154	0.0933
Methylcyclohexane	0.0056	0.0333
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0001	0.0005
Toluene	0.0005	0.0028
Ethylbenzene	0.0004	0.0025
Xylenes	0.0029	0.0186
C8+ Heavies	0.0434	0.3282
Subtotal	99.95490	99.90480
Oxygen/Argon	0.04	0.08
Alcohols	0.0051	0.0152
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	904.4	5403.9	6037.2	6886.6	**Btu/scf**
	Net Wet Real:	888.6	5309.4	5931.7	6766.2	**Btu/scf**
HHV	Gross Dry Real:	1003.9	5810.0	6479.2	7370.4	**Btu/scf**
	Gross Wet Real:	986.4	5708.4	6365.9	7241.6	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1332.1	2996.8	3145.6	3355.9	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20837.1	19079.1	18931.9	18699.0	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23131.4	20511.2	20317.5	20013.3	**Btu/lbm**
Molar Mass (MW):		16.51267	108.6	123.292	140.46	**g/mol**
Relative Density (AIR=1):		0.5692	3.7498	4.2569	4.8495	**SG**
Density:		0.04351	0.28619	0.32489	0.37013	**lbm/scf**
Compressiblity Factor:		0.9980	0.9957	0.9985	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	16.875	0.0279	0.014	0.002	**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.

EMPACT Analytical Systems Inc. 365 S Main St Brighton, CO 80601 303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

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

PROJECT NO. : **202509076** ANALYSIS NO. : **03**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: SEPTEMBER 21, 2025 18:46
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : SEPTEMBER 08, 2025
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 144 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-780
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	---	0.02	0.00	---	---
Oxygen/Argon	---	0.04	0.08	---	---
Nitrogen	---	1.57	2.66	---	---
Carbon Dioxide	---	0.08	0.21	---	---
Methane	P1	97.1591	94.4030	---	---
Ethane	P2	0.8688	1.5822	0.232	0.233
Propane	P3	0.0920	0.2457	0.025	0.025
i-Butane	I4	0.0094	0.0331	0.003	0.003
Methanol	X1	0.0017	0.0033	0.000	0.000
n-Butane	P4	0.0240	0.0845	0.008	0.008
2,2-Dimethylpropane	I5	0.0008	0.0035	0.000	0.000
i-Pentane	I5	0.0105	0.0459	0.004	0.004
Acetone	X3	0.0034	0.0119	0.001	0.001
n-Pentane	P5	0.0105	0.0459	0.004	0.004
2,2-Dimethylbutane	I6	0.0010	0.0052	0.000	0.000
Cyclopentane	N5	0.0001	0.0004	0.000	0.000
2,3-Dimethylbutane	I6	0.0010	0.0052	0.000	0.000
2-Methylpentane	I6	0.0057	0.0297	0.002	0.002
3-Methylpentane	I6	0.0032	0.0167	0.001	0.001
UnknownC5s	U5	0.0001	0.0004	0.000	0.000
n-Hexane	P6	0.0086	0.0449	0.004	0.004
2,2-Dimethylpentane	I7	0.0003	0.0018	0.000	0.000
Methylcyclopentane	N6	0.0004	0.0021	0.000	0.000
2,4-Dimethylpentane	I7	0.0004	0.0024	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
3,3-Dimethylpentane	I7	0.0002	0.0012	0.000	0.000

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

Cyclohexane	N6	0.0014	0.0072	0.000	0.000
2-Methylhexane	I7	0.0027	0.0164	0.001	0.001
2,3-Dimethylpentane	I7	0.0008	0.0048	0.000	0.000
1,1-Dimethylcyclopentane	N7	0.0004	0.0024	0.000	0.000
3-Methylhexane	I7	0.0027	0.0164	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	0.0006	0.0036	0.000	0.000
n-Heptane	P7	0.0062	0.0376	0.003	0.003
1c,2-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Methylcyclohexane	N7	0.0056	0.0333	0.002	0.002
2,2-Dimethylhexane	I8	0.0003	0.0021	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	0.0004	0.0028	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0003	0.0021	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0007	0.000	0.000
Toluene	A7	0.0005	0.0028	0.000	0.000
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	0.0024	0.0166	0.001	0.001
4-Methylheptane	I8	0.0007	0.0048	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	0.0015	0.0104	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0017	0.0116	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0007	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0007	0.0048	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0003	0.0021	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0007	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0007	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0006	0.0041	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0007	0.000	0.000
n-Octane	P8	0.0043	0.0297	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0003	0.0021	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0007	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
2,2-Dimethylheptane	I9	0.0002	0.0016	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0007	0.0053	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0016	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylcyclohexane	N8	0.0012	0.0082	0.001	0.001
n-Propylcyclopentane	N8	0.0005	0.0034	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0003	0.0023	0.000	0.000
2,5-Dimethylheptane	I9	0.0006	0.0047	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0016	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	0.0001	0.0008	0.000	0.000
Ethylbenzene	I8	0.0004	0.0025	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0019	0.0122	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0004	0.0025	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0008	0.000	0.000
4-Methyloctane	I9	0.0008	0.0062	0.000	0.000
2-Methyloctane	I9	0.0012	0.0093	0.001	0.001
3-Ethylheptane	I9	0.0001	0.0008	0.000	0.000

3-Methyloctane	I9	0.0001	0.0008	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0013	0.0099	0.001	0.001
3,3-Diethylpentane	I9	0.0001	0.0008	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0006	0.0039	0.000	0.000
i-Butylcyclopentane	N9	0.0004	0.0030	0.000	0.000
n-Nonane	P9	0.0032	0.0248	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0023	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0036	0.000	0.000
3,6-Dimethyloctane	I10	0.0005	0.0043	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0017	0.000	0.000
1,3-Methylethylbenzene	A9	0.0016	0.0116	0.001	0.001
1,4-Methylethylbenzene	A9	0.0008	0.0058	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0011	0.0080	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0009	0.000	0.000
5-Methylnonane	I10	0.0002	0.0017	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0015	0.000	0.000
2-Methylnonane	I10	0.0008	0.0069	0.000	0.000
3-Methylnonane	I10	0.0002	0.0017	0.000	0.000
t-Butylbenzene	A10	0.0039	0.0317	0.002	0.002
i-Butylcyclohexane	N10	0.0001	0.0009	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0008	0.000	0.000
sec-Butylbenzene	A10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0007	0.0055	0.000	0.000
n-Decane	P10	0.0006	0.0052	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0007	0.0057	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0008	0.000	0.000
3-Ethylnonane	I10	0.0002	0.0019	0.000	0.000
1,3-Diethylbenzene	A10	0.0002	0.0016	0.000	0.000
n-Butylbenzene	A10	0.0002	0.0016	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Diethylbenzene	A10	0.0002	0.0016	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,4-Methyl-t-butylbenzene	A11	0.0001	0.0009	0.000	0.000
UnknownC10s	U10	0.0008	0.0069	0.000	0.000
n-Undecane	P11	0.0001	0.0010	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0003	0.0029	0.000	0.000
UnknownC12s	U12	0.0001	0.0010	0.000	0.000
n-Tridecane	P13	0.0001	0.0011	0.000	0.000
n-Tetradecane	P14	0.0001	0.0012	0.000	0.000
n-Pentadecane	P15	0.0001	0.0013	0.000	0.000
TOTAL		100.00000	100.00000	0.3047	0.3061

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0005
TOLUENE	0.0005	0.0028
ETHYLBENZENE	0.0004	0.0025
XYLENES	0.0029	0.0186
TOTAL BTEX	0.0039	0.0244

*(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 :	904.4 /scf	909.3 /scf
	NET WET REAL :	888.6 /scf	893.5 /scf
HHV	GROSS DRY REAL :	1003.9 /scf	1009.4 /scf
	GROSS WET REAL :	986.4 /scf	991.9 /scf

NET HEATING VALUE (60 °F ideal reaction):	20837.1 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23131.4 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5692
DENSITY	0.04351 lb/scf
COMPRESSIBILITY FACTOR :	0.9980
REGULAR WOBBE INDEX	1332.1

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

Net Dry Ideal BTU	5397.6 /scf	Relative Density - SG (Air=1)	3.7498		***C6+factors***
Gross Dry Ideal BTU	5803.2 /scf	**Z** Compressiblity Factor	0.99571		0.99446
Net Dry Ideal BTU	19079.1 /lb	Density Factor	286.186	lbm/1000 ft3	
Gross Dry Ideal BTU	20511.2 /lb	Molar Mass or MW	108.6	g/mol	
		Volume Liquid Ideal gas	0.028	scf/gal	20.1

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.