EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-13539**	NAME/DESCRIP :	**CP11A-16 E16 596**
LEASE #:	**05-045-13539**		**PRODUCTION CASING**
FIELD/AREA:	**GRAND VALLEY**		

PROJECT NO. :	**202512131**	ANALYSIS NO. :	**01**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	JANUARY 09, 2026 11:05
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	DECEMBER 29, 2025
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	161 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-793
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: ***Moisture in sample.***

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0031	0.0056	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.07	0.10	---	---
CARBON DIOXIDE	4.71	10.85	---	---
METHANE	88.6928	74.4621	---	---
ETHANE	4.2811	6.7367	1.1412	1.1474
PROPANE	0.8915	2.0573	0.2448	0.2462
I-BUTANE	0.2435	0.7407	0.0789	0.0794
N-BUTANE	0.1517	0.4614	0.0480	0.0482
I-PENTANE	0.1094	0.4127	0.0400	0.0402
N-PENTANE	0.0547	0.2066	0.0200	0.0201
HEXANES PLUS	0.7822	3.9669	0.3190	0.3199
TOTALS	100.00000	100.00000	1.8919	1.9014

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0337	0.1377
TOLUENE	0.0915	0.4412
ETHYLBENZENE	0.0007	0.0039
XYLENES	0.0060	0.0334
TOTAL BTEX	0.1319	0.6162

**(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 :	950.5 /scf	955.7 /scf
	NET WET REAL :	933.9 /scf	939.1 /scf
HHV	GROSS DRY REAL :	1051.9 /scf	1057.6 /scf
	GROSS WET REAL :	1033.5 /scf	1039.2 /scf

NET HEATING VALUE (60 °F ideal reaction):	18919.7 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	20941.6 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6592
DENSITY	0.05035 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9976
REGULAR WOBBE INDEX	1296.4

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202512131	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JANUARY 09, 2026 11:05
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 29, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-793
LEASE NO. :	05-045-13539	SAMPLED BY :	NICK CROY
NAME/DESCRIP :	CP11A-16 E16 596 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	161	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*Moisture in sample.*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	4.71	10.85
Nitrogen	0.07	0.10
Methane	88.6928	74.4621
Ethane	4.2811	6.7367
Propane	0.8915	2.0573
Isobutane	0.2435	0.7407
n-Butane	0.1517	0.4614
Isopentane	0.1056	0.3987
n-Pentane	0.0547	0.2066
Cyclopentane	0.0038	0.0140
n-Hexane	0.0501	0.2259
Cyclohexane	0.0297	0.1308
Other Hexanes	0.1209	0.5427
Heptanes	0.2226	1.1644
Methylcyclohexane	0.1008	0.5179
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0337	0.1377
Toluene	0.0915	0.4412
Ethylbenzene	0.0007	0.0039
Xylenes	0.0060	0.0334
C8+ Heavies	0.1261	0.7684
Subtotal	99.99690	99.99440
Oxygen/Argon	0.00	0.00
Alcohols	0.0031	0.0056
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	950.5	4844.5	5805.4	8139.2	**Btu/scf**
	Net Wet Real:	933.9	4759.8	5703.9	7996.9	**Btu/scf**
HHV	Gross Dry Real:	1051.9	5198.3	6249.6	8750.9	**Btu/scf**
	Gross Wet Real:	1033.5	5107.4	6140.3	8597.9	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1296.4	2833.0	3126.2	3726.7	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		18919.7	19143.5	19675.4	18815.2	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		20941.6	20538.5	21184.5	20229.8	**Btu/lbm**
Molar Mass (MW):		19.10862	96.878	115.79	160.65	**g/mol**
Relative Density (AIR=1):		0.6592	3.3460	3.9979	5.5467	**SG**
Density:		0.05035	0.25531	0.30514	0.42334	**lbm/scf**
Compressiblity Factor:		0.9976	0.9938	0.9971	0.9998	**Z**
Liquid Volume real gas @:	**14.65**	17.6466	0.318	0.0588	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:	**05-045-13539**	NAME/DESCRIP :	**CP11A-16 E16 596**
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FIELD/AREA:	**GRAND VALLEY**		
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OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	DECEMBER 29, 2025
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PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	161 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-793
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:	***Moisture in sample.***		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Hydrogen	---	0.01	0.00	---	---
Nitrogen	---	0.07	0.10	---	---
Carbon Dioxide	---	4.71	10.85	---	---
Methane	P1	88.6928	74.4621	---	---
Ethane	P2	4.2811	6.7367	1.141	1.147
Propane	P3	0.8915	2.0573	0.245	0.246
i-Butane	I4	0.2435	0.7407	0.079	0.079
Methanol	X1	0.0028	0.0047	0.000	0.000
n-Butane	P4	0.1517	0.4614	0.048	0.048
2,2-Dimethylpropane	I5	0.0045	0.0170	0.002	0.002
i-Pentane	I5	0.1011	0.3817	0.037	0.037
Acetone	X3	0.0003	0.0009	0.000	0.000
n-Pentane	P5	0.0547	0.2066	0.020	0.020
2,2-Dimethylbutane	I6	0.0091	0.0410	0.004	0.004
Cyclopentane	N5	0.0038	0.0140	0.001	0.001
2,3-Dimethylbutane	I6	0.0127	0.0573	0.005	0.005
2-Methylpentane	I6	0.0463	0.2088	0.019	0.019
3-Methylpentane	I6	0.0288	0.1299	0.012	0.012
n-Hexane	P6	0.0501	0.2259	0.021	0.021
2,2-Dimethylpentane	I7	0.0056	0.0294	0.003	0.003
Methylcyclopentane	N6	0.0240	0.1057	0.008	0.008
2,4-Dimethylpentane	I7	0.0077	0.0404	0.004	0.004
2,2,3-Trimethylbutane	I7	0.0025	0.0131	0.001	0.001
Benzene	A6	0.0337	0.1377	0.009	0.009
3,3-Dimethylpentane	I7	0.0036	0.0189	0.002	0.002
Cyclohexane	N6	0.0297	0.1308	0.010	0.010
2-Methylhexane	I7	0.0426	0.2234	0.020	0.020

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2,3-Dimethylpentane	I7	0.0109	0.0572	0.005	0.005
1,1-Dimethylcyclopentane	N7	0.0058	0.0298	0.002	0.002
3-Methylhexane	I7	0.0401	0.2103	0.018	0.018
1c,3-Dimethylcyclopentane	N7	0.0074	0.0381	0.003	0.003
1t,3-Dimethylcyclopentane	N7	0.0070	0.0360	0.003	0.003
3-Ethylpentane	I7	0.0022	0.0115	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0113	0.0581	0.005	0.005
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0679	0.3561	0.031	0.031
1c,2-Dimethylcyclopentane	N7	0.0031	0.0159	0.001	0.001
Methylcyclohexane	N7	0.1008	0.5179	0.040	0.040
2,2-Dimethylhexane	I8	0.0045	0.0269	0.002	0.002
1,1,3-Trimethylcyclopentane	N7	0.0014	0.0082	0.001	0.001
Ethylcyclopentane	N7	0.0035	0.0180	0.001	0.001
2,5-Dimethylhexane	I8	0.0069	0.0412	0.004	0.004
2,2,3-Trimethylpentane	I8	0.0070	0.0419	0.004	0.004
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0021	0.0124	0.001	0.001
3,3-Dimethylhexane	I8	0.0021	0.0126	0.001	0.001
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0003	0.0018	0.000	0.000
Toluene	A7	0.0915	0.4412	0.031	0.031
2,3-Dimethylhexane	I8	0.0037	0.0221	0.002	0.002
2-Methyl-3-ethylpentane	I8	0.0003	0.0018	0.000	0.000
2-Methylheptane	I8	0.0178	0.1064	0.009	0.009
4-Methylheptane	I8	0.0063	0.0377	0.003	0.003
3-Methyl-3-ethylpentane	I8	0.0006	0.0036	0.000	0.000
3,4-Dimethylhexane	I8	0.0006	0.0036	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	0.0145	0.0867	0.007	0.007
1c,2t,3-Trimethylcyclopentane	N8	0.0138	0.0810	0.007	0.007
3-Ethylhexane	I8	0.0005	0.0030	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0056	0.0329	0.003	0.003
1,1-Dimethylcyclohexane	N8	0.0026	0.0153	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0004	0.0027	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0004	0.0024	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0003	0.0018	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0024	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0031	0.0182	0.002	0.002
1t,3-Dimethylcyclohexane	N8	0.0008	0.0047	0.000	0.000
n-Octane	P8	0.0132	0.0789	0.007	0.007
1c,4-Dimethylcyclohexane	N8	0.0021	0.0124	0.001	0.001
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0004	0.0027	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0008	0.0053	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0007	0.0041	0.000	0.000
n-Propylcyclopentane	N8	0.0003	0.0018	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0003	0.0020	0.000	0.000
2,5-Dimethylheptane	I9	0.0006	0.0040	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0007	0.0039	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0041	0.0228	0.002	0.002

1,4-Dimethylbenzene (p-Xylene)	A8	0.0014	0.0078	0.001	0.001
3,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0007	0.0047	0.000	0.000
2-Methyloctane	I9	0.0009	0.0060	0.001	0.001
3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0008	0.0053	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0005	0.0028	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
UnknownC8s	U8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0023	0.0154	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0003	0.0019	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0003	0.0019	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
5-Methylnonane	I10	0.0002	0.0015	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
3-Methylnonane	I10	0.0002	0.0015	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0004	0.0027	0.000	0.000
n-Decane	P10	0.0004	0.0030	0.000	0.000
UnknownC10s	U10	0.0006	0.0045	0.000	0.000
n-Undecane	P11	0.0002	0.0016	0.000	0.000
Naphthalene	A10	0.0001	0.0007	0.000	0.000
n-Dodecane	P12	0.0003	0.0027	0.000	0.000
1,3,5-Triethylbenzene	A12	0.0001	0.0008	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0008	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0001	0.0008	0.000	0.000
1-Methylnaphthalene	A11	0.0001	0.0007	0.000	0.000
UnknownC12s	U12	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0003	0.0029	0.000	0.000
UnknownC13s	U13	0.0002	0.0019	0.000	0.000
n-Tetradecane	P14	0.0001	0.0011	0.000	0.000
UnknownC14s	U14	0.0002	0.0021	0.000	0.000
n-Pentadecane	P15	0.0001	0.0011	0.000	0.000
UnknownC15s	U15	0.0001	0.0011	0.000	0.000
UnknownC16s	U16	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	1.8919	1.9014

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0337	0.1377
TOLUENE	0.0915	0.4412
ETHYLBENZENE	0.0007	0.0039
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TOTAL BTEX	0.1319	0.6162

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Mod ASTM D6730,GPA 2261 & GPA 2286.

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	GROSS WET REAL :	1033.5	**/scf**	1039.2	**/scf**
	NET HEATING VALUE (60 °F ideal reaction):			18919.7	**Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):			20941.6	**Btu/lbm**
	RELATIVE DENSITY (AIR=1):			0.6592	
	DENSITY			0.05035	**lb/scf**
	COMPRESSIBILITY FACTOR :			0.9976	
	REGULAR WOBBE INDEX			1296.4	

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

Net Dry Ideal BTU	4829.5 **/scf**	Relative Density - SG (Air=1)	3.346		***C6+factors***
Gross Dry Ideal BTU	5182.2 **/scf**	**Z** Compressiblity Factor	0.99379		0.99333
Net Dry Ideal BTU	19143.5 **/lb**	Density Factor	255.311	**lbm/1000 ft3**	
Gross Dry Ideal BTU	20538.5 **/lb**	Molar Mass or MW	96.878	**g/mol**	
		Volume Liquid Ideal gas	0.319	**scf/gal**	24.1

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.