



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-045-11256** NAME/DESCRIP : **CHEV 05-433D**
 LEASE #: CONTAINER #1
 FIELD/AREA:

PROJECT NO. : **202503105** ANALYSIS NO. : **01**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **MARCH 29, 2025 12:25**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **MARCH 25, 2025 12:30**
 CUSTOMER REF: TO:
 PRODUCER : **QB ENERGY OPERATING, LLC** EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: **SPOT**
 SAMPLE PRES. : psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : **1L TEDLAR**
 LAB PRES: psig SAMPLED BY : **DEREK HORN**
 SAMPLE TEMP. : °f SAMPLING COMPANY: **QB ENERGY**
 AMBIENT TEMP.: °f H2S BY STAIN TUBE: **-** ppm mol
 H2O BY STAIN TUBE: **-** #/mmcf CO2 BY STAIN TUBE: **-** Mol %
 FIELD COMMENTS:
 LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @	GPM @
			14.65	14.73
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	2.18	3.76	---	---
NITROGEN	7.42	11.19	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	85.0813	73.5084	---	---
ETHANE	3.0121	4.8778	0.8022	0.8066
PROPANE	1.2954	3.0763	0.3556	0.3576
I-BUTANE	0.2294	0.7181	0.0749	0.0753
N-BUTANE	0.3685	1.1535	0.1159	0.1165
I-PENTANE	0.1225	0.4756	0.0440	0.0442
N-PENTANE	0.1015	0.3944	0.0370	0.0372
HEXANES PLUS	0.1593	0.7959	0.0600	0.0600
TOTALS	100.0000	100.0000	1.4896	1.4974

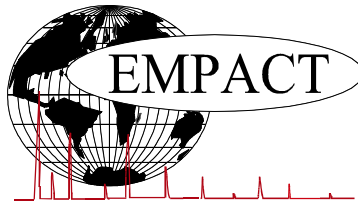
BTEX COMPONENTS	MOLE%	WT%	CALCULATED VALUES**	
			BTU @	
BENZENE	0.0024	0.0101	14.65	14.73
TOLUENE	0.0029	0.0144		
ETHYLBENZENE	0.0001	0.0006		
XYLENES	0.0011	0.0063		
TOTAL BTEX	0.0065	0.0314		
			884.5 /scf	889.3 /scf
			869.0 /scf	873.8 /scf
			979.8 /scf	985.2 /scf
			962.7 /scf	968.1 /scf
			18112.0 Btu/lbm	18112.0 Btu/lbm
			20064.6 Btu/lbm	20064.6 Btu/lbm
			0.6407	0.6407
			0.04893 lbm/scf	0.04893 lbm/scf
			0.9979	0.9979
			1225.3	1225.3

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730, GPA 2261 & GPA 2286.

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

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**EXTENDED NATURAL GAS ANALYSIS (*DHA)
GLYCALC INFORMATION**

PROJECT NO. :	202503105	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	MARCH 29, 2025 12:25
ACCOUNT NO. :		SAMPLE DATE :	MARCH 25, 2025 12:30
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	1L TEDLAR
LEASE NO. :		SAMPLED BY :	DEREK HORN
NAME/DESCRIP :	CHEV 05-433D CONTAINER #1		

FIELD DATA

SAMPLE PRES. :
H2S BY STAIN TUBE: ppm mol
COMMENTS : SPOT

SAMPLE TEMP. :
AMBIENT TEMP.:

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.02	0.05
Nitrogen	7.42	11.19
Methane	85.0813	73.5084
Ethane	3.0121	4.8778
Propane	1.2954	3.0763
Isobutane	0.2294	0.7181
n-Butane	0.3685	1.1535
Isopentane	0.1178	0.4578
n-Pentane	0.1015	0.3944
Cyclopentane	0.0047	0.0178
n-Hexane	0.0274	0.1272
Cyclohexane	0.0101	0.0458
Other Hexanes	0.0585	0.2702
Heptanes	0.0281	0.1511
Methylcyclohexane	0.0123	0.0651
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0024	0.0101
Toluene	0.0029	0.0144
Ethylbenzene	0.0001	0.0006
Xylenes	0.0011	0.0063
C8+ Heavies	0.0163	0.1045
<u>Subtotal</u>	<u>97.82000</u>	<u>96.24000</u>
<u>Oxygen/Argon</u>	<u>2.18</u>	<u>3.76</u>
Total	100.00000	100.00000

	Total	C6+	C8+	C10+	
Calculated Values BTU @	Sample	Fraction	Fraction	Fraction	
14.65					
LHV Net Dry Real:	884.5	4702.8	5881.4	7169.0	Btu/scf
Net Wet Real:	869.0	4620.6	5778.6	7043.7	Btu/scf
HHV Gross Dry Real:	979.8	5063.2	6326.1	7720.5	Btu/scf
Gross Wet Real:	962.7	4974.7	6215.5	7585.5	Btu/scf
Other Calculated Values					
Regualr Wobbe Index*	1225.3	2814.3	3142.9	3495.1	Btu/scf
Net Heating Value (60 °F ideal reaction):	18112.0	19339.7	19662.7	19601.9	Btu/lbm
Gross Heating Value (60°F ideal reaction):	20064.6	20820.0	21150.2	21109.9	Btu/lbm
Molar Mass (MW):	18.56812	92.672	117.524	142.083	g/mol
Relative Density (AIR=1):	0.6407	3.2001	4.0578	4.9058	SG
Density:	0.04893	0.24422	0.30969	0.37441	lbm/scf
Compressibility Factor:	0.9979	0.9912	0.9977	0.9996	Z
Liquid Volume real gas @:	14.65	16.8361	0.0598	0.003	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 underscore) indicates there was no tube pulled for H2S.

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DHA COMPONENT LIST

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

SAMPLE CYCLE: SAMPLE TYPE: **SPOT**
 SAMPLE PRES. : **psig** PROBE :
 FLOW PRES. : **psig** CYLINDER NO. : **1L TEDLAR**
 LAB PRES: **psig** SAMPLED BY : **DEREK HORN**
 SAMPLE TEMP. : **°f** SAMPLING COMPANY: **QB ENERGY**
 AMBIENT TEMP.: **°f** 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	---	0.01	0.00	---	---
Oxygen/Argon	---	2.18	3.76	---	---
Nitrogen	---	7.42	11.19	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	85.0813	73.5084	---	---
Ethane	P2	3.0121	4.8778	0.802	0.807
Propane	P3	1.2954	3.0763	0.356	0.358
i-Butane	I4	0.2294	0.7181	0.075	0.075
n-Butane	P4	0.3685	1.1535	0.116	0.117
2,2-Dimethylpropane	I5	0.0021	0.0082	0.001	0.001
i-Pentane	I5	0.1157	0.4496	0.042	0.042
n-Pentane	P5	0.1015	0.3944	0.037	0.037
2,2-Dimethylbutane	I6	0.0022	0.0102	0.001	0.001
Cyclopentane	N5	0.0047	0.0178	0.001	0.001
2,3-Dimethylbutane	I6	0.0046	0.0213	0.002	0.002
2-Methylpentane	I6	0.0261	0.1211	0.011	0.011
3-Methylpentane	I6	0.0137	0.0636	0.006	0.006
n-Hexane	P6	0.0274	0.1272	0.011	0.011
2,2-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
Methylcyclopentane	N6	0.0119	0.0540	0.004	0.004
2,4-Dimethylpentane	I7	0.0010	0.0054	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0002	0.0011	0.000	0.000
Benzene	A6	0.0024	0.0101	0.001	0.001
3,3-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
Cyclohexane	N6	0.0101	0.0458	0.003	0.003

2-Methylhexane	I7	0.0039	0.0211	0.002	0.002
2,3-Dimethylpentane	I7	0.0027	0.0146	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0010	0.0053	0.000	0.000
3-Methylhexane	I7	0.0046	0.0248	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0015	0.0079	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0013	0.0069	0.001	0.001
3-Ethylpentane	I7	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0024	0.0127	0.001	0.001
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0079	0.0427	0.004	0.004
1c,2-Dimethylcyclopentane	N7	0.0002	0.0011	0.000	0.000
Methylcyclohexane	N7	0.0123	0.0651	0.005	0.005
2,2-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0005	0.0026	0.000	0.000
2,5-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0003	0.0018	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0003	0.0018	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0029	0.0144	0.001	0.001
2,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0016	0.0099	0.001	0.001
4-Methylheptane	I8	0.0005	0.0031	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0007	0.0043	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0015	0.0091	0.001	0.001
3-Ethylhexane	I8	0.0003	0.0018	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0006	0.0036	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0003	0.0018	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0005	0.0030	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0019	0.0117	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0005	0.0030	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0004	0.0027	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0005	0.0030	0.000	0.000
n-Propylcyclopentane	N8	0.0002	0.0012	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0008	0.0046	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0011	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0002	0.0014	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0014	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0007	0.0049	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000

i-Propylcyclohexane	N9	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
3-Ethyl octane	I10	0.0001	0.0008	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0006	0.0042	0.000	0.000
n-Decane	P10	0.0002	0.0015	0.000	0.000
Sec-Butylcyclohexane	A10	0.0001	0.0008	0.000	0.000
UnknownC10s	U10	0.0003	0.0023	0.000	0.000
TOTAL		100.00000	100.00000	1.4896	1.4974

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @		
			14.65	14.73	
BENZENE	0.0024	0.0101	LHV NET DRY REAL :	884.5 /scf	889.3 /scf
TOLUENE	0.0029	0.0144	NET WET REAL :	869.0 /scf	873.8 /scf
ETHYLBENZENE	0.0001	0.0006	HHV GROSS DRY REAL :	979.8 /scf	985.2 /scf
XYLENES	0.0011	0.0063	GROSS WET REAL :	962.7 /scf	968.1 /scf
TOTAL BTEX	0.0065	0.0314	NET HEATING VALUE (60 °F ideal reaction):		18112.0 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		20064.6 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6407
			DENSITY		0.04893 lb/scf
			COMPRESSIBILITY FACTOR :		0.9979
			REGULAR WOBBE INDEX		1225.3

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730, GPA 2261 & GPA 2286.

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

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

Net Dry Ideal BTU	<u>4676 /scf</u>	Relative Density - SG (Air=1)	<u>3.2001</u>	C6+ factors
Gross Dry Ideal BTU	<u>5034.4 /scf</u>	Z Compressibility Factor	<u>0.99119</u>	<u>0.99053</u>
Net Dry Ideal BTU	<u>19339.7 /lb</u>	Density Factor	<u>244.224 lbm/1000 ft3</u>	
Gross Dry Ideal BTU	<u>20820 /lb</u>	Molar Mass or MW	<u>92.672 g/mol</u>	
		Volume Liquid Ideal gas	<u>0.06 scf/gal</u>	<u>23.5</u>

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.

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