EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-15209**	NAME/DESCRIP :	**110165620 NP N30 EF 08C-31 595**
LEASE #:			**BRADEN HEAD**
FIELD/AREA:			

PROJECT NO. :	**202508083**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	AUGUST 24, 2025 15:20
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	AUGUST 11, 2025 08:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	217	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-770
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	70	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
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.14	0.21	---	---
CARBON DIOXIDE	0.87	2.05	---	---
METHANE	89.9923	77.4526	---	---
ETHANE	4.6609	7.5188	1.2424	1.2492
PROPANE	2.3334	5.5201	0.6407	0.6442
I-BUTANE	0.4431	1.3817	0.1449	0.1457
N-BUTANE	0.7419	2.3134	0.2329	0.2342
I-PENTANE	0.2301	0.8896	0.0830	0.0834
N-PENTANE	0.1998	0.7733	0.0720	0.0724
HEXANES PLUS	0.3784	1.8904	0.1440	0.1445
TOTALS	100.00000	100.00000	2.5599	2.5736

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0326	0.1366
TOLUENE	0.0213	0.1053
ETHYLBENZENE	0.0012	0.0068
XYLENES	0.0047	0.0268
TOTAL BTEX	0.0598	0.2755

**(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 :	1015.9 **/scf**	1021.5 **/scf**
	NET WET REAL :	998.1 **/scf**	1003.7 **/scf**
HHV	GROSS DRY REAL :	1123.6 **/scf**	1129.7 **/scf**
	GROSS WET REAL :	1104.0 **/scf**	1110.1 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		20707.0 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		22903.7 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.6428
	DENSITY		0.04912 **lbm/scf**
	COMPRESSIBILITY FACTOR :		0.9974
	REGULAR WOBBE INDEX		1402.1

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202508083	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 24, 2025 15:20
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 11, 2025 08:30
PRODUCER :		CYLINDER NO. :	ECA-770
LEASE NO. :		SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	110165620 NP N30 EF 08C-31 595 BRADEN HEAD		
FIELD DATA		SAMPLE TEMP. :	70
SAMPLE PRES. :	217	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.87	2.05
Nitrogen	0.14	0.21
Methane	89.9923	77.4526
Ethane	4.6609	7.5188
Propane	2.3334	5.5201
Isobutane	0.4431	1.3817
n-Butane	0.7419	2.3134
Isopentane	0.2199	0.8512
n-Pentane	0.1998	0.7733
Cyclopentane	0.0102	0.0384
n-Hexane	0.0565	0.2612
Cyclohexane	0.0253	0.1142
Other Hexanes	0.0898	0.4150
Heptanes	0.0813	0.4356
Methylcyclohexane	0.0300	0.1581
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0326	0.1366
Toluene	0.0213	0.1053
Ethylbenzene	0.0012	0.0068
Xylenes	0.0047	0.0268
C8+ Heavies	0.0357	0.2308
Subtotal	100.00000	100.00000
Oxygen/Argon	0.00	0.00
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1015.9	4676.5	5882.5	7274.2	**Btu/scf**
	Net Wet Real:	998.1	4594.7	5779.7	7147.0	**Btu/scf**
HHV	Gross Dry Real:	1123.6	5020.0	6316.7	7833.4	**Btu/scf**
	Gross Wet Real:	1104.0	4932.2	6206.3	7696.5	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1402.1	2786.6	3125.8	3500.1	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20707.0	19132.5	19393.3	19120.5	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		22903.7	20538.7	20827.7	20587.5	**Btu/lbm**
Molar Mass (MW):		18.64104	93.127	118.534	145.873	**g/mol**
Relative Density (AIR=1):		0.6428	3.2159	4.0923	5.0369	**SG**
Density:		0.04912	0.24541	0.31237	0.38439	**lbm/scf**
Compressiblity Factor:		0.9974	0.9924	0.9979	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	17.8858	0.1435	0.011	0.001	**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

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FLOW PRES. :	psig	CYLINDER NO. :	ECA-770
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	70 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	---	0.01	0.00	---	---
Nitrogen	---	0.14	0.21	---	---
Carbon Dioxide	---	0.87	2.05	---	---
Methane	P1	89.9923	77.4526	---	---
Ethane	P2	4.6609	7.5188	1.242	1.249
Propane	P3	2.3334	5.5201	0.641	0.644
i-Butane	I4	0.4431	1.3817	0.145	0.146
n-Butane	P4	0.7419	2.3134	0.233	0.234
2,2-Dimethylpropane	I5	0.0033	0.0128	0.001	0.001
i-Pentane	I5	0.2166	0.8384	0.079	0.079
n-Pentane	P5	0.1998	0.7733	0.072	0.072
2,2-Dimethylbutane	I6	0.0042	0.0194	0.002	0.002
Cyclopentane	N5	0.0102	0.0384	0.003	0.003
2,3-Dimethylbutane	I6	0.0091	0.0421	0.004	0.004
2-Methylpentane	I6	0.0491	0.2270	0.020	0.020
3-Methylpentane	I6	0.0260	0.1202	0.011	0.011
n-Hexane	P6	0.0565	0.2612	0.023	0.023
Methylcyclopentane	N6	0.0014	0.0063	0.000	0.000
2,4-Dimethylpentane	I7	0.0022	0.0118	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0027	0.000	0.000
Benzene	A6	0.0326	0.1366	0.009	0.009
3,3-Dimethylpentane	I7	0.0006	0.0032	0.000	0.000
Cyclohexane	N6	0.0253	0.1142	0.009	0.009
2-Methylhexane	I7	0.0103	0.0554	0.005	0.005
2,3-Dimethylpentane	I7	0.0031	0.0167	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0019	0.0100	0.001	0.001
3-Methylhexane	I7	0.0094	0.0505	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0033	0.0174	0.002	0.002

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1t,3-Dimethylcyclopentane	N7	0.0030	0.0158	0.001	0.001
3-Ethylpentane	I7	0.0005	0.0027	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0047	0.0247	0.002	0.002
n-Heptane	P7	0.0171	0.0919	0.008	0.008
1c,2-Dimethylcyclopentane	N7	0.0004	0.0021	0.000	0.000
Methylcyclohexane	N7	0.0300	0.1581	0.012	0.012
2,2-Dimethylhexane	I8	0.0009	0.0055	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0011	0.0058	0.000	0.000
2,5-Dimethylhexane	I8	0.0008	0.0049	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0007	0.0043	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0007	0.0042	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
Toluene	A7	0.0213	0.1053	0.007	0.007
2,3-Dimethylhexane	I8	0.0006	0.0037	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0030	0.0184	0.002	0.002
4-Methylheptane	I8	0.0009	0.0055	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0021	0.0129	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0029	0.0174	0.001	0.001
3-Ethylhexane	I8	0.0002	0.0012	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0013	0.0078	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0030	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0010	0.0060	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
UnknownC7s	U7	0.0230	0.1237	0.011	0.011
n-Octane	P8	0.0044	0.0270	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0006	0.0036	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	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	0.0008	0.0054	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0006	0.0036	0.000	0.000
n-Propylcyclopentane	N8	0.0003	0.0018	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
2,5-Dimethylheptane	I9	0.0004	0.0027	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0012	0.0068	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0030	0.0171	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0010	0.0057	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	0.0003	0.0020	0.000	0.000
2-Methyloctane	I9	0.0005	0.0034	0.000	0.000
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	0.0005	0.0034	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000

3,3-Diethylpentane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0007	0.0040	0.000	0.000
i-Butylcyclopentane	N9	0.0003	0.0020	0.000	0.000
n-Nonane	P9	0.0017	0.0117	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0002	0.0013	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0008	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	0.0004	0.0026	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0008	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
2-Methylnonane	I10	0.0001	0.0008	0.000	0.000
3-Methylnonane	I10	0.0002	0.0015	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0022	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0005	0.0034	0.000	0.000
n-Decane	P10	0.0010	0.0076	0.001	0.001
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
3-Ethylnonane	I10	0.0001	0.0009	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0007	0.0054	0.000	0.000
n-Undecane	P11	0.0003	0.0025	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
n-Dodecane	P12	0.0002	0.0018	0.000	0.000
n-Tridecane	P13	0.0001	0.0010	0.000	0.000
n-Tetradecane	P14	0.0001	0.0011	0.000	0.000
TOTAL		100.00000	100.00000	2.5599	2.5736

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0326	0.1366
TOLUENE	0.0213	0.1053
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HHV	GROSS DRY REAL :	1123.6 /scf	1129.7 /scf
	GROSS WET REAL :	1104.0 /scf	1110.1 /scf

NET HEATING VALUE (60 °F ideal reaction):	20707.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	22903.7 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.6428
DENSITY	0.04912 lb/scf
COMPRESSIBILITY FACTOR :	0.9974
REGULAR WOBBE INDEX	1402.1

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

Net Dry Ideal BTU	4655.3 /scf	Relative Density - SG (Air=1)	3.2159	***C6+factors***
Gross Dry Ideal BTU	4997.2 /scf	**Z** Compressiblity Factor	0.99235	0.99149
Net Dry Ideal BTU	19132.5 /lb	Density Factor	245.409 lbm/1000 ft3	
Gross Dry Ideal BTU	20538.7 /lb	Molar Mass or MW	93.127 g/mol	
		Volume Liquid Ideal gas	0.144 scf/gal	24.2

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.