EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-15354**	NAME/DESCRIP :	**110166026 NP I30 EF05D-29 595**
LEASE #:			**BRADEN HEAD**
FIELD/AREA:			

PROJECT NO. :	**202508031**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	AUGUST 11, 2025 16:08
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 31, 2025 13:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	437	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	TBI-554
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	75	ºf	SAMPLING COMPANY:	QB ENERGY OPERATING LLC
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	0.07	0.01	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.19	0.31	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	94.7565	87.7802	---	---
ETHANE	2.9029	5.0404	0.7734	0.7776
PROPANE	1.0284	2.6186	0.2828	0.2843
I-BUTANE	0.1903	0.6387	0.0619	0.0623
N-BUTANE	0.3239	1.0871	0.1019	0.1025
I-PENTANE	0.1206	0.5016	0.0430	0.0432
N-PENTANE	0.0977	0.4070	0.0350	0.0352
HEXANES PLUS	0.2897	1.5564	0.1120	0.1122
TOTALS	100.00000	100.00000	1.4100	1.4173

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0211	0.0952
TOLUENE	0.0171	0.0910
ETHYLBENZENE	0.0024	0.0147
XYLENES	0.0072	0.0440
TOTAL BTEX	0.0478	0.2449

**(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 :	968.2 **/scf**	973.5 **/scf**
	NET WET REAL :	951.3 **/scf**	956.6 **/scf**
HHV	GROSS DRY REAL :	1073.2 **/scf**	1079.1 **/scf**
	GROSS WET REAL :	1054.4 **/scf**	1060.3 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	21252.7 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23549.4 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.5972
DENSITY	0.04563 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9977
REGULAR WOBBE INDEX	1389.9

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202508031	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 11, 2025 16:08
ACCOUNT NO. :		SAMPLE DATE :	JULY 31, 2025 13:30
PRODUCER :		CYLINDER NO. :	TBI-554
LEASE NO. :		SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	110166026 NP I30 EF05D-29 595 BRADEN HEAD		
FIELD DATA		SAMPLE TEMP. :	75
SAMPLE PRES. :	437	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	***SPOT*** ***NO PROBE***		

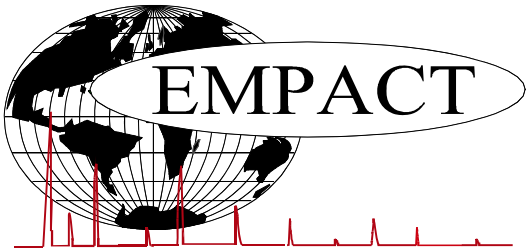
Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.07	0.01
Carbon Dioxide	0.02	0.05
Carbon Monoxide	0.00	0.00
Nitrogen	0.19	0.31
Methane	94.7565	87.7802
Ethane	2.9029	5.0404
Propane	1.0284	2.6186
Isobutane	0.1903	0.6387
n-Butane	0.3239	1.0871
Isopentane	0.1139	0.4745
n-Pentane	0.0977	0.4070
Cyclopentane	0.0067	0.0271
n-Hexane	0.0416	0.2070
Cyclohexane	0.0175	0.0851
Other Hexanes	0.0767	0.3795
Heptanes	0.0499	0.2869
Methylcyclohexane	0.0230	0.1304
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0211	0.0952
Toluene	0.0171	0.0910
Ethylbenzene	0.0024	0.0147
Xylenes	0.0072	0.0440
C8+ Heavies	0.0332	0.2226
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:	968.2	4666.8	5649.2	14796.5	**Btu/scf**
	Net Wet Real:	951.3	4585.2	5550.4	14537.8	**Btu/scf**
HHV	Gross Dry Real:	1073.2	5008.0	6057.5	15903.3	**Btu/scf**
	Gross Wet Real:	1054.4	4920.5	5951.6	15625.3	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1389.9	2781.1	3052.9	4985.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21252.7	19151.8	19529.3	26517.0	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23549.4	20549.2	20943.7	28500.4	**Btu/lbm**
Molar Mass (MW):		17.31743	93.093	114.192	296.58	**g/mol**
Relative Density (AIR=1):		0.5972	3.2144	3.9425	10.2401	**SG**
Density:		0.04563	0.24532	0.30091	0.78154	**lbm/scf**
Compressiblity Factor:		0.9977	0.9925	0.9976	1.0000	**Z**
Liquid Volume real gas @:	**14.65**	17.4103	0.1116	0.0159	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.



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-045-15354**	NAME/DESCRIP :	**110166026 NP I30 EF05D-29 595**
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PRODUCER :		EFFECTIVE DATE:	
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SAMPLE PRES. :	437 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	TBI-554
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	75 ºf	SAMPLING COMPANY:	QB ENERGY OPERATING LLC
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	---	---
Hydrogen	---	0.07	0.01	---	---
Nitrogen	---	0.19	0.31	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	94.7565	87.7802	---	---
Ethane	P2	2.9029	5.0404	0.773	0.778
Propane	P3	1.0284	2.6186	0.283	0.284
i-Butane	I4	0.1903	0.6387	0.062	0.062
n-Butane	P4	0.3239	1.0871	0.102	0.103
2,2-Dimethylpropane	I5	0.0013	0.0054	0.000	0.000
i-Pentane	I5	0.1126	0.4691	0.041	0.041
n-Pentane	P5	0.0977	0.4070	0.035	0.035
2,2-Dimethylbutane	I6	0.0017	0.0085	0.001	0.001
Cyclopentane	N5	0.0067	0.0271	0.002	0.002
2,3-Dimethylbutane	I6	0.0056	0.0279	0.002	0.002
2-Methylpentane	I6	0.0322	0.1602	0.013	0.013
3-Methylpentane	I6	0.0181	0.0901	0.007	0.007
n-Hexane	P6	0.0416	0.2070	0.017	0.017
2,2-Dimethylpentane	I7	0.0007	0.0040	0.000	0.000
Methylcyclopentane	N6	0.0191	0.0928	0.007	0.007
2,4-Dimethylpentane	I7	0.0014	0.0081	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0017	0.000	0.000
Benzene	A6	0.0211	0.0952	0.006	0.006
3,3-Dimethylpentane	I7	0.0003	0.0017	0.000	0.000
Cyclohexane	N6	0.0175	0.0851	0.006	0.006
2-Methylhexane	I7	0.0073	0.0422	0.003	0.003
2,3-Dimethylpentane	I7	0.0023	0.0133	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0014	0.0079	0.001	0.001
3-Methylhexane	I7	0.0070	0.0405	0.003	0.003

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1c,3-Dimethylcyclopentane	N7	0.0024	0.0136	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0022	0.0125	0.001	0.001
3-Ethylpentane	I7	0.0004	0.0023	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0035	0.0199	0.002	0.002
n-Heptane	P7	0.0146	0.0845	0.007	0.007
1c,2-Dimethylcyclopentane	N7	0.0048	0.0272	0.002	0.002
Methylcyclohexane	N7	0.0230	0.1304	0.009	0.009
2,2-Dimethylhexane	I8	0.0007	0.0046	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0013	0.000	0.000
Ethylcyclopentane	N7	0.0011	0.0062	0.000	0.000
2,5-Dimethylhexane	I8	0.0007	0.0046	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0006	0.0040	0.000	0.000
2,4-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0007	0.0046	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
Toluene	A7	0.0171	0.0910	0.006	0.006
2,3-Dimethylhexane	I8	0.0007	0.0046	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
2-Methylheptane	I8	0.0037	0.0244	0.002	0.002
4-Methylheptane	I8	0.0010	0.0066	0.001	0.001
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
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0025	0.0165	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0033	0.0214	0.002	0.002
3-Ethylhexane	I8	0.0004	0.0027	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0016	0.0104	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0032	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0013	0.0084	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0012	0.0078	0.001	0.001
n-Octane	P8	0.0052	0.0343	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0008	0.0052	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
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0003	0.0022	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0016	0.0117	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0004	0.0029	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0015	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0010	0.0065	0.000	0.000
n-Propylcyclopentane	N8	0.0005	0.0032	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,5-Dimethylheptane	I9	0.0005	0.0037	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	0.0024	0.0147	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0048	0.0294	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0012	0.0073	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0015	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000

1,2-Dimethylbenzene (o-Xylene)	A8	0.0012	0.0073	0.000	0.000
UnknownC9s	U9	0.0003	0.0022	0.000	0.000
n-Heneicosane	P21	0.0002	0.0034	0.000	0.000
TOTAL		100.00000	100.00000	1.4100	1.4173

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0211	0.0952
TOLUENE	0.0171	0.0910
ETHYLBENZENE	0.0024	0.0147
XYLENES	0.0072	0.0440
TOTAL BTEX	0.0478	0.2449

**(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 :	968.2 /scf	973.5 /scf
	NET WET REAL :	951.3 /scf	956.6 /scf
HHV	GROSS DRY REAL :	1073.2 /scf	1079.1 /scf
	GROSS WET REAL :	1054.4 /scf	1060.3 /scf

NET HEATING VALUE (60 °F ideal reaction):	21252.7 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23549.4 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5972
DENSITY	0.04563 lb/scf
COMPRESSIBILITY FACTOR :	0.9977
REGULAR WOBBE INDEX	1389.9

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

Net Dry Ideal BTU	4646.5 /scf	Relative Density - SG (Air=1)	3.2144		***C6+factors***
Gross Dry Ideal BTU	4986.2 /scf	**Z** Compressiblity Factor	0.99254		0.99177
Net Dry Ideal BTU	19151.8 /lb	Density Factor	245.324	lbm/1000 ft3	
Gross Dry Ideal BTU	20549.2 /lb	Molar Mass or MW	93.093	g/mol	
		Volume Liquid Ideal gas	0.112	scf/gal	24.9

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.*