EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10424**	NAME/DESCRIP :	**EUREKA 8814A N11 397**
LEASE #:			**INTERMEDIATE CASING**
FIELD/AREA:			

PROJECT NO. :	**202509080**	ANALYSIS NO. :	**02**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	SEPTEMBER 22, 2025 15:06
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	SEPTEMBER 11, 2025
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	0753
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
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.41	0.57	---	---
CARBON DIOXIDE	0.92	1.99	---	---
METHANE	83.6214	66.0695	---	---
ETHANE	7.0624	10.4589	1.8841	1.8944
PROPANE	4.5987	9.9872	1.2641	1.2710
I-BUTANE	0.7897	2.2605	0.2580	0.2594
N-BUTANE	1.3353	3.8224	0.4200	0.4223
I-PENTANE	0.4033	1.4312	0.1460	0.1468
N-PENTANE	0.3547	1.2604	0.1280	0.1287
HEXANES PLUS	0.4845	2.1299	0.1850	0.1859
TOTALS	100.00000	100.00000	4.2852	4.3085

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0496	0.1908
TOLUENE	0.0248	0.1125
ETHYLBENZENE	0.0008	0.0042
XYLENES	0.0029	0.0151
TOTAL BTEX	0.0781	0.3226

**(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 :	1094.4 **/scf**	1100.3 **/scf**
	NET WET REAL :	1075.3 **/scf**	1081.2 **/scf**
HHV	GROSS DRY REAL :	1207.6 **/scf**	1214.2 **/scf**
	GROSS WET REAL :	1186.5 **/scf**	1193.1 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	20463.0 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	22580.4 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.7003
DENSITY	0.05350 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9968
REGULAR WOBBE INDEX	1442.9

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202509080	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 22, 2025 15:06
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 11, 2025
PRODUCER :		CYLINDER NO. :	0753
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	EUREKA 8814A N11 397 INTERMEDIATE CASING		

FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :		AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.92	1.99
Nitrogen	0.41	0.57
Methane	83.6214	66.0695
Ethane	7.0624	10.4589
Propane	4.5987	9.9872
Isobutane	0.7897	2.2605
n-Butane	1.3353	3.8224
Isopentane	0.3848	1.3673
n-Pentane	0.3547	1.2604
Cyclopentane	0.0185	0.0639
n-Hexane	0.0878	0.3726
Cyclohexane	0.0340	0.1409
Other Hexanes	0.1678	0.7086
Heptanes	0.0647	0.3179
Methylcyclohexane	0.0326	0.1576
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0496	0.1908
Toluene	0.0248	0.1125
Ethylbenzene	0.0008	0.0042
Xylenes	0.0029	0.0151
C8+ Heavies	0.0195	0.1097
Subtotal	99.99000	99.98000
Oxygen/Argon	0.01	0.02
Total	100.00000	100.00000

Calculated Values BTU @ 14.65		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1094.4	4487.8	5638.7	7170.4	**Btu/scf**
	Net Wet Real:	1075.3	4409.3	5540.1	7045.1	**Btu/scf**
HHV	Gross Dry Real:	1207.6	4815.6	6055.2	7721.8	**Btu/scf**
	Gross Wet Real:	1186.5	4731.4	5949.3	7586.8	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1442.9	2726.7	3060.4	3493.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20463.0	19084.6	19663.3	19176.4	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		22580.4	20479.7	21119.7	20651.0	**Btu/lbm**
Molar Mass (MW):		20.30394	89.287	113.455	142.282	**g/mol**
Relative Density (AIR=1):		0.7003	3.0830	3.9175	4.9126	**SG**
Density:		0.05350	0.23531	0.29898	0.37493	**lbm/scf**
Compressiblity Factor:		0.9968	0.9911	0.9972	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	18.5707	0.1844	0.006	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.

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10424** NAME/DESCRIP : **EUREKA 8814A N11 397 INTERMEDIATE CASING**
LEASE #:
FIELD/AREA:

PROJECT NO. : **202509080** ANALYSIS NO. : **02**
COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: SEPTEMBER 22, 2025 15:06
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : SEPTEMBER 11, 2025
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:

FIELD DATA

SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : psig PROBE :
FLOW PRES. : psig CYLINDER NO. : 0753
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	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.41	0.57	---	---
Carbon Dioxide	---	0.92	1.99	---	---
Methane	P1	83.6214	66.0695	---	---
Ethane	P2	7.0624	10.4589	1.884	1.894
Propane	P3	4.5987	9.9872	1.264	1.271
i-Butane	I4	0.7897	2.2605	0.258	0.259
n-Butane	P4	1.3353	3.8224	0.420	0.422
2,2-Dimethylpropane	I5	0.0020	0.0071	0.001	0.001
i-Pentane	I5	0.3828	1.3602	0.140	0.141
n-Pentane	P5	0.3547	1.2604	0.128	0.129
2,2-Dimethylbutane	I6	0.0026	0.0110	0.001	0.001
Cyclopentane	N5	0.0185	0.0639	0.005	0.005
2,3-Dimethylbutane	I6	0.0120	0.0509	0.005	0.005
2-Methylpentane	I6	0.0780	0.3311	0.032	0.032
3-Methylpentane	I6	0.0388	0.1647	0.016	0.016
n-Hexane	P6	0.0878	0.3726	0.036	0.036
2,2-Dimethylpentane	I7	0.0008	0.0039	0.000	0.000
Methylcyclopentane	N6	0.0364	0.1509	0.013	0.013
2,4-Dimethylpentane	I7	0.0022	0.0108	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0002	0.0010	0.000	0.000
Benzene	A6	0.0496	0.1908	0.014	0.014
3,3-Dimethylpentane	I7	0.0004	0.0020	0.000	0.000
Cyclohexane	N6	0.0340	0.1409	0.012	0.012
2-Methylhexane	I7	0.0106	0.0523	0.005	0.005
2,3-Dimethylpentane	I7	0.0035	0.0173	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0020	0.0096	0.001	0.001

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3-Methylhexane	I7	0.0095	0.0469	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0026	0.0126	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0035	0.0169	0.002	0.002
3-Ethylpentane	I7	0.0006	0.0030	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0056	0.0271	0.003	0.003
n-Heptane	P7	0.0198	0.0977	0.009	0.009
1c,2-Dimethylcyclopentane	N7	0.0005	0.0024	0.000	0.000
Methylcyclohexane	N7	0.0326	0.1576	0.013	0.013
2,2-Dimethylhexane	I8	0.0008	0.0045	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0003	0.0017	0.000	0.000
Ethylcyclopentane	N7	0.0012	0.0058	0.000	0.000
2,5-Dimethylhexane	I8	0.0005	0.0028	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0004	0.0023	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0005	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0009	0.0050	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0005	0.000	0.000
Toluene	A7	0.0248	0.1125	0.008	0.008
2,3-Dimethylhexane	I8	0.0005	0.0028	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0005	0.000	0.000
2-Methylheptane	I8	0.0023	0.0129	0.001	0.001
4-Methylheptane	I8	0.0006	0.0034	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0005	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0005	0.000	0.000
3-Methylheptane	I8	0.0012	0.0067	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0028	0.0155	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0005	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0012	0.0066	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0003	0.0017	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0009	0.0050	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0005	0.000	0.000
UnknownC7s	U7	0.0014	0.0069	0.001	0.001
n-Octane	P8	0.0029	0.0163	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0005	0.0028	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0006	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0008	0.0050	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
Ethylcyclohexane	N8	0.0003	0.0017	0.000	0.000
n-Propylcyclopentane	N8	0.0002	0.0011	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0006	0.000	0.000
Ethylbenzene	I8	0.0008	0.0042	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0018	0.0094	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0006	0.0031	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0001	0.0006	0.000	0.000
2-Methyloctane	I9	0.0001	0.0006	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0006	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0005	0.0026	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0001	0.0006	0.000	0.000
UnknownC9s	U9	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	4.2852	4.3085

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0496	0.1908
TOLUENE	0.0248	0.1125
ETHYLBENZENE	0.0008	0.0042
XYLENES	0.0029	0.0151
TOTAL BTEX	0.0781	0.3226

**(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 :	1094.4 /scf	1100.3 /scf
	NET WET REAL :	1075.3 /scf	1081.2 /scf
HHV	GROSS DRY REAL :	1207.6 /scf	1214.2 /scf
	GROSS WET REAL :	1186.5 /scf	1193.1 /scf

NET HEATING VALUE (60 °F ideal reaction):	20463.0 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	22580.4 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.7003
DENSITY	0.05350 lb/scf
COMPRESSIBILITY FACTOR :	0.9968
REGULAR WOBBE INDEX	1442.9

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

Net Dry Ideal BTU	4461.8 /scf	Relative Density - SG (Air=1)	3.083	***C6+factors***
Gross Dry Ideal BTU	4787.7 /scf	**Z** Compressiblity Factor	0.99109	0.99055
Net Dry Ideal BTU	19084.6 /lb	Density Factor	235.306 lbm/1000 ft3	
Gross Dry Ideal BTU	20479.7 /lb	Molar Mass or MW	89.287 g/mol	
		Volume Liquid Ideal gas	0.185 scf/gal	25.5

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.