



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	NAME/DESCRIP :	LOVE RANCH 6 G-4
LEASE #:	05-103-10513	SURFACE CASING
FIELD/AREA:		
PROJECT NO. :	202509019	ANALYSIS NO. : 02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE: SEPTEMBER 11, 2025 18:09
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE : AUGUST 22, 2025
CUSTOMER REF:		TO:
PRODUCER :		EFFECTIVE DATE:

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

SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	63 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-778
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	°f	SAMPLING COMPANY:	QB ENEGY
AMBIENT TEMP.:	°f	H2S BY STAIN TUBE:	— ppm mol
H2O BY STAIN TUBE:	- #/mmcf	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.65</u>	<u>GPM @ 14.73</u>
ALCOHOLS	0.0011	0.0034	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.51	0.06	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.11	0.17	---	---
CARBON DIOXIDE	0.58	1.41	---	---
METHANE	91.9777	81.6771	---	---
ETHANE	3.7629	6.2631	1.0033	1.0088
PROPANE	1.4240	3.4758	0.3907	0.3929
I-BUTANE	0.2798	0.9002	0.0909	0.0914
N-BUTANE	0.3741	1.2036	0.1179	0.1186
I-PENTANE	0.1335	0.5323	0.0480	0.0482
N-PENTANE	0.0963	0.3846	0.0350	0.0352
HEXANES PLUS	0.7506	3.9199	0.3020	0.3033
<u>TOTALS</u>	<u>100.0000</u>	<u>100.0000</u>	<u>1.9878</u>	<u>1.9984</u>

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0496	0.2144
TOLUENE	0.0325	0.1658
ETHYLBENZENE	0.0013	0.0076
<u>XYLENES</u>	<u>0.0072</u>	<u>0.0423</u>
<u>TOTAL BTEX</u>	<u>0.0906</u>	<u>0.4301</u>

	<u>CALCULATED VALUES**</u>	
	<u>14.65</u>	<u>14.73</u>
BTU @		
LHV NET DRY REAL :	994.0 /scf	999.4 /scf
NET WET REAL :	976.6 /scf	982.0 /scf
HHV GROSS DRY REAL :	1100.1 /scf	1106.1 /scf
GROSS WET REAL :	1080.9 /scf	1086.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		20917.6 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23151.5 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6234
DENSITY		0.04760 lbm/scf
COMPRESSIBILITY FACTOR :		0.9976
REGULAR WOBBE INDEX		1394.3

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)
Mod ASTM D6730,GPA 2261 & GPA 2286.*

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

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



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

PROJECT NO. :	202509019	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	SEPTEMBER 11, 2025 18:09
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 22, 2025
PRODUCER :		CYLINDER NO. :	ECA-778
LEASE NO. :	05-103-10513	SAMPLED BY :	NICK CROY
NAME/DESCRIP :	LOVE RANCH 6 G-4 SURFACE CASING		

FIELD DATA

SAMPLE PRES. :	63	SAMPLE TEMP. :	
H2S BY STAIN TUBE:	— ppm mol	AMBIENT TEMP.:	
COMMENTS :			

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	0.51	0.06
Carbon Dioxide	0.58	1.41
Nitrogen	0.11	0.17
Methane	91.9777	81.6771
Ethane	3.7629	6.2631
Propane	1.4240	3.4758
Isobutane	0.2798	0.9002
n-Butane	0.3741	1.2036
Isopentane	0.1257	0.5020
n-Pentane	0.0963	0.3846
Cyclopentane	0.0078	0.0303
n-Hexane	0.0858	0.4093
Cyclohexane	0.0573	0.2669
Other Hexanes	0.1596	0.7565
Heptanes	0.1721	0.9506
Methylcyclohexane	0.0921	0.5006
2,2,4 Trimethylpentane	0.0002	0.0013
Benzene	0.0496	0.2144
Toluene	0.0325	0.1658
Ethylbenzene	0.0013	0.0076
Xylenes	0.0072	0.0423
C8+ Heavies	0.0929	0.6046
<u>Subtotal</u>	<u>99.99890</u>	<u>99.99660</u>
Oxygen/Argon	0.00	0.00
Alcohols	0.0011	0.0034
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

Calculated Values BTU @		Total	C6+	C8+	C10+
	LHV Net Dry Real:	994.0	4737.4	5813.8	7116.7 Btu/scf
	Net Wet Real:	976.6	4654.6	5712.2	6992.3 Btu/scf
	HHV Gross Dry Real:	1100.1	5085.5	6251.6	7659.4 Btu/scf
	Gross Wet Real:	1080.9	4996.6	6142.3	7525.5 Btu/scf

Other Calculated Values					
Regualr Wobbe Index*	1394.3	2806.5	3117.1	3446.5	Btu/scf
Net Heating Value (60 °F ideal reaction):	20917.6	19186.4	19549.7	19252.2	Btu/lbm
Gross Heating Value (60°F ideal reaction):	23151.5	20603.8	21026.2	20720.9	Btu/lbm
Molar Mass (MW):	18.06572	94.349	116.629	143.796	g/mol
Relative Density (AIR=1):	0.6234	3.2578	4.0274	4.9654	SG
Density:	0.04760	0.24861	0.30735	0.37893	lbm/scf
Compressibility Factor:	0.9976	0.9930	0.9975	0.9995	Z
Liquid Volume real gas @:	17.6436	0.3011	0.0439	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 underscore) indicates there was no tube pulled for H2S.

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:
LEASE #:
FIELD/AREA:

NAME/DESCRIP : **LOVE RANCH 6 G-4**
SURFACE CASING

05-103-10513

PROJECT NO. : **202509019**
COMPANY NAME : **QB ENERGY OPERATING, LLC**
OFFICE / BRANCH: **PARACHUTE, CO**
CUSTOMER REF:
PRODUCER :

ANALYSIS NO. : **02**
ANALYSIS DATE: **SEPTEMBER 11, 2025 18:09**
SAMPLE DATE : **AUGUST 22, 2025**
TO:
EFFECTIVE DATE:

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

SAMPLE CYCLE:
SAMPLE PRES. : **63** **psig**
FLOW PRES. : **psig**
LAB PRES: **psig**
SAMPLE TEMP. : **°f**
AMBIENT TEMP.: **°f**
H2O BY STAIN TUBE: **-** **#/mmcf**
FIELD COMMENTS:
LAB COMMENTS:

SAMPLE TYPE:
PROBE :
CYLINDER NO. : **ECA-778**
SAMPLED BY : **NICK CROY**
SAMPLING COMPANY: **QB ENEGY**
H2S BY STAIN TUBE: **-** **ppm mol**
CO2 BY STAIN TUBE: **-** **Mol %**

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
Hydrogen	---	0.51	0.06	---	---
Nitrogen	---	0.11	0.17	---	---
Carbon Dioxide	---	0.58	1.41	---	---
Methane	P1	91.9777	81.6771	---	---
Ethane	P2	3.7629	6.2631	1.003	1.009
Propane	P3	1.4240	3.4758	0.391	0.393
i-Butane	I4	0.2798	0.9002	0.091	0.091
n-Butane	P4	0.3741	1.2036	0.118	0.119
2,2-Dimethylpropane	I5	0.0027	0.0108	0.001	0.001
Ethanol	X2	0.0002	0.0005	0.000	0.000
i-Pentane	I5	0.1230	0.4912	0.045	0.045
Acetone	X3	0.0003	0.0009	0.000	0.000
i-Propanol	X3	0.0006	0.0020	0.000	0.000
n-Pentane	P5	0.0963	0.3846	0.035	0.035
2,2-Dimethylbutane	I6	0.0074	0.0353	0.003	0.003
Cyclopentane	N5	0.0078	0.0303	0.002	0.002
2,3-Dimethylbutane	I6	0.0137	0.0654	0.006	0.006
2-Methylpentane	I6	0.0583	0.2781	0.024	0.024
3-Methylpentane	I6	0.0358	0.1708	0.015	0.015
n-Hexane	P6	0.0858	0.4093	0.035	0.035
2,2-Dimethylpentane	I7	0.0038	0.0211	0.002	0.002
Methylcyclopentane	N6	0.0444	0.2069	0.016	0.016
2,4-Dimethylpentane	I7	0.0058	0.0322	0.003	0.003
2,2,3-Trimethylbutane	I7	0.0015	0.0083	0.001	0.001
Benzene	A6	0.0496	0.2144	0.014	0.014
3,3-Dimethylpentane	I7	0.0024	0.0133	0.001	0.001
Cyclohexane	N6	0.0573	0.2669	0.019	0.019
2-Methylhexane	I7	0.0289	0.1603	0.013	0.013

2,3-Dimethylpentane	I7	0.0078	0.0433	0.004	0.004
1,1-Dimethylcyclopentane	N7	0.0058	0.0315	0.002	0.002
3-Methylhexane	I7	0.0263	0.1459	0.012	0.012
1c,3-Dimethylcyclopentane	N7	0.0083	0.0451	0.004	0.004
1t,3-Dimethylcyclopentane	N7	0.0075	0.0407	0.003	0.003
3-Ethylpentane	I7	0.0014	0.0078	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0118	0.0642	0.005	0.005
2,2,4-Trimethylpentane	I8	0.0002	0.0013	0.000	0.000
n-Heptane	P7	0.0571	0.3167	0.026	0.026
1c,2-Dimethylcyclopentane	N7	0.0005	0.0027	0.000	0.000
Methylcyclohexane	N7	0.0921	0.5006	0.037	0.037
2,2-Dimethylhexane	I8	0.0031	0.0196	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0030	0.0163	0.001	0.001
2,5-Dimethylhexane	I8	0.0028	0.0177	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0025	0.0158	0.001	0.001
2,4-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0018	0.0112	0.001	0.001
3,3-Dimethylhexane	I8	0.0008	0.0050	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0325	0.1658	0.011	0.011
2,3-Dimethylhexane	I8	0.0016	0.0101	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0003	0.0019	0.000	0.000
2-Methylheptane	I8	0.0096	0.0607	0.005	0.005
4-Methylheptane	I8	0.0029	0.0183	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0003	0.0019	0.000	0.000
3,4-Dimethylhexane	I8	0.0003	0.0019	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	0.0066	0.0417	0.003	0.003
1c,2t,3-Trimethylcyclopentane	N8	0.0091	0.0565	0.005	0.005
3-Ethylhexane	I8	0.0003	0.0019	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0037	0.0230	0.002	0.002
1,1-Dimethylcyclohexane	N8	0.0014	0.0087	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0003	0.0019	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0025	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	0.0024	0.0149	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0146	0.0923	0.007	0.007
1c,4-Dimethylcyclohexane	N8	0.0017	0.0106	0.001	0.001
i-Propylcyclopentane	I8	0.0002	0.0012	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0003	0.0021	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	0.0007	0.0050	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0019	0.0133	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0003	0.0021	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
Ethylcyclohexane	N8	0.0016	0.0100	0.001	0.001
n-Propylcyclopentane	N8	0.0009	0.0056	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,5-Dimethylheptane	I9	0.0012	0.0085	0.001	0.001
3,3-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000

1,1,3-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
Ethylbenzene	I8	0.0013	0.0076	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0046	0.0270	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0015	0.0088	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	0.0050	0.000	0.000
2-Methyloctane	I9	0.0010	0.0071	0.001	0.001
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	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	0.0009	0.0063	0.001	0.001
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	0.0011	0.0065	0.000	0.000
i-Butylcyclopentane	N9	0.0006	0.0042	0.000	0.000
UnknownC8s	U8	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0030	0.0213	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0004	0.0028	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0013	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0004	0.0028	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0033	0.000	0.000
3,6-Dimethyloctane	I10	0.0002	0.0016	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0005	0.0033	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0004	0.0027	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
5-Methylnonane	I10	0.0002	0.0016	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
2-Methylnonane	I10	0.0002	0.0016	0.000	0.000
3-Ethylheptane	I10	0.0001	0.0008	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0006	0.0045	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0008	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0011	0.0078	0.001	0.001
n-Decane	P10	0.0006	0.0047	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
Sec-Butylcyclohexane	A10	0.0001	0.0008	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
1,4-Methyl-t-butylbenzene	A11	0.0001	0.0008	0.000	0.000
UnknownC10s	U10	0.0013	0.0102	0.001	0.001
n-Undecane	P11	0.0001	0.0009	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
n-Heptadecane	P17	0.0001	0.0013	0.000	0.000
TOTAL		100.00000	100.00000	1.9878	1.9984

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0496	0.2144
TOLUENE	0.0325	0.1658
ETHYLBENZENE	0.0013	0.0076
XYLENES	0.0072	0.0423
TOTAL BTEX	0.0906	0.4301

*(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 :	994.0 /scf	999.4 /scf
NET WET REAL :	976.6 /scf	982.0 /scf
HHV GROSS DRY REAL :	1100.1 /scf	1106.1 /scf
GROSS WET REAL :	1080.9 /scf	1086.9 /scf
NET HEATING VALUE (60 °F ideal reaction):		20917.6 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23151.5 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6234
DENSITY		0.04760 lb/scf
COMPRESSIBILITY FACTOR :		0.9976
REGULAR WOBBE INDEX		1394.3

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

Net Dry Ideal BTU	<u>4718.9 /scf</u>	Relative Density - SG (Air=1)	<u>3.2578</u>	C6+ factors
Gross Dry Ideal BTU	<u>5065.6 /scf</u>	Z Compressibility Factor	<u>0.99297</u>	<u>0.99228</u>
Net Dry Ideal BTU	<u>19186.4 /lb</u>	Density Factor	<u>248.613 lbm/1000 ft3</u>	
Gross Dry Ideal BTU	<u>20603.8 /lb</u>	Molar Mass or MW	<u>94.349 g/mol</u>	
		Volume Liquid Ideal gas	<u>0.302 scf/gal</u>	<u>24.2</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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