



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-045-05130** NAME/DESCRIP : **120286008 DOUBLE WILLOW 8610A J19 497**
 LEASE #: **COC-50268** **BRADEN HEAD**
 FIELD/AREA: **WILLOW CREEK**

PROJECT NO. : **202603103** ANALYSIS NO. : **02**
 COMPANY NAME : **QB ENERGY OPERATING, LLC** ANALYSIS DATE: **APRIL 11, 2026 14:21**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **MARCH 15, 2026**
 CUSTOMER REF: TO:
 PRODUCER : **QB ENERGY OPERATING LLC** EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
 SAMPLE PRES. : 68 psig PROBE : NO
 FLOW PRES. : psig CYLINDER NO. : ECA-733
 LAB PRES: psig SAMPLED BY : MIKE KELLEY
 SAMPLE TEMP. : 38 °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 @	
			14.65	14.73
ALCOHOLS	0.0003	0.0006	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.02	0.04	---	---
NITROGEN	0.77	1.32	---	---
CARBON DIOXIDE	0.63	1.70	---	---
METHANE	98.5616	96.9047	---	---
ETHANE	0.0171	0.0315	0.0050	0.0050
PROPANE	0.0005	0.0014	0.0000	0.0000
I-BUTANE	0.0003	0.0010	0.0000	0.0000
N-BUTANE	0.0001	0.0004	0.0000	0.0000
I-PENTANE	0.0001	0.0004	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000	0.0000
HEXANES PLUS	0.0000	0.0000	0.0000	0.0000
TOTALS	100.00000	100.00000	0.0050	0.0050

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0000	0.0000
TOLUENE	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0000	0.0000

	CALCULATED VALUES**	
	14.65	14.73
BTU @		
LHV NET DRY REAL :	895.6 /scf	900.5 /scf
NET WET REAL :	879.9 /scf	884.8 /scf
HHV GROSS DRY REAL :	994.7 /scf	1000.1 /scf
GROSS WET REAL :	977.3 /scf	982.7 /scf
NET HEATING VALUE (60 °F ideal reaction):		20852.3 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23160.3 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.5633
DENSITY		0.04299 lbm/scf
COMPRESSIBILITY FACTOR :		0.9980
REGULAR WOBBE INDEX		1326.8

*(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. :	202603103	ANALYSIS NO. :	02
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	APRIL 11, 2026 14:21
ACCOUNT NO. :		SAMPLE DATE :	MARCH 15, 2026
PRODUCER :	QB ENERGY OPERATING LLC	CYLINDER NO. :	ECA-733
LEASE NO. :	COC-50268	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	120286008 DOUBLE WILLOW 8610A J19 497 BRADEN HEAD		

FIELD DATA		SAMPLE TEMP. :	38
SAMPLE PRES. :	68	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	<i>SPOT</i>		<i>NO PROBE</i>

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.63	1.70
Nitrogen	0.77	1.32
Methane	98.5616	96.9047
Ethane	0.0171	0.0315
Propane	0.0005	0.0014
Isobutane	0.0003	0.0010
n-Butane	0.0001	0.0004
Isopentane	0.0001	0.0004
n-Pentane	0.0000	0.0000
Cyclopentane	0.0000	0.0000
n-Hexane	0.0000	0.0000
Cyclohexane	0.0000	0.0000
Other Hexanes	0.0000	0.0000
Heptanes	0.0000	0.0000
Methylcyclohexane	0.0000	0.0000
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0000	0.0000
<u>Subtotal</u>	<u>99.97970</u>	<u>99.95940</u>
Oxygen/Argon	0.02	0.04
Alcohols	0.0003	0.0006
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

	<u>Total</u>	<u>C6+</u>	<u>C8+</u>	<u>C10+</u>	
<u>Calculated Values BTU @</u>	<u>Sample</u>	<u>Fraction</u>	<u>Fraction</u>	<u>Fraction</u>	
LHV Net Dry Real:	895.6	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Net Wet Real:	879.9	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
HHV Gross Dry Real:	994.7	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Gross Wet Real:	977.3	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Other Calculated Values					
Regualr Wobbe Index*	1326.8	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Net Heating Value (60 °F ideal reaction):	20852.3	#DIV/0!	#DIV/0!	#DIV/0!	Btu/lbm
Gross Heating Value (60°F ideal reaction):	23160.3	#DIV/0!	#DIV/0!	#DIV/0!	Btu/lbm
Molar Mass (MW):	16.31685	#DIV/0!	#DIV/0!	#DIV/0!	g/mol
Relative Density (AIR=1):	0.5633	#DIV/0!	#DIV/0!	#DIV/0!	SG
Density:	0.04299	#DIV/0!	#DIV/0!	#DIV/0!	lbm/scf
Compressibility Factor:	0.9980	#DIV/0!	#DIV/0!	#DIV/0!	Z
Liquid Volume real gas @:	16.8112	0	0	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. : **68** psig PROBE : **NO**
 FLOW PRES. : psig CYLINDER NO. : **ECA-733**
 LAB PRES: psig SAMPLED BY : **MIKE KELLEY**
 SAMPLE TEMP. : **38** °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
Oxygen/Argon	---	0.02	0.04	---	---
Nitrogen	---	0.77	1.32	---	---
Carbon Dioxide	---	0.63	1.70	---	---
Methane	P1	98.5616	96.9047	---	---
Ethane	P2	0.0171	0.0315	0.005	0.005
Propane	P3	0.0005	0.0014	0.000	0.000
i-Butane	I4	0.0003	0.0010	0.000	0.000
Methanol	X1	0.0003	0.0006	0.000	0.000
n-Butane	P4	0.0001	0.0004	0.000	0.000
i-Pentane	I5	0.0001	0.0004	0.000	0.000
TOTAL		100.00000	100.00000	0.0050	0.0050

CALCULATED VALUES**

BTEX COMPONENTS	MOLE%	WT%	BTU @ 14.65	14.73
BENZENE	0.0000	0.0000	LHV NET DRY REAL : 895.6 /scf	900.5 /scf
TOLUENE	0.0000	0.0000	NET WET REAL : 879.9 /scf	884.8 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL : 994.7 /scf	1000.1 /scf
XYLENES	0.0000	0.0000	GROSS WET REAL : 977.3 /scf	982.7 /scf
TOTAL BTEX	0.0000	0.0000	NET HEATING VALUE (60 °F ideal reaction):	20852.3 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):	23160.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):	0.5633
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			COMPRESSIBILITY FACTOR :	0.9980
			REGULAR WOBBE INDEX	1326.8

**(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	#DIV/0! /scf	Relative Density - SG (Air=1)	#DIV/0!	C6+ factors
Gross Dry Ideal BTU	#DIV/0! /scf	Z Compressibility Factor	#DIV/0!	#DIV/0!
Net Dry Ideal BTU	#DIV/0! /lb	Density Factor	#DIV/0! lbm/1000 ft3	
Gross Dry Ideal BTU	#DIV/0! /lb	Molar Mass or MW	#DIV/0! g/mol	
		Volume Liquid Ideal gas	0 scf/gal	#DIV/0!
<p>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.</p>				

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