EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-19137**	NAME/DESCRIP :	**110140142 SGU F25 8510AX-25 496**
LEASE #:			**PRODUCTION CASING**
FIELD/AREA:			

PROJECT NO. :	**202508024**	ANALYSIS NO. :	**01**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	AUGUST 10, 2025 15:58
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 31, 2025 08:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	720	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	77
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	59	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
GLYCOLS	0.0002	0.0011	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.09	0.13	---	---
CARBON DIOXIDE	3.91	9.15	---	---
METHANE	88.6554	75.6054	---	---
ETHANE	5.1073	8.1637	1.3611	1.3685
PROPANE	1.1353	2.6613	0.3118	0.3135
I-BUTANE	0.3181	0.9829	0.1039	0.1045
N-BUTANE	0.2051	0.6337	0.0640	0.0643
I-PENTANE	0.1295	0.4963	0.0470	0.0472
N-PENTANE	0.0680	0.2608	0.0250	0.0251
HEXANES PLUS	0.3710	1.9146	0.1480	0.1483
TOTALS	100.00000	100.00000	2.0608	2.0714

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0189	0.0785
TOLUENE	0.0253	0.1239
ETHYLBENZENE	0.0011	0.0062
XYLENES	0.0098	0.0554
TOTAL BTEX	0.0551	0.2640

**(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 :	954.9 **/scf**	960.1 **/scf**
	NET WET REAL :	938.2 **/scf**	943.4 **/scf**
HHV	GROSS DRY REAL :	1057.1 **/scf**	1062.9 **/scf**
	GROSS WET REAL :	1038.6 **/scf**	1044.4 **/scf**

NET HEATING VALUE (60 °F ideal reaction):	19291.9 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	21359.4 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6482
DENSITY	0.04957 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9975
REGULAR WOBBE INDEX	1313.9

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202508024	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	AUGUST 10, 2025 15:58
ACCOUNT NO. :		SAMPLE DATE :	JULY 31, 2025 08:30
PRODUCER :		CYLINDER NO. :	77
LEASE NO. :		SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	110140142 SGU F25 8510AX-25 496 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	59
SAMPLE PRES. :	720	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	3.91	9.15
Nitrogen	0.09	0.13
Methane	88.6554	75.6054
Ethane	5.1073	8.1637
Propane	1.1353	2.6613
Isobutane	0.3181	0.9829
n-Butane	0.2051	0.6337
Isopentane	0.1264	0.4848
n-Pentane	0.0680	0.2608
Cyclopentane	0.0031	0.0115
n-Hexane	0.0344	0.1576
Cyclohexane	0.0187	0.0837
Other Hexanes	0.0899	0.4098
Heptanes	0.0732	0.3881
Methylcyclohexane	0.0337	0.1759
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0189	0.0785
Toluene	0.0253	0.1239
Ethylbenzene	0.0011	0.0062
Xylenes	0.0098	0.0554
C8+ Heavies	0.0660	0.4355
Subtotal	99.99980	99.99890
Oxygen/Argon	0.00	0.00
Glycols	0.0002	0.0011
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	954.9	4868.5	6055.5	7943.2	**Btu/scf**
	Net Wet Real:	938.2	4783.4	5949.6	7804.3	**Btu/scf**
HHV	Gross Dry Real:	1057.1	5226.2	6505.8	8563.6	**Btu/scf**
	Gross Wet Real:	1038.6	5134.8	6392.1	8413.9	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1313.9	2844.3	3179.0	3676.2	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19291.9	19153.0	19363.8	18668.5	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21359.4	20560.6	20801.7	20120.7	**Btu/lbm**
Molar Mass (MW):		18.81211	97.078	121.605	158.088	**g/mol**
Relative Density (AIR=1):		0.6482	3.3525	4.1992	5.4585	**SG**
Density:		0.04957	0.25583	0.32045	0.41660	**lbm/scf**
Compressiblity Factor:		0.9975	0.9934	0.9982	0.9998	**Z**
Liquid Volume real gas @:	**14.65**	17.6745	0.1475	0.0349	0.005	**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:	**05-045-19137**	NAME/DESCRIP :	**110140142 SGU F25 8510AX-25 496**
LEASE #:			**PRODUCTION CASING**
FIELD/AREA:			
PROJECT NO. :	**202508024**	ANALYSIS NO. :	**01**
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OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 31, 2025 08:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	720 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	77
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	59 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	---	---
Nitrogen	---	0.09	0.13	---	---
Carbon Dioxide	---	3.91	9.15	---	---
Methane	P1	88.65540	75.60540	---	---
Ethane	P2	5.1073	8.1637	1.361	1.369
Propane	P3	1.1353	2.6613	0.312	0.314
i-Butane	I4	0.3181	0.9829	0.104	0.105
n-Butane	P4	0.2051	0.6337	0.064	0.064
2,2-Dimethylpropane	I5	0.0054	0.0207	0.002	0.002
i-Pentane	I5	0.1210	0.4641	0.044	0.044
n-Pentane	P5	0.0680	0.2608	0.025	0.025
2,2-Dimethylbutane	I6	0.0076	0.0348	0.003	0.003
Cyclopentane	N5	0.0031	0.0115	0.001	0.001
2,3-Dimethylbutane	I6	0.0095	0.0435	0.004	0.004
2-Methylpentane	I6	0.0347	0.1589	0.014	0.014
3-Methylpentane	I6	0.0199	0.0912	0.008	0.008
n-Hexane	P6	0.0344	0.1576	0.014	0.014
2,2-Dimethylpentane	I7	0.0020	0.0106	0.001	0.001
Methylcyclopentane	N6	0.0182	0.0814	0.006	0.006
2,4-Dimethylpentane	I7	0.0028	0.0149	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0008	0.0043	0.000	0.000
Benzene	A6	0.0189	0.0785	0.005	0.005
3,3-Dimethylpentane	I7	0.0012	0.0064	0.001	0.001
Cyclohexane	N6	0.0187	0.0837	0.006	0.006
2-Methylhexane	I7	0.0119	0.0634	0.006	0.006
2,3-Dimethylpentane	I7	0.0031	0.0165	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0024	0.0126	0.001	0.001
3-Methylhexane	I7	0.0108	0.0575	0.005	0.005

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1c,3-Dimethylcyclopentane	N7	0.0032	0.0167	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0029	0.0152	0.001	0.001
3-Ethylpentane	I7	0.0006	0.0032	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0046	0.0240	0.002	0.002
n-Heptane	P7	0.0201	0.1071	0.009	0.009
1c,2-Dimethylcyclopentane	N7	0.0053	0.0276	0.002	0.002
Methylcyclohexane	N7	0.0337	0.1759	0.014	0.014
2,2-Dimethylhexane	I8	0.0010	0.0061	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0003	0.0018	0.000	0.000
Ethylcyclopentane	N7	0.0012	0.0063	0.000	0.000
2,5-Dimethylhexane	I8	0.0013	0.0079	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0010	0.0061	0.001	0.001
2,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0007	0.0042	0.000	0.000
3,3-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0253	0.1239	0.008	0.008
2,3-Dimethylhexane	I8	0.0009	0.0055	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0050	0.0304	0.003	0.003
4-Methylheptane	I8	0.0016	0.0097	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	0.0040	0.0243	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0049	0.0292	0.003	0.003
3-Ethylhexane	I8	0.0004	0.0025	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0022	0.0131	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0009	0.0054	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	0.0002	0.0012	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0012	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	0.0015	0.0089	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0036	0.0215	0.002	0.002
n-Octane	P8	0.0058	0.0352	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0011	0.0065	0.001	0.001
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0004	0.0027	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0010	0.0067	0.001	0.001
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	0.0011	0.0065	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0024	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0003	0.0020	0.000	0.000
2,5-Dimethylheptane	I9	0.0010	0.0068	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	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0011	0.0062	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0066	0.0373	0.003	0.003
1,4-Dimethylbenzene (p-Xylene)	A8	0.0021	0.0119	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	0.0048	0.000	0.000

2-Methyloctane	I9	0.0011	0.0075	0.001	0.001
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	0.0010	0.0067	0.001	0.001
3,3-Diethylpentane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0011	0.0062	0.000	0.000
i-Butylcyclopentane	N9	0.0005	0.0034	0.000	0.000
UnknownC8s	U8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0033	0.0225	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0020	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0004	0.0026	0.000	0.000
Diethylene glycol	GL4	0.0002	0.0011	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0004	0.0026	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0007	0.0045	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
5-Methylnonane	I10	0.0002	0.0015	0.000	0.000
1,2-Methylethylbenzene	A9	0.0003	0.0019	0.000	0.000
2-Methylnonane	I10	0.0001	0.0007	0.000	0.000
3-Ethyloctane	I10	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0002	0.0015	0.000	0.000
t-Butylbenzene	A10	0.0005	0.0036	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0007	0.000	0.000
sec-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0009	0.0061	0.001	0.001
n-Decane	P10	0.0014	0.0106	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
3-Ethylnonane	I10	0.0002	0.0017	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,4-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
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0002	0.0014	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0011	0.0084	0.001	0.001
n-Undecane	P11	0.0012	0.0100	0.001	0.001
5-Methylindan	A11	0.0001	0.0007	0.000	0.000
1,2-Ethyl-n-propylbenzene	A11	0.0001	0.0008	0.000	0.000
sec-Pentylbenzene	A11	0.0001	0.0008	0.000	0.000
n-Pentylbenzene	A11	0.0001	0.0008	0.000	0.000
1,2-Di-n-propylbenzene	A11	0.0001	0.0009	0.000	0.000
Naphthalene	A10	0.0001	0.0007	0.000	0.000
UnknownC11s	U11	0.0003	0.0025	0.000	0.000
n-Dodecane	P12	0.0011	0.0099	0.001	0.001
1,3,5-Triethylbenzene	A12	0.0002	0.0017	0.000	0.000
1,4-Methyl-n-pentylbenzene	A12	0.0002	0.0017	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0009	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0002	0.0016	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0007	0.000	0.000
UnknownC12s	U12	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0007	0.0069	0.001	0.001
n-Tetradecane	P14	0.0004	0.0042	0.000	0.000

UnknownC14s	U14	0.0001	0.0011	0.000	0.000
n-Pentadecane	P15	0.0002	0.0022	0.000	0.000
UnknownC15s	U15	0.0001	0.0011	0.000	0.000
n-Hexadecane	P16	0.0001	0.0012	0.000	0.000
UnknownC16s	U16	0.0001	0.0012	0.000	0.000
n-Heneicosane	P21	0.0002	0.0031	0.000	0.000
TOTAL		100.00000	100.00000	2.0608	2.0714

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0189	0.0785
TOLUENE	0.0253	0.1239
ETHYLBENZENE	0.0011	0.0062
XYLENES	0.0098	0.0554
TOTAL BTEX	0.0551	0.2640

**(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 :	954.9 /scf	960.1 /scf
	NET WET REAL :	938.2 /scf	943.4 /scf
HHV	GROSS DRY REAL :	1057.1 /scf	1062.9 /scf
	GROSS WET REAL :	1038.6 /scf	1044.4 /scf
	NET HEATING VALUE (60 °F ideal reaction):		19291.9 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		21359.4 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6482
	DENSITY		0.04957 lb/scf
	COMPRESSIBILITY FACTOR :		0.9975
	REGULAR WOBBE INDEX		1313.9

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

Net Dry Ideal BTU	4851.5 /scf	Relative Density - SG (Air=1)	3.3525		***C6+factors***
Gross Dry Ideal BTU	5207.9 /scf	**Z** Compressiblity Factor	0.99338		0.9926
Net Dry Ideal BTU	19153 /lb	Density Factor	255.829	lbm/1000 ft3	
Gross Dry Ideal BTU	20560.6 /lb	Molar Mass or MW	97.078	g/mol	
		Volume Liquid Ideal gas	0.148	scf/gal	23.9

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.