EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10589**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T62X-11G2**
LEASE #:	**05-103-10589**		**PRIMARY CASING**
FIELD/AREA:	**PICEANCE CREEK - #68800**		
PROJECT NO. :	**202407081**	ANALYSIS NO. :	**01**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	JULY 23, 2024 09:43
OFFICE / BRANCH:	PARACHUTE	SAMPLE DATE :	JULY 11, 2024 11:00
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS PICEANCE LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	500	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	TBI-592
LAB PRES:		psig	SAMPLED BY :	RYAN POZORSKI
SAMPLE TEMP. :	82	ºf	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:		#/mmcf	CO2 BY STAIN TUBE:	Mol %

FIELD COMMENTS:

LAB COMMENTS: ***Cylinder TBI-592: Low sample volume; Insufficient sample for ISO-NG analysis.***

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0018	0.0030	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.17	0.25	---	---
CARBON DIOXIDE	2.83	6.51	---	---
METHANE	86.9394	72.9040	---	---
ETHANE	6.4417	10.1248	1.7172	1.7266
PROPANE	2.1569	4.9716	0.5927	0.5960
I-BUTANE	0.4437	1.3480	0.1449	0.1457
N-BUTANE	0.4031	1.2247	0.1269	0.1276
I-PENTANE	0.1419	0.5347	0.0520	0.0522
N-PENTANE	0.0948	0.3575	0.0340	0.0342
HEXANES PLUS	0.3667	1.7517	0.1410	0.1415
TOTALS	100.00000	100.00000	2.8087	2.8238

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0172	0.0703
TOLUENE	0.0107	0.0515
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0003	0.0017
TOTAL BTEX	0.0283	0.1241

**(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 :	994.8 /scf	1000.3 /scf
	NET WET REAL :	977.4 /scf	982.9 /scf
HHV	GROSS DRY REAL :	1100.8 /scf	1106.8 /scf
	GROSS WET REAL :	1081.6 /scf	1087.6 /scf
	NET HEATING VALUE (60 °F ideal reaction):		19756.3 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		21852.6 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6602
	DENSITY		0.05041 lbm/scf
	COMPRESSIBILITY FACTOR :		0.9973
	REGULAR WOBBE INDEX		1355.4

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202407081	ANALYSIS NO. :	01
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	JULY 23, 2024 09:43
ACCOUNT NO. :		SAMPLE DATE :	JULY 11, 2024 11:00
PRODUCER :	CAERUS PICEANCE LLC	CYLINDER NO. :	TBI-592
LEASE NO. :	05-103-10589	SAMPLED BY :	RYAN POZORSKI
NAME/DESCRIP :	PICEANCE CREEK UNIT T62X-11G2 PRIMARY CASING		
FIELD DATA		SAMPLE TEMP. :	82
SAMPLE PRES. :	500	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	***SPOT*** ***NO PROBE*** *Cylinder TBI-592: Low sample volume; Insufficient sample for ISO-NG analysis.*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.83	6.51
Nitrogen	0.17	0.25
Methane	86.9394	72.9040
Ethane	6.4417	10.1248
Propane	2.1569	4.9716
Isobutane	0.4437	1.3480
n-Butane	0.4031	1.2247
Isopentane	0.1373	0.5178
n-Pentane	0.0948	0.3575
Cyclopentane	0.0046	0.0169
n-Hexane	0.0613	0.2762
Cyclohexane	0.0335	0.1474
Other Hexanes	0.1095	0.4905
Heptanes	0.0889	0.4634
Methylcyclohexane	0.0383	0.1966
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0172	0.0703
Toluene	0.0107	0.0515
Ethylbenzene	0.0001	0.0006
Xylenes	0.0003	0.0017
C8+ Heavies	0.0069	0.0535
Subtotal	99.98820	99.97700
Oxygen/Argon	0.01	0.02
Alcohols	0.0018	0.0030
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	994.8	4623.7	7385.2	8374.4	**Btu/scf**
	Net Wet Real:	977.4	4542.9	7256.1	8228.0	**Btu/scf**
HHV	Gross Dry Real:	1100.8	4970.0	7933.1	8998.0	**Btu/scf**
	Gross Wet Real:	1081.6	4883.1	7794.4	8840.7	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1355.4	2782.6	3534.1	3780.8	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19756.3	19214.0	18683.8	18411.1	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21852.6	20658.3	20070.0	19780.7	**Btu/lbm**
Molar Mass (MW):		19.13026	91.395	146.664	165.056	**g/mol**
Relative Density (AIR=1):		0.6602	3.1556	5.0642	5.6985	**SG**
Density:		0.05041	0.24084	0.38648	0.43494	**lbm/scf**
Compressiblity Factor:		0.9973	0.9915	0.9994	0.9999	**Z**
Liquid Volume real gas @:	**14.65**	17.9566	0.1406	0.001	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 uderscore) indicates there was no tube pulled for H2S.

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

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FIELD/AREA:	**PICEANCE CREEK - #68800**		
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PRODUCER :	CAERUS PICEANCE LLC	EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	500 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	TBI-592
LAB PRES:	psig	SAMPLED BY :	RYAN POZORSKI
SAMPLE TEMP. :	82 ºf	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:	***Cylinder TBI-592: Low sample volume; Insufficient sample for ISO-NG analysis.***		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Helium	---	0.00	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.17	0.25	---	---
Carbon Dioxide	---	2.83	6.51	---	---
Methane	P1	86.9394	72.9040	---	---
Ethane	P2	6.4417	10.1248	1.717	1.727
Propane	P3	2.1569	4.9716	0.593	0.596
i-Butane	I4	0.4437	1.3480	0.145	0.146
Methanol	X1	0.0018	0.0030	0.000	0.000
n-Butane	P4	0.4031	1.2247	0.127	0.128
2,2-Dimethylpropane	I5	0.0040	0.0151	0.002	0.002
i-Pentane	I5	0.1333	0.5027	0.049	0.049
n-Pentane	P5	0.0948	0.3575	0.034	0.034
2,2-Dimethylbutane	I6	0.0054	0.0243	0.002	0.002
Cyclopentane	N5	0.0046	0.0169	0.001	0.001
2,3-Dimethylbutane	I6	0.0098	0.0442	0.004	0.004
2-Methylpentane	I6	0.0433	0.1950	0.018	0.018
3-Methylpentane	I6	0.0254	0.1144	0.010	0.010
n-Hexane	P6	0.0613	0.2762	0.025	0.025
2,2-Dimethylpentane	I7	0.0018	0.0094	0.001	0.001
Methylcyclopentane	N6	0.0256	0.1126	0.009	0.009
2,4-Dimethylpentane	I7	0.0032	0.0168	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0007	0.0037	0.000	0.000
Benzene	A6	0.0172	0.0703	0.005	0.005
3,3-Dimethylpentane	I7	0.0011	0.0057	0.000	0.000
Cyclohexane	N6	0.0335	0.1474	0.011	0.011
2-Methylhexane	I7	0.0160	0.0838	0.007	0.007
2,3-Dimethylpentane	I7	0.0037	0.0194	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0036	0.0184	0.001	0.001

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3-Methylhexane	I7	0.0141	0.0739	0.006	0.006
1c,3-Dimethylcyclopentane	N7	0.0049	0.0251	0.002	0.002
1t,3-Dimethylcyclopentane	N7	0.0045	0.0231	0.002	0.002
3-Ethylpentane	I7	0.0005	0.0026	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0074	0.0380	0.003	0.003
n-Heptane	P7	0.0261	0.1367	0.012	0.012
1c,2-Dimethylcyclopentane	N7	0.0005	0.0026	0.000	0.000
Methylcyclohexane	N7	0.0383	0.1966	0.015	0.015
2,2-Dimethylhexane	I8	0.0004	0.0024	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0007	0.0036	0.000	0.000
2,5-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0107	0.0515	0.004	0.004
2,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0001	0.0006	0.000	0.000
4-Methylheptane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0001	0.0006	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0001	0.0006	0.000	0.000
1c,4-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0002	0.0011	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0002	0.0014	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
3-Methylnonane	I10	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
n-Decane	P10	0.0003	0.0022	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0001	0.0007	0.000	0.000
n-Undecane	P11	0.0007	0.0057	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0007	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0001	0.0008	0.000	0.000
1,4-Ethyl-t-butylbenzene	A11	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0001	0.0008	0.000	0.000
n-Dodecane	P12	0.0008	0.0071	0.001	0.001
1,3,5-Triethylbenzene	A12	0.0001	0.0008	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0008	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	0.0002	0.0016	0.000	0.000
n-Tridecane	P13	0.0005	0.0048	0.000	0.000
n-Tetradecane	P14	0.0002	0.0021	0.000	0.000
n-Pentadecane	P15	0.0001	0.0011	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
TOTAL		100.00000	100.00000	2.8087	2.8238

				CALCULATED VALUES**	
BTEX COMPONENTS	**MOLE%**	**WT%**	**BTU @**	**14.65**	**14.73**
BENZENE	0.0172	0.0703	**LHV** NET DRY REAL :	994.8 **/scf**	1000.3 **/scf**
TOLUENE	0.0107	0.0515	NET WET REAL :	977.4 **/scf**	982.9 **/scf**

ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0003	0.0017
TOTAL BTEX	0.0283	0.1241

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

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

HHV	GROSS DRY REAL :	1100.8 **/scf**	1106.8 **/scf**
	GROSS WET REAL :	1081.6 **/scf**	1087.6 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		19756.3 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		21852.6 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.6602
	DENSITY		0.05041 **lb/scf**
	COMPRESSIBILITY FACTOR :		0.9973
	REGULAR WOBBE INDEX		1355.4

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

Net Dry Ideal BTU	4598.6 **/scf**	Relative Density - SG (Air=1)	3.1556	***C6+factors***
Gross Dry Ideal BTU	4943 **/scf**	**Z** Compressiblity Factor	0.99145	0.99077
Net Dry Ideal BTU	19214 **/lb**	Density Factor	240.837 **lbm/1000 ft3**	
Gross Dry Ideal BTU	20658.3 **/lb**	Molar Mass or MW	91.395 **g/mol**	
		Volume Liquid Ideal gas	0.141 **scf/gal**	24.7

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.