EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10589**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T62X-11G2**
LEASE #:	**05-103-10589**		**BRAIDEN HEAD**
FIELD/AREA:	**PICEANCE CREEK - #68800**		

PROJECT NO. :	**202407081**	ANALYSIS NO. :	**03**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	JULY 23, 2024 13:54
OFFICE / BRANCH:	PARACHUTE	SAMPLE DATE :	JULY 11, 2024 11:10
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS PICEANCE LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	811	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-770
LAB PRES:		psig	SAMPLED BY :	RYAN POZARSKI
SAMPLE TEMP. :	62	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:

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0001	0.0002	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.57	0.94	---	---
CARBON DIOXIDE	0.47	1.21	---	---
METHANE	95.4660	89.7923	---	---
ETHANE	2.4206	4.2674	0.6454	0.6489
PROPANE	0.5009	1.2950	0.1379	0.1386
I-BUTANE	0.0800	0.2726	0.0260	0.0261
N-BUTANE	0.1393	0.4747	0.0440	0.0442
I-PENTANE	0.0575	0.2430	0.0210	0.0211
N-PENTANE	0.0504	0.2132	0.0180	0.0181
HEXANES PLUS	0.2252	1.2916	0.0910	0.0911
TOTALS	100.00000	100.00000	0.9833	0.9881

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0080	0.0366
TOLUENE	0.0072	0.0389
ETHYLBENZENE	0.0004	0.0025
XYLENES	0.0025	0.0156
TOTAL BTEX	0.0181	0.0936

**(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 :	938.6 /scf	943.7 /scf
	NET WET REAL :	922.2 /scf	927.3 /scf
HHV	GROSS DRY REAL :	1040.7 /scf	1046.4 /scf
	GROSS WET REAL :	1022.5 /scf	1028.2 /scf

NET HEATING VALUE (60 °F ideal reaction):	20928.5	Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23209.3	Btu/lbm
RELATIVE DENSITY (AIR=1):	0.5880	
DENSITY	0.04494	lbm/scf
COMPRESSIBILITY FACTOR :	0.9978	
REGULAR WOBBE INDEX	1358.5	

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202407081	ANALYSIS NO. :	03
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	JULY 23, 2024 13:54
ACCOUNT NO. :		SAMPLE DATE :	JULY 11, 2024 11:10
PRODUCER :	CAERUS PICEANCE LLC	CYLINDER NO. :	ECA-770
LEASE NO. :	05-103-10589	SAMPLED BY :	RYAN POZARSKI
NAME/DESCRIP :	PICEANCE CREEK UNIT T62X-11G2 BRAIDEN HEAD		
FIELD DATA		SAMPLE TEMP. :	62
SAMPLE PRES. :	811	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	0.47	1.21
Nitrogen	0.57	0.94
Methane	95.4660	89.7923
Ethane	2.4206	4.2674
Propane	0.5009	1.2950
Isobutane	0.0800	0.2726
n-Butane	0.1393	0.4747
Isopentane	0.0556	0.2352
n-Pentane	0.0504	0.2132
Cyclopentane	0.0019	0.0078
n-Hexane	0.0321	0.1622
Cyclohexane	0.0138	0.0681
Other Hexanes	0.0527	0.2649
Heptanes	0.0458	0.2682
Methylcyclohexane	0.0219	0.1261
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0080	0.0366
Toluene	0.0072	0.0389
Ethylbenzene	0.0004	0.0025
Xylenes	0.0025	0.0156
C8+ Heavies	0.0408	0.3085
Subtotal	99.99990	99.99980
Oxygen/Argon	0.00	0.00
Alcohols	0.0001	0.0002
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	938.6	4934.0	6382.8	8045.0	**Btu/scf**
	Net Wet Real:	922.2	4847.7	6271.2	7904.4	**Btu/scf**
HHV	Gross Dry Real:	1040.7	5305.9	6869.0	8675.8	**Btu/scf**
	Gross Wet Real:	1022.5	5213.1	6748.9	8524.1	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1358.5	2875.9	3279.8	3713.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		20928.5	19174.0	19149.2	18485.6	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23209.3	20620.5	20608.3	19934.9	**Btu/lbm**
Molar Mass (MW):		17.05644	97.819	127.442	159.02	**g/mol**
Relative Density (AIR=1):		0.5880	3.3782	4.4004	5.4909	**SG**
Density:		0.04494	0.25778	0.33583	0.41906	**lbm/scf**
Compressiblity Factor:		0.9978	0.9931	0.9985	0.9998	**Z**
Liquid Volume real gas @:	**14.65**	17.2179	0.0907	0.0159	0.007	**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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FLOW PRES. :	psig	CYLINDER NO. :	ECA-770
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SAMPLE TEMP. :	62 °f	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
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**
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.57	0.94	---	---
Carbon Dioxide	---	0.47	1.21	---	---
Methane	P1	95.4660	89.7923	---	---
Ethane	P2	2.4206	4.2674	0.645	0.649
Propane	P3	0.5009	1.2950	0.138	0.139
i-Butane	I4	0.0800	0.2726	0.026	0.026
Methanol	X1	0.0001	0.0002	0.000	0.000
n-Butane	P4	0.1393	0.4747	0.044	0.044
2,2-Dimethylpropane	I5	0.0032	0.0135	0.001	0.001
i-Pentane	I5	0.0524	0.2217	0.019	0.019
n-Pentane	P5	0.0504	0.2132	0.018	0.018
2,2-Dimethylbutane	I6	0.0039	0.0197	0.002	0.002
Cyclopentane	N5	0.0019	0.0078	0.001	0.001
2,3-Dimethylbutane	I6	0.0046	0.0232	0.002	0.002
2-Methylpentane	I6	0.0215	0.1086	0.009	0.009
3-Methylpentane	I6	0.0125	0.0631	0.005	0.005
n-Hexane	P6	0.0321	0.1622	0.013	0.013
2,2-Dimethylpentane	I7	0.0011	0.0065	0.001	0.001
Methylcyclopentane	N6	0.0102	0.0503	0.004	0.004
2,4-Dimethylpentane	I7	0.0017	0.0100	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0004	0.0024	0.000	0.000
Benzene	A6	0.0080	0.0366	0.002	0.002
3,3-Dimethylpentane	I7	0.0007	0.0041	0.000	0.000
Cyclohexane	N6	0.0138	0.0681	0.005	0.005
2-Methylhexane	I7	0.0078	0.0459	0.004	0.004
2,3-Dimethylpentane	I7	0.0017	0.0100	0.001	0.001

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1,1-Dimethylcyclopentane	N7	0.0015	0.0086	0.001	0.001
3-Methylhexane	I7	0.0069	0.0405	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0019	0.0110	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0015	0.0086	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0018	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0028	0.0161	0.001	0.001
n-Heptane	P7	0.0164	0.0963	0.008	0.008
1c,2-Dimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
Methylcyclohexane	N7	0.0219	0.1261	0.009	0.009
2,2-Dimethylhexane	I8	0.0006	0.0041	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0006	0.0035	0.000	0.000
2,5-Dimethylhexane	I8	0.0007	0.0047	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0006	0.0041	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0004	0.0026	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0014	0.000	0.000
Toluene	A7	0.0072	0.0389	0.002	0.002
2,3-Dimethylhexane	I8	0.0005	0.0033	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0027	0.0181	0.001	0.001
4-Methylheptane	I8	0.0007	0.0047	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0002	0.0014	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0017	0.0114	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0025	0.0165	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0010	0.0066	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0033	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0013	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0008	0.0053	0.000	0.000
n-Octane	P8	0.0055	0.0368	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0007	0.0046	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0008	0.000	0.000
2,2-Dimethylheptane	I9	0.0003	0.0022	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0007	0.0052	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0015	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylcyclohexane	N8	0.0006	0.0039	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0026	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,5-Dimethylheptane	I9	0.0005	0.0038	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylbenzene	I8	0.0004	0.0025	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0017	0.0106	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0005	0.0031	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0008	0.000	0.000
4-Methyloctane	I9	0.0003	0.0022	0.000	0.000
2-Methyloctane	I9	0.0005	0.0038	0.000	0.000
3-Methyloctane	I9	0.0001	0.0008	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0005	0.0037	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0003	0.0019	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0015	0.000	0.000
n-Nonane	P9	0.0023	0.0173	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0002	0.0015	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0022	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0003	0.0021	0.000	0.000

3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0014	0.000	0.000
5-Methylnonane	I10	0.0002	0.0016	0.000	0.000
2-Methylnonane	I10	0.0002	0.0016	0.000	0.000
3-Methylnonane	I10	0.0002	0.0016	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0024	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0006	0.0045	0.000	0.000
n-Decane	P10	0.0014	0.0117	0.001	0.001
1,4-Methyl-i-propylbenzene	A10	0.0002	0.0016	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0008	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0008	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0008	0.000	0.000
1,2-Ethyl-i-propylbenzene	A10	0.0001	0.0009	0.000	0.000
UnknownC10s	U10	0.0010	0.0083	0.001	0.001
n-Undecane	P11	0.0012	0.0110	0.001	0.001
1,2,3,5-Tetramethylbenzene	A11	0.0001	0.0008	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0001	0.0009	0.000	0.000
Tetrahydronaphthalene	A10	0.0001	0.0008	0.000	0.000
UnknownC11s	U11	0.0004	0.0037	0.000	0.000
n-Dodecane	P12	0.0011	0.0110	0.001	0.001
1,3,5-Triethylbenzene	A12	0.0003	0.0029	0.000	0.000
1,4-Methyl-n-pentylbenzene	A12	0.0001	0.0009	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0009	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0003	0.0026	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0008	0.000	0.000
UnknownC12s	U12	0.0004	0.0037	0.000	0.000
n-Tridecane	P13	0.0009	0.0097	0.001	0.001
UnknownC13s	U13	0.0007	0.0076	0.001	0.001
UnknownC14s	U14	0.0002	0.0024	0.000	0.000
n-Pentadecane	P15	0.0001	0.0012	0.000	0.000
UnknownC15s	U15	0.0006	0.0075	0.001	0.001
TOTAL		100.00000	100.00000	0.9833	0.9881

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0080	0.0366
TOLUENE	0.0072	0.0389
ETHYLBENZENE	0.0004	0.0025
XYLENES	0.0025	0.0156
TOTAL BTEX	0.0181	0.0936

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

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HHV	GROSS DRY REAL :	1040.7 /scf	1046.4 /scf
	GROSS WET REAL :	1022.5 /scf	1028.2 /scf
	NET HEATING VALUE (60 °F ideal reaction):		20928.5 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23209.3 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.5880
	DENSITY		0.04494 lb/scf
	COMPRESSIBILITY FACTOR :		0.9978
	REGULAR WOBBE INDEX		1358.5

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

Net Dry Ideal BTU	4915.4 /scf	Relative Density - SG (Air=1)	3.3782	***C6+factors***
Gross Dry Ideal BTU	5285.9 /scf	**Z** Compressiblity Factor	0.99311	0.99203
Net Dry Ideal BTU	19174 /lb	Density Factor	257.776 lbm/1000 ft3	
Gross Dry Ideal BTU	20620.5 /lb	Molar Mass or MW	97.819 g/mol	
		Volume Liquid Ideal gas	0.091 scf/gal	23.3

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.