EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-09016**	NAME/DESCRIP :	**110170027 GG4 CHEVRON 12-70**
LEASE #:	**05-045-09016**		**BRAIDEN HEAD**
FIELD/AREA:			

PROJECT NO. :	**202107030**	ANALYSIS NO. :	**01**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	JULY 27, 2021 13:39
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 22, 2021
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS OIL & GAS LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	27	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-748
LAB PRES:		psig	SAMPLED BY :	JESSE D. LATHAM (DUSTY)
SAMPLE TEMP. :	79	ºf	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	- ppm
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	- Mol %

FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0011	0.0033	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.27	0.39	---	---
CARBON DIOXIDE	0.01	0.02	---	---
METHANE	88.5109	74.1128	---	---
ETHANE	5.3312	8.3670	1.4215	1.4293
PROPANE	3.1732	7.3033	0.8717	0.8765
I-BUTANE	0.5536	1.6794	0.1809	0.1819
N-BUTANE	0.9547	2.8963	0.2999	0.3015
I-PENTANE	0.3051	1.1476	0.1110	0.1115
N-PENTANE	0.2526	0.9513	0.0910	0.0915
HEXANES PLUS	0.6176	3.1290	0.2500	0.2510
TOTALS	100.00000	100.00000	3.2260	3.2432

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0447	0.1823
TOLUENE	0.0371	0.1784
ETHYLBENZENE	0.0046	0.0255
XYLENES	0.0296	0.1641
TOTAL BTEX	0.1160	0.5503

**(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 :	1059.5 /scf	1065.2 /scf
	NET WET REAL :	1041.0 /scf	1046.7 /scf
HHV	GROSS DRY REAL :	1170.4 /scf	1176.8 /scf
	GROSS WET REAL :	1149.9 /scf	1156.3 /scf

NET HEATING VALUE (60 °F ideal reaction):	21009.3 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23210.4 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6613
DENSITY	0.05049 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9972
REGULAR WOBBE INDEX	1439.7

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202107030	ANALYSIS NO. :	01
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	JULY 27, 2021 13:39
ACCOUNT NO. :		SAMPLE DATE :	JULY 22, 2021
PRODUCER :	CAERUS OIL & GAS LLC	CYLINDER NO. :	ECA-748
LEASE NO. :	05-045-09016	SAMPLED BY :	JESSE D. LATHAM (DUSTY)
NAME/DESCRIP :	110170027 GG4 CHEVRON 12-70 BRAIDEN HEAD		
FIELD DATA		SAMPLE TEMP. :	79
SAMPLE PRES. :	27	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm*		
COMMENTS :	***SPOT*** ***NO PROBE***		

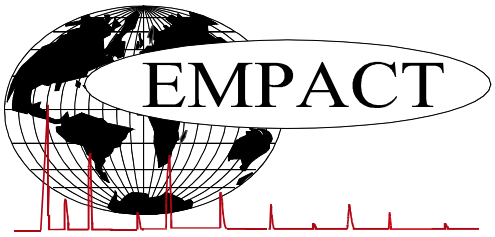
Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	0.01	0.02
Nitrogen	0.27	0.39
Methane	88.5109	74.1128
Ethane	5.3312	8.3670
Propane	3.1732	7.3033
Isobutane	0.5536	1.6794
n-Butane	0.9547	2.8963
Isopentane	0.2918	1.0989
n-Pentane	0.2526	0.9513
Cyclopentane	0.0133	0.0487
n-Hexane	0.0725	0.3261
Cyclohexane	0.0289	0.1269
Other Hexanes	0.1455	0.6511
Heptanes	0.0845	0.4397
Methylcyclohexane	0.0405	0.2076
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0447	0.1823
Toluene	0.0371	0.1784
Ethylbenzene	0.0046	0.0255
Xylenes	0.0296	0.1641
C8+ Heavies	0.1296	0.8267
Subtotal	99.99890	99.99670
Oxygen/Argon	0.00	0.00
Alcohols	0.0011	0.0033
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1059.5	4831.4	5820.9	6927.2	**Btu/scf**
	Net Wet Real:	1041.0	4746.9	5719.1	6806.1	**Btu/scf**
HHV	Gross Dry Real:	1170.4	5178.5	6232.3	7424.0	**Btu/scf**
	Gross Wet Real:	1149.9	5088.0	6123.4	7294.2	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1439.7	2820.4	3082.7	3379.4	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21009.3	19026.9	18988.4	19089.8	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23210.4	20395.0	20333.1	20459.9	**Btu/lbm**
Molar Mass (MW):		19.16089	97.03	118.721	140.521	**g/mol**
Relative Density (AIR=1):		0.6613	3.3501	4.0993	4.8517	**SG**
Density:		0.05049	0.25569	0.31286	0.37029	**lbm/scf**
Compressiblity Factor:		0.9972	0.9938	0.9983	0.9995	**Z**
Liquid Volume real gas @:	**14.65**	18.1709	0.2492	0.0758	0.008	**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:	**05-045-09016**	NAME/DESCRIP :	**110170027 GG4 CHEVRON 12-70**
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FLOW PRES. :	psig	CYLINDER NO. :	ECA-748
LAB PRES:	psig	SAMPLED BY :	JESSE D. LATHAM (DUSTY)
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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	---	0.27	0.39	---	---
Carbon Dioxide	---	0.01	0.02	---	---
Methane	P1	88.5109	74.1128	---	---
Ethane	P2	5.3312	8.3670	1.422	1.429
Propane	P3	3.1732	7.3033	0.872	0.877
i-Butane	I4	0.5536	1.6794	0.181	0.182
n-Butane	P4	0.9547	2.8963	0.300	0.302
2,2-Dimethylpropane	I5	0.0019	0.0072	0.001	0.001
i-Pentane	I5	0.2899	1.0917	0.106	0.107
Acetone	X3	0.0008	0.0024	0.000	0.000
i-Propanol	X3	0.0003	0.0009	0.000	0.000
n-Pentane	P5	0.2526	0.9513	0.091	0.092
2,2-Dimethylbutane	I6	0.0022	0.0099	0.001	0.001
Cyclopentane	N5	0.0133	0.0487	0.004	0.004
2,3-Dimethylbutane	I6	0.0098	0.0441	0.004	0.004
2-Methylpentane	I6	0.0668	0.3005	0.028	0.028
3-Methylpentane	I6	0.0343	0.1543	0.014	0.014
n-Hexane	P6	0.0725	0.3261	0.030	0.030
2,2-Dimethylpentane	I7	0.0004	0.0021	0.000	0.000
Methylcyclopentane	N6	0.0324	0.1423	0.011	0.011
2,4-Dimethylpentane	I7	0.0023	0.0120	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0016	0.000	0.000
Benzene	A6	0.0447	0.1823	0.012	0.012
3,3-Dimethylpentane	I7	0.0005	0.0026	0.000	0.000
Cyclohexane	N6	0.0289	0.1269	0.010	0.010
2-Methylhexane	I7	0.0139	0.0727	0.006	0.006
2,3-Dimethylpentane	I7	0.0053	0.0277	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0021	0.0108	0.001	0.001
3-Methylhexane	I7	0.0136	0.0711	0.006	0.006
1c,3-Dimethylcyclopentane	N7	0.0047	0.0241	0.002	0.002
1t,3-Dimethylcyclopentane	N7	0.0042	0.0215	0.002	0.002
3-Ethylpentane	I7	0.0006	0.0031	0.000	0.000

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1t,2-Dimethylcyclopentane	N7	0.0076	0.0389	0.003	0.003
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0264	0.1381	0.012	0.012
1c,2-Dimethylcyclopentane	N7	0.0005	0.0026	0.000	0.000
Methylcyclohexane	N7	0.0405	0.2076	0.016	0.016
2,2-Dimethylhexane	I8	0.0018	0.0108	0.001	0.001
Ethylcyclopentane	N7	0.0021	0.0108	0.001	0.001
2,5-Dimethylhexane	I8	0.0011	0.0066	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,4-Dimethylhexane	I8	0.0012	0.0072	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0017	0.0100	0.001	0.001
3,3-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0014	0.0082	0.001	0.001
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0371	0.1784	0.012	0.012
2,3-Dimethylhexane	I8	0.0013	0.0078	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0005	0.0030	0.000	0.000
2-Methylheptane	I8	0.0079	0.0471	0.004	0.004
4-Methylheptane	I8	0.0018	0.0108	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0002	0.0012	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0043	0.0256	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0067	0.0393	0.003	0.003
3-Ethylhexane	I8	0.0002	0.0012	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0027	0.0158	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0008	0.0047	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0006	0.0035	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0009	0.0053	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0025	0.0147	0.001	0.001
n-Octane	P8	0.0141	0.0841	0.007	0.007
1c,4-Dimethylcyclohexane	N8	0.0015	0.0088	0.001	0.001
i-Propylcyclopentane	I8	0.0002	0.0012	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0010	0.0059	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0040	0.0264	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0030	0.0201	0.002	0.002
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0010	0.0059	0.000	0.000
n-Propylcyclopentane	N8	0.0022	0.0129	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0003	0.0020	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
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
1,1,3-Trimethylcyclohexane	N9	0.0003	0.0020	0.000	0.000
Ethylbenzene	I8	0.0046	0.0255	0.002	0.002
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0189	0.1048	0.007	0.007
1,4-Dimethylbenzene (p-Xylene)	A8	0.0061	0.0338	0.002	0.002
3,4-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000

3,4-Dimethylheptane (2)	I9	0.0005	0.0033	0.000	0.000
4-Ethylheptane	I9	0.0003	0.0020	0.000	0.000
4-Methyloctane	I9	0.0016	0.0107	0.001	0.001
2-Methyloctane	I9	0.0027	0.0181	0.002	0.002
3-Ethylheptane	I9	0.0004	0.0027	0.000	0.000
3-Methyloctane	I9	0.0027	0.0181	0.002	0.002
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3,3-Diethylpentane	I9	0.0002	0.0014	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0046	0.0255	0.002	0.002
i-Butylcyclopentane	N9	0.0017	0.0112	0.001	0.001
n-Nonane	P9	0.0132	0.0884	0.007	0.007
1,1-Methylethylcyclohexane	N9	0.0008	0.0053	0.000	0.000
i-Propylbenzene	A9	0.0005	0.0031	0.000	0.000
i-Propylcyclohexane	N9	0.0005	0.0033	0.000	0.000
2,2-Dimethyloctane	I10	0.0006	0.0044	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
2,5-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0014	0.0092	0.001	0.001
3,3-Dimethyloctane	I10	0.0005	0.0037	0.000	0.000
n-Propylbenzene	A9	0.0022	0.0138	0.001	0.001
3,6-Dimethyloctane	I10	0.0013	0.0097	0.001	0.001
3-Methyl-5-ethylheptane	I10	0.0006	0.0044	0.000	0.000
1,3-Methylethylbenzene	A9	0.0031	0.0195	0.002	0.002
1,4-Methylethylbenzene	A9	0.0011	0.0069	0.001	0.001
1,3,5-Trimethylbenzene	A9	0.0064	0.0401	0.003	0.003
2,3-Dimethyloctane	I10	0.0005	0.0037	0.000	0.000
5-Methylnonane	I10	0.0011	0.0082	0.001	0.001
1,2-Methylethylbenzene	A9	0.0019	0.0119	0.001	0.001
2-Methylnonane	I10	0.0008	0.0060	0.000	0.000
3-Ethyloctane	I10	0.0008	0.0060	0.000	0.000
1,2,4-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
t-Butylbenzene	A10	0.0045	0.0315	0.002	0.002
i-Butylcyclohexane	N10	0.0003	0.0022	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0023	0.0154	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0058	0.0431	0.004	0.004
n-Dodecane	P12	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
TOTAL		100.00000	100.00000	3.2260	3.2432

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0447	0.1823
TOLUENE	0.0371	0.1784
ETHYLBENZENE	0.0046	0.0255
XYLENES	0.0296	0.1641
TOTAL BTEX	0.1160	0.5503

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	GROSS WET REAL :	1149.9	/scf	1156.3	/scf
	NET HEATING VALUE (60 °F ideal reaction):			21009.3	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			23210.4	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.6613	
	DENSITY			0.05049	lb/scf
	COMPRESSIBILITY FACTOR :			0.9972	
	REGULAR WOBBE INDEX			1439.7	

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

Net Dry Ideal BTU	4816.3 /scf	Relative Density - SG (Air=1)	3.3501	***C6+factors***
Gross Dry Ideal BTU	5162.3 /scf	**Z** Compressiblity Factor	0.99375	0.99272
Net Dry Ideal BTU	19026.9 /lb	Density Factor	255.688 lbm/1000 ft3	
Gross Dry Ideal BTU	20395 /lb	Molar Mass or MW	97.03 g/mol	
		Volume Liquid Ideal gas	0.25 scf/gal	24.1

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.*