EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-11040**	NAME/DESCRIP :	**YELLOW CREEK FEDERAL 33-22-1 PRODUCTION CASING**
LEASE #:			
FIELD/AREA:	**YELLOW CREEK, COC59394**		
PROJECT NO. :	**202404020**	ANALYSIS NO. :	**02**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	APRIL 11, 2024 08:44
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 27, 2024 9:00
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS PICEANCE, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT	
SAMPLE PRES. :	547	psig	PROBE :	NO	
FLOW PRES. :		psig	CYLINDER NO. :	ECA-725	
LAB PRES:		psig	SAMPLED BY :	JUSTIN STEELE	
SAMPLE TEMP. :	44	ºf	SAMPLING COMPANY:	CAERUS	
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	0.1297	0.2154	0.0170	0.0171
HELIUM	0.00	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.35	0.50	---	---
CARBON DIOXIDE	3.42	7.68	---	---
METHANE	85.3734	69.8362	---	---
ETHANE	6.5521	10.0459	1.7474	1.7569
PROPANE	2.2439	5.0453	0.6168	0.6201
I-BUTANE	0.5057	1.4987	0.1649	0.1658
N-BUTANE	0.5570	1.6508	0.1749	0.1759
I-PENTANE	0.2431	0.8934	0.0880	0.0884
N-PENTANE	0.1906	0.7012	0.0690	0.0694
HEXANES PLUS	0.4245	1.9331	0.1670	0.1676
TOTALS	100.00000	100.00000	3.0450	3.0612

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0099	0.0394
TOLUENE	0.0173	0.0813
ETHYLBENZENE	0.0004	0.0021
XYLENES	0.0031	0.0168
TOTAL BTEX	0.0307	0.1396

**(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 :	1001.6	**/scf**	1007.1	**/scf**
	NET WET REAL :	984.1	**/scf**	989.6	**/scf**
HHV	GROSS DRY REAL :	1107.3	**/scf**	1113.3	**/scf**
	GROSS WET REAL :	1087.9	**/scf**	1093.9	**/scf**
	NET HEATING VALUE (60 °F ideal reaction):			19399.8	**Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):			21448.7	**Btu/lbm**
	RELATIVE DENSITY (AIR=1):			0.6763	
	DENSITY			0.05167	**lbm/scf**
	COMPRESSIBILITY FACTOR :			0.9972	
	REGULAR WOBBE INDEX			1347.0	

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202404020	ANALYSIS NO. :	02
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	APRIL 11, 2024 08:44
ACCOUNT NO. :		SAMPLE DATE :	MARCH 27, 2024 9:00
PRODUCER :	CAERUS PICEANCE, LLC	CYLINDER NO. :	ECA-725
LEASE NO. :		SAMPLED BY :	JUSTIN STEELE
NAME/DESCRIP :	YELLOW CREEK FEDERAL 33-22-1 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	44
SAMPLE PRES. :	547	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	3.42	7.68
Nitrogen	0.35	0.50
Methane	85.3734	69.8362
Ethane	6.5521	10.0459
Propane	2.2439	5.0453
Isobutane	0.5057	1.4987
n-Butane	0.5570	1.6508
Isopentane	0.2347	0.8634
n-Pentane	0.1906	0.7012
Cyclopentane	0.0084	0.0300
n-Hexane	0.1118	0.4912
Cyclohexane	0.0237	0.1017
Other Hexanes	0.1827	0.7986
Heptanes	0.0309	0.1571
Methylcyclohexane	0.0234	0.1172
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0099	0.0394
Toluene	0.0173	0.0813
Ethylbenzene	0.0004	0.0021
Xylenes	0.0031	0.0168
C8+ Heavies	0.0213	0.1277
Subtotal	99.87030	99.78460
Oxygen/Argon	0.00	0.00
Alcohols	0.1297	0.2154
Total	100.00000	100.00000

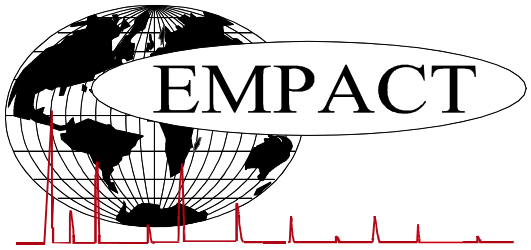
Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1001.6	4531.6	5783.5	7170.4	**Btu/scf**
	Net Wet Real:	984.1	4452.4	5682.4	7045.1	**Btu/scf**
HHV	Gross Dry Real:	1107.3	4875.3	6212.7	7721.8	**Btu/scf**
	Gross Wet Real:	1087.9	4790.1	6104.1	7586.8	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1347.0	2757.1	3107.6	3554.3	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19399.8	19198.8	19564.9	19608.2	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21448.7	20656.6	21020.8	21116.1	**Btu/lbm**
Molar Mass (MW):		19.61092	89.313	115.933	137.446	**g/mol**
Relative Density (AIR=1):		0.6763	3.0835	4.0031	4.7457	**SG**
Density:		0.05167	0.23536	0.30552	0.36219	**lbm/scf**
Compressiblity Factor:		0.9972	0.9899	0.9977	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	18.0463	0.1665	0.008	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 uderscore) indicates there was no tube pulled for H2S.

EMPACT Analytical Systems Inc. 365 S Main St Brighton, CO 80601 303-637-0150



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-11040** NAME/DESCRIP : **YELLOW CREEK FEDERAL 33-22-1**
LEASE #: **PRODUCTION CASING**
FIELD/AREA: **YELLOW CREEK, COC59394**

PROJECT NO. : **202404020** ANALYSIS NO. : **02**
COMPANY NAME : **CAERUS OIL & GAS LLC** ANALYSIS DATE: APRIL 11, 2024 08:44
OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : MARCH 27, 2024 9:00
CUSTOMER REF: TO:
PRODUCER : CAERUS PICEANCE, LLC EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE: SPOT
SAMPLE PRES. : 547 psig PROBE : NO
FLOW PRES. : psig CYLINDER NO. : ECA-725
LAB PRES: psig SAMPLED BY : JUSTIN STEELE
SAMPLE TEMP. : 44 ºf SAMPLING COMPANY: CAERUS
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	---	0.00	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.35	0.50	---	---
Carbon Dioxide	---	3.42	7.68	---	---
Methane	P1	85.3734	69.8362	---	---
Ethane	P2	6.5521	10.0459	1.747	1.757
Propane	P3	2.2439	5.0453	0.617	0.620
i-Butane	I4	0.5057	1.4987	0.165	0.166
Methanol	X1	0.1281	0.2093	0.016	0.016
n-Butane	P4	0.5570	1.6508	0.175	0.176
2,2-Dimethylpropane	I5	0.0056	0.0206	0.002	0.002
i-Pentane	I5	0.2291	0.8428	0.084	0.084
n-Pentane	P5	0.1906	0.7012	0.069	0.069
t-Butanol	X4	0.0016	0.0061	0.001	0.001
2,2-Dimethylbutane	I6	0.0081	0.0356	0.003	0.003
Cyclopentane	N5	0.0084	0.0300	0.002	0.002
2,3-Dimethylbutane	I6	0.0153	0.0673	0.006	0.006
2-Methylpentane	I6	0.0761	0.3344	0.032	0.032
3-Methylpentane	I6	0.0415	0.1823	0.017	0.017
n-Hexane	P6	0.1118	0.4912	0.046	0.046
2,2-Dimethylpentane	I7	0.0014	0.0071	0.001	0.001
Methylcyclopentane	N6	0.0417	0.1790	0.015	0.015
2,4-Dimethylpentane	I7	0.0019	0.0097	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0015	0.000	0.000
Benzene	A6	0.0099	0.0394	0.003	0.003
3,3-Dimethylpentane	I7	0.0003	0.0015	0.000	0.000
Cyclohexane	N6	0.0237	0.1017	0.008	0.008
2-Methylhexane	I7	0.0045	0.0230	0.002	0.002
2,3-Dimethylpentane	I7	0.0009	0.0046	0.000	0.000

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

1,1-Dimethylcyclopentane	N7	0.0009	0.0045	0.000	0.000
3-Methylhexane	I7	0.0039	0.0199	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0014	0.0070	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0012	0.0060	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0015	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0020	0.0100	0.001	0.001
n-Heptane	P7	0.0108	0.0552	0.005	0.005
1c,2-Dimethylcyclopentane	N7	0.0004	0.0020	0.000	0.000
Methylcyclohexane	N7	0.0234	0.1172	0.009	0.009
2,2-Dimethylhexane	I8	0.0005	0.0029	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0006	0.0030	0.000	0.000
2,5-Dimethylhexane	I8	0.0005	0.0029	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0004	0.0023	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0004	0.0023	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
Toluene	A7	0.0173	0.0813	0.006	0.006
2,3-Dimethylhexane	I8	0.0004	0.0023	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0017	0.0099	0.001	0.001
4-Methylheptane	I8	0.0004	0.0023	0.000	0.000
3-Methylheptane	I8	0.0010	0.0058	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0022	0.0126	0.001	0.001
3-Ethylhexane	I8	0.0002	0.0012	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0010	0.0057	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0003	0.0017	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	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	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0007	0.0040	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0002	0.0011	0.000	0.000
n-Octane	P8	0.0034	0.0198	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0005	0.0029	0.000	0.000
2,2-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0008	0.0051	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0004	0.0023	0.000	0.000
n-Propylcyclopentane	N8	0.0003	0.0017	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
2,5-Dimethylheptane	I9	0.0004	0.0026	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0003	0.0019	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0004	0.0021	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0020	0.0108	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0009	0.0049	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0013	0.000	0.000
4-Methyloctane	I9	0.0002	0.0013	0.000	0.000
2-Methyloctane	I9	0.0003	0.0019	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0003	0.0019	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0002	0.0011	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0009	0.0059	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
3-Ethyloctane	I10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0001	0.0007	0.000	0.000
n-Decane	P10	0.0001	0.0007	0.000	0.000

1,2,3-Trimethylbenzene	A9	0.0004	0.0024	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0003	0.0020	0.000	0.000
TOTAL		100.00000	100.00000	3.0450	3.0612

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0099	0.0394
TOLUENE	0.0173	0.0813
ETHYLBENZENE	0.0004	0.0021
XYLENES	0.0031	0.0168
TOTAL BTEX	0.0307	0.1396

**(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 :	1001.6 /scf	1007.1	/scf
	NET WET REAL :	984.1 /scf	989.6	/scf
HHV	GROSS DRY REAL :	1107.3 /scf	1113.3	/scf
	GROSS WET REAL :	1087.9 /scf	1093.9	/scf
	NET HEATING VALUE (60 °F ideal reaction):		19399.8	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		21448.7	Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6763	
	DENSITY		0.05167	lb/scf
	COMPRESSIBILITY FACTOR :		0.9972	
	REGULAR WOBBE INDEX		1347.0	

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

Net Dry Ideal BTU	4500.1 /scf	Relative Density - SG (Air=1)	3.0835		***C6+factors***
Gross Dry Ideal BTU	4841.4 /scf	**Z** Compressiblity Factor	0.98993		0.9894
Net Dry Ideal BTU	19198.8 /lb	Density Factor	235.364	lbm/1000 ft3	
Gross Dry Ideal BTU	20656.6 /lb	Molar Mass or MW	89.313	g/mol	
		Volume Liquid Ideal gas	0.167	scf/gal	24.5

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.

ISOTOPIC NATURAL GAS ANALYSIS

PRIMARY DB KEY:	**05-103-11040**	NAME/DESCRIP :	**YELLOW CREEK FEDERAL 33-22-1 PRODUCTION CASING**
LEASE #:			
FIELD/AREA:	**YELLOW CREEK, COC59394**		
PROJECT NO. :	**202404020**	ANALYSIS NO. :	**02**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	APRIL 17, 2024 00:00
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 27, 2024 9:00
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS PICEANCE, LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT	
SAMPLE PRES. :	547	psig	PROBE :	NO	
FLOW PRES. :		psig	CYLINDER NO. :	ECA-725	
LAB PRES:		psig	SAMPLED BY :	JUSTIN STEELE	
SAMPLE TEMP. :	44	°f	SAMPLING COMPANY:	CAERUS	
AMBIENT TEMP.:		°f	H2S BY STAIN TUBE:	_	ppm mol
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	-	Mol %

FIELD COMMENTS:

LAB COMMENTS:

COMPONENTS	NORM. MOLE%	GPM @ 14.65	d13C ‰ VPDB	dD ‰ VSMOW
HELIUM	0.00	-	-	-
HYDROGEN	0.01	-	-	-
OXYGEN/ARGON	0.00	-	-	-
NITROGEN	0.35	-	-	-
CO2	3.42	-	-3.1	-
METHANE	85.37	-	-39.3	-185
ETHANE	6.55	1.7492	-28.1	-
PROPANE	2.24	0.6177	-26.3	-
ISOBUTANE	0.51	0.1629	-25.9	-
N-BUTANE	0.56	0.1729	-26.0	-
ISOPENTANE	0.24	0.0840	-25.9	-
N-PENTANE	0.19	0.0690	-25.4	-
HEXANES+	0.55	0.1509	-	-
TOTAL	100.00	3.0066		

BTU @ 60 DEG F		**14.65**	
	GROSS DRY REAL =	1105.4	**/scf**
	GROSS SATURATED REAL =	1086.1	**/scf**

RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F)	0.6746
GRAVITY (LB/SCF)	0.05149
COMPRESSIBILITY FACTOR :	0.99730

NOTE: REFERENCE GPA 2261(ASTM D1945 & ASME-PTC), 2145, & 2172 CURRENT PUBLICATIONS

Reference: Per GPA 2172-14 sec 9 ***The C6+ is derived from the following ratios of C6, C7 & C8+ respectively:*** **60% 30% 10%**

The NG Composition File #: **202404020-02-A-120**
The Isotopic Data File #: **DIG-035189**

Note:Stable isotope results based on multi-point laboratory calibration
Presicion $\delta^{13}C$ < 0.5 ‰ **Precision δD < 5.0 ‰**
Values in red represent low peak heights. Interpret with caution.