EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-13082**	NAME/DESCRIP :	**Unocal 14A-9D**
LEASE #:	**05-045-13082**		**U2 Pad**
FIELD/AREA:			**Surface Casing**

PROJECT NO. :	**202103020**	ANALYSIS NO. :	**02**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 03, 2021 11:01
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 13:50
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	1L TEDLAR
LAB PRES:	psig	SAMPLED BY :	BRETT MIDDLETON
SAMPLE TEMP. :	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:

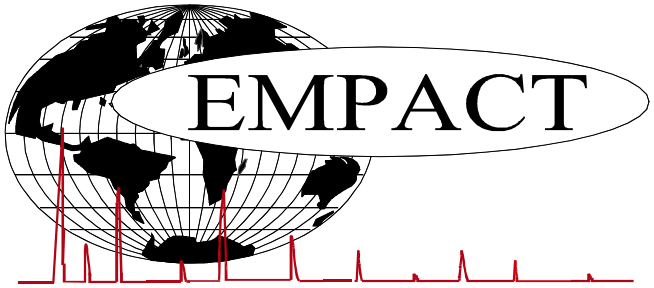
COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	1.13	2.02	---	---
NITROGEN	4.12	6.44	---	---
CARBON DIOXIDE	0.01	0.02	---	---
METHANE	89.8662	80.5054	---	---
ETHANE	2.9234	4.9086	0.7793	0.7835
PROPANE	0.9782	2.4086	0.2687	0.2702
I-BUTANE	0.1896	0.6154	0.0619	0.0623
N-BUTANE	0.3291	1.0681	0.1029	0.1035
I-PENTANE	0.1320	0.5312	0.0480	0.0482
N-PENTANE	0.1144	0.4609	0.0410	0.0412
HEXANES PLUS	0.1971	1.0218	0.0750	0.0752
TOTALS	100.00000	100.00000	1.3768	1.3841

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0052	0.0227
TOLUENE	0.0008	0.0041
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0003	0.0018
TOTAL BTEX	0.0065	0.0298

	BTU @	14.65	14.73
LHV	NET DRY REAL :	919.2 /scf	924.3 /scf
	NET WET REAL :	903.1 /scf	908.2 /scf
HHV	GROSS DRY REAL :	1018.8 /scf	1024.4 /scf
	GROSS WET REAL :	1001.0 /scf	1006.6 /scf

NET HEATING VALUE (60 °F ideal reaction):	19521.3 **Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	21631.0 **Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6178
DENSITY	0.04719 **lbm/scf**
COMPRESSIBILITY FACTOR :	0.9978
REGULAR WOBBE INDEX	1297.5

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.
(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)



EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202103020	ANALYSIS NO. :	02
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 03, 2021 11:01
ACCOUNT NO. :		SAMPLE DATE :	MARCH 1, 2021 13:50
PRODUCER :		CYLINDER NO. :	1L TEDLAR
LEASE NO. :	05-045-13082	SAMPLED BY :	BRETT MIDDLETON
NAME/DESCRIP :	Unocal 14A-9D U2 Pad Surface Casing		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :		AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm*		
COMMENTS :	***SPOT***		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.01	0.02
Nitrogen	4.12	6.44
Methane	89.8662	80.5054
Ethane	2.9234	4.9086
Propane	0.9782	2.4086
Isobutane	0.1896	0.6154
n-Butane	0.3291	1.0681
Isopentane	0.1265	0.5096
n-Pentane	0.1144	0.4609
Cyclopentane	0.0055	0.0216
n-Hexane	0.0341	0.1641
Cyclohexane	0.0124	0.0583
Other Hexanes	0.0697	0.3340
Heptanes	0.0361	0.2011
Methylcyclohexane	0.0156	0.0855
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0052	0.0227
Toluene	0.0008	0.0041
Ethylbenzene	0.0002	0.0012
Xylenes	0.0003	0.0018
C8+ Heavies	0.0227	0.1490
Subtotal	98.87000	97.98000
Oxygen/Argon	1.13	2.02
Total	100.00000	100.00000

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:	**05-045-13082**	NAME/DESCRIP :	**Unocal 14A-9D**
LEASE #:	**05-045-13082**		**U2 Pad**
FIELD/AREA:			**Surface Casing**
PROJECT NO. :	**202103020**	ANALYSIS NO. :	**02**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 03, 2021 11:01
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 13:50
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	1L TEDLAR
LAB PRES:	psig	SAMPLED BY :	BRETT MIDDLETON
SAMPLE TEMP. :	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	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Helium	---	0.01	0.00	---	---
Oxygen/Argon	---	1.13	2.02	---	---
Nitrogen	---	4.12	6.44	---	---
Carbon Dioxide	---	0.01	0.02	---	---
Methane	P1	89.8662	80.5054	---	---
Ethane	P2	2.9234	4.9086	0.779	0.784
Propane	P3	0.9782	2.4086	0.269	0.270
i-Butane	I4	0.1896	0.6154	0.062	0.062
n-Butane	P4	0.3291	1.0681	0.103	0.104
2,2-Dimethylpropane	I5	0.0031	0.0125	0.001	0.001
i-Pentane	I5	0.1234	0.4971	0.045	0.045
n-Pentane	P5	0.1144	0.4609	0.041	0.041
2,2-Dimethylbutane	I6	0.0028	0.0135	0.001	0.001
Cyclopentane	N5	0.0055	0.0216	0.002	0.002
2,3-Dimethylbutane	I6	0.0053	0.0255	0.002	0.002
2-Methylpentane	I6	0.0317	0.1526	0.013	0.013
3-Methylpentane	I6	0.0165	0.0794	0.007	0.007
n-Hexane	P6	0.0341	0.1641	0.014	0.014
2,2-Dimethylpentane	I7	0.0008	0.0045	0.000	0.000
Methylcyclopentane	N6	0.0134	0.0630	0.005	0.005
2,4-Dimethylpentane	I7	0.0013	0.0073	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0017	0.000	0.000
Benzene	A6	0.0052	0.0227	0.001	0.001
3,3-Dimethylpentane	I7	0.0004	0.0022	0.000	0.000
Cyclohexane	N6	0.0124	0.0583	0.004	0.004
2-Methylhexane	I7	0.0064	0.0358	0.003	0.003
2,3-Dimethylpentane	I7	0.0020	0.0112	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0012	0.0066	0.000	0.000
3-Methylhexane	I7	0.0058	0.0324	0.003	0.003

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1c,3-Dimethylcyclopentane	N7	0.0017	0.0093	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0018	0.0099	0.001	0.001
3-Ethylpentane	I7	0.0004	0.0022	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0028	0.0154	0.001	0.001
n-Heptane	P7	0.0104	0.0582	0.005	0.005
1c,2-Dimethylcyclopentane	N7	0.0002	0.0011	0.000	0.000
Methylcyclohexane	N7	0.0156	0.0855	0.006	0.006
2,2-Dimethylhexane	I8	0.0008	0.0051	0.000	0.000
Ethylcyclopentane	N7	0.0006	0.0033	0.000	0.000
2,5-Dimethylhexane	I8	0.0004	0.0026	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,4-Dimethylhexane	I8	0.0005	0.0032	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0005	0.0031	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
Toluene	A7	0.0008	0.0041	0.000	0.000
2,3-Dimethylhexane	I8	0.0005	0.0032	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0023	0.0147	0.001	0.001
4-Methylheptane	I8	0.0006	0.0039	0.000	0.000
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
3-Methylheptane	I8	0.0014	0.0089	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0019	0.0119	0.001	0.001
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0008	0.0050	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0003	0.0019	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
1,1-Methylethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0007	0.0044	0.000	0.000
n-Octane	P8	0.0033	0.0211	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0004	0.0025	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0008	0.0056	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0005	0.0036	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
n-Propylcyclopentane	N8	0.0005	0.0031	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0002	0.0012	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0003	0.0018	0.000	0.000
4-Methyloctane	I9	0.0002	0.0015	0.000	0.000
2-Methyloctane	I9	0.0004	0.0029	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0003	0.0021	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0014	0.000	0.000
n-Nonane	P9	0.0011	0.0079	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0014	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0002	0.0013	0.000	0.000
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0003	0.0021	0.000	0.000
n-Decane	P10	0.0003	0.0024	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0002	0.0016	0.000	0.000

n-Undecane		P11	0.0001	0.0009	0.000	0.000
TOTAL			100.00000	100.00000	1.3768	1.3841

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0052	0.0227
TOLUENE	0.0008	0.0041
ETHYLBENZENE	0.0002	0.0012
XYLENES	0.0003	0.0018
TOTAL BTEX	0.0065	0.0298

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.
(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)

	BTU @	14.65	14.73	
LHV	NET DRY REAL :	919.2 /scf	924.3 /scf	
	NET WET REAL :	903.1 /scf	908.2 /scf	
HHV	GROSS DRY REAL :	1018.8 /scf	1024.4 /scf	
	GROSS WET REAL :	1001.0 /scf	1006.6 /scf	
	NET HEATING VALUE (60 °F ideal reaction):		19521.3	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		21631.0	Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6178	
	DENSITY		0.04719	lb/scf
	COMPRESSIBILITY FACTOR :		0.9978	
	REGULAR WOBBE INDEX		1297.5	

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

Net Dry Ideal BTU	4686.8 /scf	Relative Density - SG (Air=1)	3.2056		***C6+factors***
Gross Dry Ideal BTU	5047.7 /scf	**Z** Compressiblity Factor	0.99121		0.99051
Net Dry Ideal BTU	19346.4 /lb	Density Factor	244.694	lbm/1000 ft3	
Gross Dry Ideal BTU	20832.9 /lb	Molar Mass or MW	92.859	g/mol	
		Volume Liquid Ideal gas	0.075	scf/gal	23.4

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.