EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-13080**	NAME/DESCRIP :	**Unocal Encana 14D-9D**
LEASE #:	**05-045-13080**		**U2 Pad**
FIELD/AREA:			**Surface Gas**

PROJECT NO. :	**202103020**	ANALYSIS NO. :	**01**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 03, 2021 09:22
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 13:40
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:

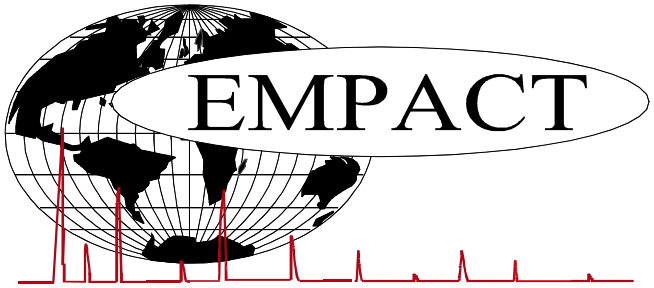
COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
HELIUM	0.02	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.88	1.65	---	---
NITROGEN	3.53	5.78	---	---
CARBON DIOXIDE	0.01	0.03	---	---
METHANE	92.9354	87.1105	---	---
ETHANE	2.0196	3.5481	0.5384	0.5413
PROPANE	0.3843	0.9901	0.1059	0.1065
I-BUTANE	0.0421	0.1430	0.0140	0.0141
N-BUTANE	0.0793	0.2693	0.0250	0.0251
I-PENTANE	0.0293	0.1233	0.0100	0.0100
N-PENTANE	0.0221	0.0931	0.0080	0.0080
HEXANES PLUS	0.0479	0.2626	0.0160	0.0160
TOTALS	100.00000	100.00000	0.7173	0.7210

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0031	0.0141
TOLUENE	0.0006	0.0032
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0001	0.0006
TOTAL BTEX	0.0039	0.0185

	BTU @	14.65	14.73
LHV	NET DRY REAL :	893.0 /scf	897.9 /scf
	NET WET REAL :	877.4 /scf	882.3 /scf
HHV	GROSS DRY REAL :	990.7 /scf	996.1 /scf
	GROSS WET REAL :	973.4 /scf	978.8 /scf

NET HEATING VALUE (60 °F ideal reaction):	19834.5	**Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	22007.3	**Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.5905	
DENSITY	0.04509	**lbm/scf**
COMPRESSIBILITY FACTOR :	0.9980	
REGULAR WOBBE INDEX	1290.7	

**(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. :	01
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 03, 2021 09:22
ACCOUNT NO. :		SAMPLE DATE :	MARCH 1, 2021 13:40
PRODUCER :		CYLINDER NO. :	1L TEDLAR
LEASE NO. :	05-045-13080	SAMPLED BY :	BRETT MIDDLETON
NAME/DESCRIP :	Unocal Encana 14D-9D U2 Pad Surface Gas		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :		AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm*		
COMMENTS :	***SPOT***		

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.01	0.03
Nitrogen	3.53	5.78
Methane	92.9354	87.1105
Ethane	2.0196	3.5481
Propane	0.3843	0.9901
Isobutane	0.0421	0.1430
n-Butane	0.0793	0.2693
Isopentane	0.0281	0.1184
n-Pentane	0.0221	0.0931
Cyclopentane	0.0012	0.0049
n-Hexane	0.0067	0.0337
Cyclohexane	0.0030	0.0147
Other Hexanes	0.0147	0.0737
Heptanes	0.0084	0.0490
Methylcyclohexane	0.0039	0.0224
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0031	0.0141
Toluene	0.0006	0.0032
Ethylbenzene	0.0001	0.0006
Xylenes	0.0001	0.0006
C8+ Heavies	0.0073	0.0506
Subtotal	99.12000	98.35000
Oxygen/Argon	0.88	1.65
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:	**05-045-13080**	NAME/DESCRIP :	**Unocal Encana 14D-9D**
LEASE #:	**05-045-13080**		**U2 Pad**
FIELD/AREA:			**Surface Gas**
PROJECT NO. :	**202103020**	ANALYSIS NO. :	**01**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 03, 2021 09:22
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 13:40
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	---	0.02	0.00	---	---
Oxygen/Argon	---	0.88	1.65	---	---
Nitrogen	---	3.53	5.78	---	---
Carbon Dioxide	---	0.01	0.03	---	---
Methane	P1	92.9354	87.1105	---	---
Ethane	P2	2.0196	3.5481	0.538	0.541
Propane	P3	0.3843	0.9901	0.106	0.107
i-Butane	I4	0.0421	0.1430	0.014	0.014
n-Butane	P4	0.0793	0.2693	0.025	0.025
2,2-Dimethylpropane	I5	0.0010	0.0042	0.000	0.000
i-Pentane	I5	0.0271	0.1142	0.010	0.010
n-Pentane	P5	0.0221	0.0931	0.008	0.008
2,2-Dimethylbutane	I6	0.0009	0.0046	0.000	0.000
Cyclopentane	N5	0.0012	0.0049	0.000	0.000
2,3-Dimethylbutane	I6	0.0013	0.0065	0.001	0.001
2-Methylpentane	I6	0.0063	0.0317	0.003	0.003
3-Methylpentane	I6	0.0034	0.0171	0.001	0.001
n-Hexane	P6	0.0067	0.0337	0.003	0.003
2,2-Dimethylpentane	I7	0.0002	0.0012	0.000	0.000
Methylcyclopentane	N6	0.0028	0.0138	0.001	0.001
2,4-Dimethylpentane	I7	0.0003	0.0017	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0001	0.0006	0.000	0.000
Benzene	A6	0.0031	0.0141	0.001	0.001
3,3-Dimethylpentane	I7	0.0001	0.0006	0.000	0.000
Cyclohexane	N6	0.0030	0.0147	0.001	0.001
2-Methylhexane	I7	0.0015	0.0088	0.001	0.001
2,3-Dimethylpentane	I7	0.0005	0.0029	0.000	0.000
3-Methylhexane	I7	0.0013	0.0076	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
3-Ethylpentane	I7	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0006	0.0034	0.000	0.000
n-Heptane	P7	0.0025	0.0147	0.001	0.001
Methylcyclohexane	N7	0.0039	0.0224	0.002	0.002
2,2-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
Ethylcyclopentane	N7	0.0001	0.0006	0.000	0.000

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2,5-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0006	0.0032	0.000	0.000
2,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0006	0.0040	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
3-Methylheptane	I8	0.0004	0.0027	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0005	0.0033	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
UnknownC7s	U7	0.0003	0.0017	0.000	0.000
n-Octane	P8	0.0009	0.0060	0.000	0.000
1c,4-Dimethylcyclohexane	N8	0.0002	0.0013	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0003	0.0022	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	0.0001	0.0006	0.000	0.000
n-Propylcyclopentane	N8	0.0002	0.0013	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0008	0.000	0.000
Ethylbenzene	I8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0001	0.0008	0.000	0.000
2-Methyloctane	I9	0.0001	0.0008	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0008	0.000	0.000
3-Methyloctane	I9	0.0001	0.0008	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0008	0.000	0.000
UnknownC8s	U8	0.0001	0.0006	0.000	0.000
n-Nonane	P9	0.0003	0.0022	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0002	0.0015	0.000	0.000
n-Decane	P10	0.0001	0.0008	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0008	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	0.7173	0.7210

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0031	0.0141
TOLUENE	0.0006	0.0032
ETHYLBENZENE	0.0001	0.0006
XYLENES	0.0001	0.0006
TOTAL BTEX	0.0039	0.0185

(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 :	893.0	/scf	897.9	/scf
	NET WET REAL :	877.4	/scf	882.3	/scf
HHV	GROSS DRY REAL :	990.7	/scf	996.1	/scf
	GROSS WET REAL :	973.4	/scf	978.8	/scf
	NET HEATING VALUE (60 °F ideal reaction):			19834.5	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			22007.3	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.5905	
	DENSITY			0.04509	lb/scf
	COMPRESSIBILITY FACTOR :			0.9980	
	REGULAR WOBBE INDEX			1290.7	

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

Net Dry Ideal BTU	4724.5 /scf	Relative Density - SG (Air=1)	3.2462	***C6+factors***
Gross Dry Ideal BTU	5081.3 /scf	**Z** Compressiblity Factor	0.99201	0.99129
Net Dry Ideal BTU	19272.9 /lb	Density Factor	247.764 lbm/1000 ft3	
Gross Dry Ideal BTU	20725.8 /lb	Molar Mass or MW	94.022 g/mol	
		Volume Liquid Ideal gas	0.016 scf/gal	23.7

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.

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