



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: **Casing**

PROJECT NO. : **202103019** ANALYSIS NO. : **02**
 COMPANY NAME : **CAERUS OIL & GAS LLC** ANALYSIS DATE: **MARCH 04, 2021 14:32**
 OFFICE / BRANCH: **PARACHUTE, CO** SAMPLE DATE : **MARCH 1, 2021 08:15**
 CUSTOMER REF: TO:
 PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
 SAMPLE PRES. : 346 psig PROBE : NO
 FLOW PRES. : psig CYLINDER NO. : ECA-733
 LAB PRES: psig SAMPLED BY : MIKE KELLEY
 SAMPLE TEMP. : 23 °f SAMPLING COMPANY: CAERUS OIL & GAS LLC
 AMBIENT TEMP.: °f H2S BY STAIN TUBE: - ppm
 H2O BY STAIN TUBE: - #/mmcf CO2 BY STAIN TUBE: - Mol %
 FIELD COMMENTS:
 LAB COMMENTS: *Possible Ethylene in sample*

COMPONENT	MOLE %	MASS %	GPM @	
			14.65	14.73
ALCOHOLS	0.0339	0.0598	0.0040	0.0040
HELIUM	0.01	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.11	0.17	---	---
CARBON DIOXIDE	2.19	5.31	---	---
METHANE	89.9535	79.4741	---	---
ETHANE	5.7684	9.5524	1.5380	1.5464
PROPANE	1.2729	3.0912	0.3498	0.3517
I-BUTANE	0.2681	0.8582	0.0879	0.0884
N-BUTANE	0.1824	0.5838	0.0570	0.0573
I-PENTANE	0.0786	0.3121	0.0280	0.0281
N-PENTANE	0.0373	0.1482	0.0130	0.0131
HEXANES PLUS	0.0849	0.4402	0.0320	0.0320
TOTALS	100.00000	100.00000	2.1097	2.1210

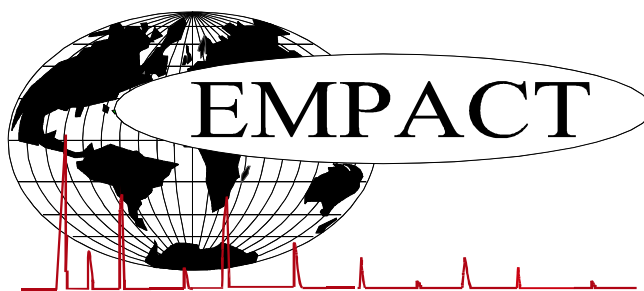
BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0017	0.0073	LHV NET DRY REAL :	961.9 /scf	967.1 /scf
TOLUENE	0.0007	0.0035	NET WET REAL :	945.1 /scf	950.3 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1065.1 /scf	1070.9 /scf
XYLENES	0.0003	0.0018	GROSS WET REAL :	1046.5 /scf	1052.3 /scf
TOTAL BTEX	0.0027	0.0126	NET HEATING VALUE (60 °F ideal reaction):		20124.1 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		22289.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6265
			DENSITY		0.04785 lbm/scf
			COMPRESSIBILITY FACTOR :		0.9975
			REGULAR WOBBE INDEX		1346.5

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*

Mod ASTM D6730,GPA 2261 & GPA 2286.

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

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

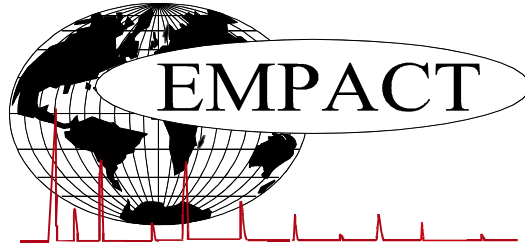
PROJECT NO. :	202103019	ANALYSIS NO. :	02
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 04, 2021 14:32
ACCOUNT NO. :		SAMPLE DATE :	MARCH 1, 2021 08:15
PRODUCER :		CYLINDER NO. :	ECA-733
LEASE NO. :	05-045-13080	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	Unocal Encana 14D-9D U2 Pad Casing		

FIELD DATA		SAMPLE TEMP. :	23
SAMPLE PRES. :	346	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	- ppm		
COMMENTS :	<i>SPOT NO PROBE</i> <i>Possible Ethylene in sample</i>		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	2.19	5.31
Nitrogen	0.11	0.17
Methane	89.9535	79.4741
Ethane	5.7684	9.5524
Propane	1.2729	3.0912
Isobutane	0.2681	0.8582
n-Butane	0.1824	0.5838
Isopentane	0.0775	0.3079
n-Pentane	0.0373	0.1482
Cyclopentane	0.0011	0.0042
n-Hexane	0.0130	0.0617
Cyclohexane	0.0051	0.0236
Other Hexanes	0.0343	0.1620
Heptanes	0.0136	0.0750
Methylcyclohexane	0.0057	0.0308
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0017	0.0073
Toluene	0.0007	0.0035
Ethylbenzene	0.0000	0.0000
Xylenes	0.0003	0.0018
C8+ Heavies	0.0105	0.0745
<u>Subtotal</u>	<u>99.96610</u>	<u>99.94020</u>
Oxygen/Argon	0.00	0.00
<u>Alcohols</u>	<u>0.0339</u>	<u>0.0598</u>
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

BDL - Below Detection Limit. The H2S LOS has a detection limit of 0.25 ppm. A _ (an underscore) indicates there was no tube pulled for H2S.

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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:			Casing
PROJECT NO. :	202103019	ANALYSIS NO. :	02
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 04, 2021 14:32
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 08:15
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	346	PROBE :	NO
FLOW PRES. :		CYLINDER NO. :	ECA-733
LAB PRES:		SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	23	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:		H2S BY STAIN TUBE:	- ppm
H2O BY STAIN TUBE:	-	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:			
LAB COMMENTS:	Possible Ethylene in sample		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Nitrogen	---	0.11	0.17	---	---
Carbon Dioxide	---	2.19	5.31	---	---
Methane	P1	89.9535	79.4741	---	---
Ethane	P2	5.7678	9.5514	1.538	1.546
UnknownC2s	U2	0.0006	0.0010	0.000	0.000
Propane	P3	1.2729	3.0912	0.350	0.352
i-Butane	I4	0.2681	0.8582	0.088	0.088
Methanol	X1	0.0339	0.0598	0.004	0.004
n-Butane	P4	0.1824	0.5838	0.057	0.057
2,2-Dimethylpropane	I5	0.0039	0.0155	0.001	0.001
i-Pentane	I5	0.0736	0.2924	0.027	0.027
n-Pentane	P5	0.0373	0.1482	0.013	0.013
2,2-Dimethylbutane	I6	0.0030	0.0143	0.001	0.001
Cyclopentane	N5	0.0011	0.0042	0.000	0.000
2,3-Dimethylbutane	I6	0.0037	0.0176	0.002	0.002
2-Methylpentane	I6	0.0136	0.0645	0.006	0.006
3-Methylpentane	I6	0.0070	0.0332	0.003	0.003
n-Hexane	P6	0.0130	0.0617	0.005	0.005
2,2-Dimethylpentane	I7	0.0005	0.0028	0.000	0.000
Methylcyclopentane	N6	0.0070	0.0324	0.002	0.002
2,4-Dimethylpentane	I7	0.0008	0.0044	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0002	0.0011	0.000	0.000
Benzene	A6	0.0017	0.0073	0.000	0.000
3,3-Dimethylpentane	I7	0.0002	0.0011	0.000	0.000
Cyclohexane	N6	0.0051	0.0236	0.002	0.002
2-Methylhexane	I7	0.0026	0.0144	0.001	0.001
2,3-Dimethylpentane	I7	0.0006	0.0033	0.000	0.000

1,1-Dimethylcyclopentane	N7	0.0005	0.0027	0.000	0.000
3-Methylhexane	I7	0.0021	0.0116	0.001	0.001
1c,3-Dimethylcyclopentane	N7	0.0007	0.0038	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0008	0.0044	0.000	0.000
3-Ethylpentane	I7	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0009	0.0049	0.000	0.000
n-Heptane	P7	0.0035	0.0193	0.002	0.002
Methylcyclohexane	N7	0.0057	0.0308	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
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
Toluene	A7	0.0007	0.0035	0.000	0.000
2-Methylheptane	I8	0.0001	0.0006	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0002	0.0012	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0006	0.0047	0.000	0.000
1,3-Methylethylbenzene	A9	0.0021	0.0139	0.001	0.001
1,4-Methylethylbenzene	A9	0.0010	0.0066	0.001	0.001
2-Methylnonane	I10	0.0007	0.0055	0.000	0.000
t-Butylbenzene	A10	0.0032	0.0237	0.002	0.002
sec-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0005	0.0033	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0009	0.0067	0.001	0.001
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
t-Decahydronaphthalene	A9	0.0001	0.0008	0.000	0.000
UnknownC10s	U10	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	2.1097	2.1210

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.65	14.73
BENZENE	0.0017	0.0073	LHV NET DRY REAL :	961.9 /scf	967.1 /scf
TOLUENE	0.0007	0.0035	NET WET REAL :	945.1 /scf	950.3 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1065.1 /scf	1070.9 /scf
XYLENES	0.0003	0.0018	GROSS WET REAL :	1046.5 /scf	1052.3 /scf
TOTAL BTEX	0.0027	0.0126	NET HEATING VALUE (60 °F ideal reaction):		20124.1 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):		22289.3 Btu/lbm
			RELATIVE DENSITY (AIR=1):		0.6265
			DENSITY		0.04785 lb/scf
			COMPRESSIBILITY FACTOR :		0.9975
			REGULAR WOBBE INDEX		1346.5

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730, GPA 2261 & GPA 2286.

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

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

Net Dry Ideal BTU	4682.4 /scf	Relative Density - SG (Air=1)	3.251	C6+ factors
Gross Dry Ideal BTU	5037.7 /scf	Z Compressibility Factor	0.9914	0.99035
Net Dry Ideal BTU	18904.2 /lb	Density Factor	248.097 lbm/1000 ft3	
Gross Dry Ideal BTU	20338.1 /lb	Molar Mass or MW	94.151 g/mol	
		Volume Liquid Ideal gas	0.032 scf/gal	23.8
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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