



EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	05-045-13081	NAME/DESCRIP :	Unocal 24D-9D
LEASE #:	05-045-13081		U2 Pad
FIELD/AREA:			Casing
PROJECT NO. :	202103019	ANALYSIS NO. :	07
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 05, 2021 07:30
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 10:00
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	235 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-796
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:			

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.65</u>	<u>GPM @ 14.73</u>
ALCOHOLS	0.0345	0.0614	0.0040	0.0040
HELIUM	0.00	0.00	---	---
HYDROGEN	0.17	0.02	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.16	0.25	---	---
CARBON DIOXIDE	0.48	1.17	---	---
METHANE	89.8405	80.0923	---	---
ETHANE	6.6604	11.1293	1.7759	1.7856
PROPANE	1.8707	4.5840	0.5137	0.5165
I-BUTANE	0.3303	1.0669	0.1079	0.1085
N-BUTANE	0.3010	0.9722	0.0949	0.0955
I-PENTANE	0.0831	0.3330	0.0300	0.0301
N-PENTANE	0.0434	0.1740	0.0160	0.0161
HEXANES PLUS	0.0261	0.1469	0.0100	0.0100
TOTALS	100.00000	100.00000	2.5524	2.5663

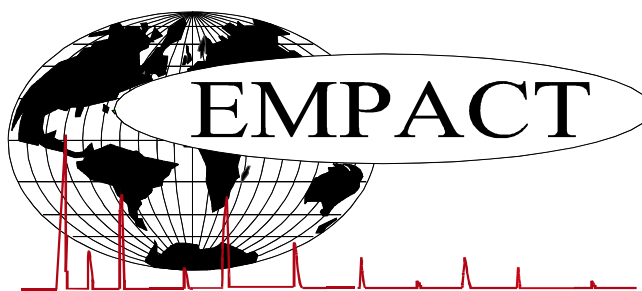
<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>	<u>BTU @ 14.65</u>	<u>14.73</u>
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	993.3 /scf
TOLUENE	0.0001	0.0005	NET WET REAL :	975.9 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1099.6 /scf
XYLENES	0.0004	0.0024	GROSS WET REAL :	1080.4 /scf
TOTAL BTEX	0.0005	0.0029	NET HEATING VALUE (60 °F ideal reaction):	20958.5 Btu/lbm
			GROSS HEATING VALUE (60°F ideal reaction):	23202.6 Btu/lbm
			RELATIVE DENSITY (AIR=1):	0.6209
			DENSITY	0.04742 lbm/scf
			COMPRESSIBILITY FACTOR :	0.9975
			REGULAR WOBBE INDEX	1396.4

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730,GPA 2261 & GPA 2286.

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

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



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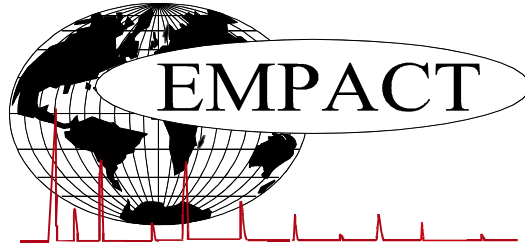
GLYCALC INFORMATION

PROJECT NO. :	202103019	ANALYSIS NO. :	07
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 05, 2021 07:30
ACCOUNT NO. :		SAMPLE DATE :	MARCH 1, 2021 10:00
PRODUCER :		CYLINDER NO. :	ECA-796
LEASE NO. :	05-045-13081	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	Unocal 24D-9D U2 Pad Casing		
FIELD DATA		SAMPLE TEMP. :	23
SAMPLE PRES. :	235	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	- ppm		
COMMENTS :	<i>SPOT NO PROBE</i>		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.00	0.00
Hydrogen	0.17	0.02
Carbon Dioxide	0.48	1.17
Nitrogen	0.16	0.25
Methane	89.8405	80.0923
Ethane	6.6604	11.1293
Propane	1.8707	4.5840
Isobutane	0.3303	1.0669
n-Butane	0.3010	0.9722
Isopentane	0.0826	0.3311
n-Pentane	0.0434	0.1740
Cyclopentane	0.0005	0.0019
n-Hexane	0.0039	0.0187
Cyclohexane	0.0004	0.0019
Other Hexanes	0.0122	0.0584
Heptanes	0.0009	0.0051
Methylcyclohexane	0.0002	0.0011
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0000	0.0000
Toluene	0.0001	0.0005
Ethylbenzene	0.0000	0.0000
Xylenes	0.0004	0.0024
C8+ Heavies	0.0080	0.0588
<u>Subtotal</u>	<u>99.96550</u>	<u>99.93860</u>
Oxygen/Argon	0.00	0.00
<u>Alcohols</u>	<u>0.0345</u>	<u>0.0614</u>
Total	100.00000	100.00000

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:	05-045-13081	NAME/DESCRIP :	Unocal 24D-9D
LEASE #:	05-045-13081		U2 Pad
FIELD/AREA:			Casing
PROJECT NO. :	202103019	ANALYSIS NO. :	07
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PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	235	PROBE :	NO
FLOW PRES. :		CYLINDER NO. :	ECA-796
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:			

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
Hydrogen	---	0.17	0.02	---	---
Nitrogen	---	0.16	0.25	---	---
Carbon Dioxide	---	0.48	1.17	---	---
Methane	P1	89.8405	80.0923	---	---
Ethane	P2	6.6604	11.1293	1.776	1.786
Propane	P3	1.8707	4.5840	0.514	0.517
i-Butane	I4	0.3303	1.0669	0.108	0.109
Methanol	X1	0.0345	0.0614	0.004	0.004
n-Butane	P4	0.3010	0.9722	0.095	0.096
2,2-Dimethylpropane	I5	0.0038	0.0152	0.001	0.001
i-Pentane	I5	0.0788	0.3159	0.029	0.029
n-Pentane	P5	0.0434	0.1740	0.016	0.016
2,2-Dimethylbutane	I6	0.0015	0.0072	0.001	0.001
Cyclopentane	N5	0.0005	0.0019	0.000	0.000
2,3-Dimethylbutane	I6	0.0015	0.0072	0.001	0.001
2-Methylpentane	I6	0.0058	0.0278	0.002	0.002
3-Methylpentane	I6	0.0025	0.0120	0.001	0.001
n-Hexane	P6	0.0039	0.0187	0.002	0.002
Methylcyclopentane	N6	0.0009	0.0042	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0001	0.0006	0.000	0.000
Cyclohexane	N6	0.0004	0.0019	0.000	0.000
2-Methylhexane	I7	0.0002	0.0011	0.000	0.000
2,3-Dimethylpentane	I7	0.0001	0.0006	0.000	0.000
3-Methylhexane	I7	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0002	0.0011	0.000	0.000
Methylcyclohexane	N7	0.0002	0.0011	0.000	0.000
Toluene	A7	0.0001	0.0005	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000

1,2-Dimethylbenzene (o-Xylene)	A8	0.0003	0.0018	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0013	0.000	0.000
3,6-Dimethyloctane	I10	0.0006	0.0047	0.000	0.000
1,3-Methylethylbenzene	A9	0.0009	0.0060	0.001	0.001
1,3,5-Trimethylbenzene	A9	0.0009	0.0060	0.000	0.000
1,2-Methylethylbenzene	A9	0.0007	0.0047	0.000	0.000
t-Butylbenzene	A10	0.0024	0.0179	0.001	0.001
i-Butylbenzene	A10	0.0003	0.0022	0.000	0.000
3-Ethylnonane	I10	0.0001	0.0009	0.000	0.000
UnknownC10s	U10	0.0018	0.0142	0.001	0.001
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
TOTAL		100.0000	100.0000	2.5524	2.5663

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0000	0.0000
TOLUENE	0.0001	0.0005
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0004	0.0024
TOTAL BTEX	0.0005	0.0029

BTU @	14.65	14.73
LHV NET DRY REAL :	993.3 /scf	998.7 /scf
NET WET REAL :	975.9 /scf	981.3 /scf
HHV GROSS DRY REAL :	1099.6 /scf	1105.7 /scf
GROSS WET REAL :	1080.4 /scf	1086.5 /scf
NET HEATING VALUE (60 °F ideal reaction):		20958.5 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		23202.6 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6209
DENSITY		0.04742 lb/scf
COMPRESSIBILITY FACTOR :		0.9975
REGULAR WOBBE INDEX		1396.4

*(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	5105 /scf	Relative Density - SG (Air=1)	3.4927	C6+ factors
Gross Dry Ideal BTU	5483.1 /scf	Z Compressibility Factor	0.9925	0.99042
Net Dry Ideal BTU	19074.6 /lb	Density Factor	266.572 lbm/1000 ft3	
Gross Dry Ideal BTU	20486.3 /lb	Molar Mass or MW	101.161 g/mol	
		Volume Liquid Ideal gas	0.01 scf/gal	23.2

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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