EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-13083**	NAME/DESCRIP :	**Unocal 14B-9D**
LEASE #:	**05-045-13083**		**U2 Pad**
FIELD/AREA:			**Braidenhead**

PROJECT NO. :	**202103019**	ANALYSIS NO. :	**04**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 05, 2021 09:21
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 08:45
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	26	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-732
LAB PRES:		psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	23	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: ***Possible Ethylene in sample***

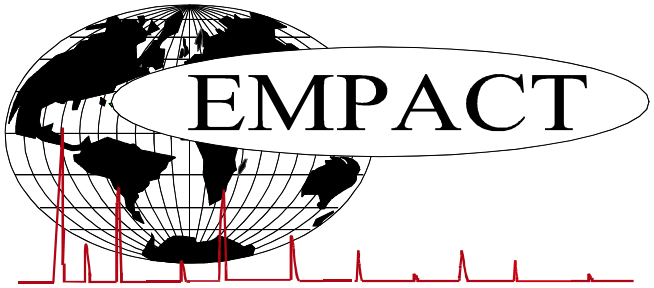
COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.02	0.04	---	---
NITROGEN	0.63	1.00	---	---
CARBON DIOXIDE	0.01	0.02	---	---
METHANE	93.3913	84.7453	---	---
ETHANE	3.2963	5.6064	0.8783	0.8831
PROPANE	1.2415	3.0966	0.3407	0.3426
I-BUTANE	0.2624	0.8627	0.0859	0.0864
N-BUTANE	0.4673	1.5363	0.1469	0.1477
I-PENTANE	0.1915	0.7805	0.0700	0.0703
N-PENTANE	0.1757	0.7170	0.0630	0.0633
HEXANES PLUS	0.3040	1.5952	0.1190	0.1192
TOTALS	100.00000	100.00000	1.7038	1.7126

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0111	0.0490
TOLUENE	0.0025	0.0130
ETHYLBENZENE	0.0004	0.0024
XYLENES	0.0016	0.0096
TOTAL BTEX	0.0156	0.0740

	BTU @	14.65		14.73	
LHV	NET DRY REAL :	979.5	**/scf**	984.8	**/scf**
	NET WET REAL :	962.4	**/scf**	967.7	**/scf**
HHV	GROSS DRY REAL :	1084.9	**/scf**	1090.8	**/scf**
	GROSS WET REAL :	1065.9	**/scf**	1071.8	**/scf**

NET HEATING VALUE (60 °F ideal reaction):	21063.0	**Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	23326.9	**Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6098	
DENSITY	0.04658	**lbm/scf**
COMPRESSIBILITY FACTOR :	0.9976	
REGULAR WOBBE INDEX	1390.3	

**(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. :	202103019	ANALYSIS NO. :	04
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MARCH 05, 2021 09:21
ACCOUNT NO. :		SAMPLE DATE :	MARCH 1, 2021 08:45
PRODUCER :		CYLINDER NO. :	ECA-732
LEASE NO. :	05-045-13083	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	Unocal 14B-9D U2 Pad Braidenhead		
FIELD DATA		SAMPLE TEMP. :	23
SAMPLE PRES. :	26	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm*		
COMMENTS :	***SPOT*** ***NO PROBE*** ***Possible Ethylene in sample***		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.01	0.02
Nitrogen	0.63	1.00
Methane	93.3913	84.7453
Ethane	3.2963	5.6064
Propane	1.2415	3.0966
Isobutane	0.2624	0.8627
n-Butane	0.4673	1.5363
Isopentane	0.1829	0.7464
n-Pentane	0.1757	0.7170
Cyclopentane	0.0086	0.0341
n-Hexane	0.0527	0.2569
Cyclohexane	0.0194	0.0924
Other Hexanes	0.1044	0.5064
Heptanes	0.0530	0.2989
Methylcyclohexane	0.0242	0.1344
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0111	0.0490
Toluene	0.0025	0.0130
Ethylbenzene	0.0004	0.0024
Xylenes	0.0016	0.0096
C8+ Heavies	0.0347	0.2322
Subtotal	99.98000	99.96000
Oxygen/Argon	0.02	0.04
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:	**05-045-13083**	NAME/DESCRIP :	**Unocal 14B-9D**
LEASE #:	**05-045-13083**		**U2 Pad**
FIELD/AREA:			**Braidenhead**
PROJECT NO. :	**202103019**	ANALYSIS NO. :	**04**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MARCH 05, 2021 09:21
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MARCH 1, 2021 08:45
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	26 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-732
LAB PRES:	psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	23 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:	***Possible Ethylene in sample***		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Helium	---	0.01	0.00	---	---
Oxygen/Argon	---	0.02	0.04	---	---
Nitrogen	---	0.63	1.00	---	---
Carbon Dioxide	---	0.01	0.02	---	---
Methane	P1	93.3913	84.7453	---	---
Ethane	P2	3.2958	5.6055	0.878	0.883
UnknownC2s	U2	0.0005	0.0009	0.000	0.000
Propane	P3	1.2415	3.0966	0.341	0.343
i-Butane	I4	0.2624	0.8627	0.086	0.086
n-Butane	P4	0.4673	1.5363	0.147	0.148
2,2-Dimethylpropane	I5	0.0032	0.0131	0.001	0.001
i-Pentane	I5	0.1797	0.7333	0.066	0.066
n-Pentane	P5	0.1756	0.7166	0.063	0.063
2,2-Dimethylbutane	I6	0.0031	0.0151	0.001	0.001
Cyclopentane	N5	0.0086	0.0341	0.003	0.003
2,3-Dimethylbutane	I6	0.0076	0.0371	0.003	0.003
2-Methylpentane	I6	0.0475	0.2315	0.020	0.020
3-Methylpentane	I6	0.0247	0.1204	0.010	0.010
UnknownC5s	U5	0.0001	0.0004	0.000	0.000
n-Hexane	P6	0.0527	0.2569	0.022	0.022
2,2-Dimethylpentane	I7	0.0009	0.0051	0.000	0.000
Methylcyclopentane	N6	0.0215	0.1023	0.008	0.008
2,4-Dimethylpentane	I7	0.0018	0.0102	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0003	0.0017	0.000	0.000
Benzene	A6	0.0111	0.0490	0.003	0.003
3,3-Dimethylpentane	I7	0.0004	0.0023	0.000	0.000
Cyclohexane	N6	0.0194	0.0924	0.007	0.007
2-Methylhexane	I7	0.0093	0.0527	0.004	0.004
2,3-Dimethylpentane	I7	0.0028	0.0159	0.001	0.001

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

1,1-Dimethylcyclopentane	N7	0.0016	0.0089	0.001	0.001
3-Methylhexane	I7	0.0084	0.0476	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0027	0.0150	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0030	0.0167	0.001	0.001
3-Ethylpentane	I7	0.0005	0.0028	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0045	0.0250	0.002	0.002
n-Heptane	P7	0.0156	0.0884	0.007	0.007
1c,2-Dimethylcyclopentane	N7	0.0002	0.0011	0.000	0.000
Methylcyclohexane	N7	0.0242	0.1344	0.010	0.010
2,2-Dimethylhexane	I8	0.0011	0.0071	0.001	0.001
Ethylcyclopentane	N7	0.0010	0.0055	0.000	0.000
2,5-Dimethylhexane	I8	0.0006	0.0039	0.000	0.000
2,4-Dimethylhexane	I8	0.0007	0.0045	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0008	0.0051	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0006	0.0038	0.000	0.000
Toluene	A7	0.0025	0.0130	0.001	0.001
2,3-Dimethylhexane	I8	0.0006	0.0039	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0013	0.000	0.000
2-Methylheptane	I8	0.0034	0.0220	0.002	0.002
4-Methylheptane	I8	0.0009	0.0058	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
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0021	0.0136	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0029	0.0184	0.001	0.001
3-Ethylhexane	I8	0.0002	0.0013	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0013	0.0083	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0004	0.0026	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0003	0.0019	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0010	0.0063	0.001	0.001
n-Octane	P8	0.0049	0.0317	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0006	0.0038	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0003	0.0019	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0012	0.0085	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0007	0.0051	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0003	0.0019	0.000	0.000
n-Propylcyclopentane	N8	0.0007	0.0045	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0004	0.0024	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0011	0.0066	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0012	0.000	0.000
4-Methyloctane	I9	0.0003	0.0022	0.000	0.000
2-Methyloctane	I9	0.0005	0.0036	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0005	0.0036	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0003	0.0018	0.000	0.000
i-Butylcyclopentane	N9	0.0003	0.0022	0.000	0.000
n-Nonane	P9	0.0019	0.0138	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	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	0.0003	0.0022	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
n-Propylbenzene	A9	0.0003	0.0020	0.000	0.000

3-Methyl-5-ethylheptane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
5-Methylnonane	I10	0.0001	0.0008	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0014	0.000	0.000
3-Methylnonane	I10	0.0001	0.0008	0.000	0.000
t-Butylbenzene	A10	0.0002	0.0015	0.000	0.000
UnknownC9s	U9	0.0004	0.0029	0.000	0.000
n-Decane	P10	0.0006	0.0048	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0002	0.0015	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0005	0.0040	0.000	0.000
n-Undecane	P11	0.0001	0.0009	0.000	0.000
n-Hexadecane	P16	0.0001	0.0013	0.000	0.000
TOTAL		100.00000	100.00000	1.7038	1.7126

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0111	0.0490
TOLUENE	0.0025	0.0130
ETHYLBENZENE	0.0004	0.0024
XYLENES	0.0016	0.0096
TOTAL BTEX	0.0156	0.0740

**(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 :	979.5 /scf	984.8 /scf
	NET WET REAL :	962.4 /scf	967.7 /scf
HHV	GROSS DRY REAL :	1084.9 /scf	1090.8 /scf
	GROSS WET REAL :	1065.9 /scf	1071.8 /scf
	NET HEATING VALUE (60 °F ideal reaction):		21063.0 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		23326.9 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6098
	DENSITY		0.04658 lb/scf
	COMPRESSIBILITY FACTOR :		0.9976
	REGULAR WOBBE INDEX		1390.3

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

Net Dry Ideal BTU	4676.2 /scf	Relative Density - SG (Air=1)	3.2032	***C6+factors***
Gross Dry Ideal BTU	5032.9 /scf	**Z** Compressiblity Factor	0.99139	0.99074
Net Dry Ideal BTU	19319.4 /lb	Density Factor	244.498 lbm/1000 ft3	
Gross Dry Ideal BTU	20792.6 /lb	Molar Mass or MW	92.789 g/mol	
		Volume Liquid Ideal gas	0.119 scf/gal	23.6

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.