EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-19130**	NAME/DESCRIP :	**SGV FEDERAL #7-41B (8D)**
LEASE #:	**300115254, COC-23443**		**CASING**
FIELD/AREA:	**PARACHUTE - #67350**		

PROJECT NO. :	**202405083**	ANALYSIS NO. :	**03**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 17, 2024 14:35
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	MAY 9, 2024 9:00
CUSTOMER REF:		TO:	
PRODUCER :	CAERUS PICEANCE LLC	EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	404	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-747
LAB PRES:		psig	SAMPLED BY :	MIKE KELLEY
SAMPLE TEMP. :	44	ºf	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	Mol %

FIELD COMMENTS:

LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0014	0.0025	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.08	0.12	---	---
CARBON DIOXIDE	1.28	3.07	---	---
METHANE	89.6578	78.3703	---	---
ETHANE	6.0081	9.8435	1.6021	1.6108
PROPANE	1.9092	4.5871	0.5247	0.5276
I-BUTANE	0.3112	0.9856	0.1019	0.1025
N-BUTANE	0.3600	1.1401	0.1129	0.1136
I-PENTANE	0.1046	0.4107	0.0380	0.0382
N-PENTANE	0.0736	0.2893	0.0270	0.0271
HEXANES PLUS	0.2141	1.1809	0.0850	0.0851
TOTALS	100.00000	100.00000	2.4916	2.5049

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0053	0.0226
TOLUENE	0.0121	0.0608
ETHYLBENZENE	0.0013	0.0075
XYLENES	0.0119	0.0687
TOTAL BTEX	0.0306	0.1596

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

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

CALCULATED VALUES**

	BTU @	14.65		14.73	
LHV	NET DRY REAL :	992.9	/scf	998.4	/scf
	NET WET REAL :	975.5	/scf	981.0	/scf
HHV	GROSS DRY REAL :	1099.1	/scf	1105.1	/scf
	GROSS WET REAL :	1079.9	/scf	1085.9	/scf
	NET HEATING VALUE (60 °F ideal reaction):			20569.5	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			22764.6	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.6331	
	DENSITY			0.04836	lbm/scf
	COMPRESSIBILITY FACTOR :			0.9974	
	REGULAR WOBBE INDEX			1382.1	

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202405083	ANALYSIS NO. :	03
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MAY 17, 2024 14:35
ACCOUNT NO. :		SAMPLE DATE :	MAY 9, 2024 9:00
PRODUCER :	CAERUS PICEANCE LLC	CYLINDER NO. :	ECA-747
LEASE NO. :	300115254, COC-23443	SAMPLED BY :	MIKE KELLEY
NAME/DESCRIP :	SGV FEDERAL #7-41B (8D) CASING		
FIELD DATA		SAMPLE TEMP. :	44
SAMPLE PRES. :	404	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	1.28	3.07
Nitrogen	0.08	0.12
Methane	89.6578	78.3703
Ethane	6.0081	9.8435
Propane	1.9092	4.5871
Isobutane	0.3112	0.9856
n-Butane	0.3600	1.1401
Isopentane	0.1010	0.3970
n-Pentane	0.0736	0.2893
Cyclopentane	0.0036	0.0137
n-Hexane	0.0243	0.1141
Cyclohexane	0.0132	0.0605
Other Hexanes	0.0463	0.2162
Heptanes	0.0339	0.1839
Methylcyclohexane	0.0270	0.1444
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0053	0.0226
Toluene	0.0121	0.0608
Ethylbenzene	0.0013	0.0075
Xylenes	0.0119	0.0687
C8+ Heavies	0.0388	0.3022
Subtotal	99.99860	99.99750
Oxygen/Argon	0.00	0.00
Alcohols	0.0014	0.0025
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**	**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV Net Dry Real:	992.9	5070.8	6621.0	14159.6	**Btu/scf**
Net Wet Real:	975.5	4982.2	6505.3	13912.1	**Btu/scf**
HHV Gross Dry Real:	1099.1	5442.7	7095.8	15220.1	**Btu/scf**
Gross Wet Real:	1079.9	5347.6	6971.8	14954.0	**Btu/scf**
Other Calculated Values					
Regualr Wobbe Index*	1382.1	2902.8	3310.4	4889.6	**Btu/scf**
Net Heating Value (60 °F ideal reaction):	20569.5	19705.3	20946.1	25797.2	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):	22764.6	21149.2	22455.7	27728.7	**Btu/lbm**
Molar Mass (MW):	18.35327	101.218	133.462	282.384	**g/mol**
Relative Density (AIR=1):	0.6331	3.4943	4.6079	9.7500	**SG**
Density:	0.04836	0.26673	0.35168	0.74413	**lbm/scf**
Compressiblity Factor:	0.9974	0.9939	0.9983	1.0000	**Z**
Liquid Volume real gas @: **14.65**	17.825	0.0847	0.0229	0.005	**gal/1000 scf**

**** The Wobbe pressure base in the number considered is based upon the given Pb of the HHV above.***

#DIV/0 or 0 (zero) will appear in the Calculated Value Section when there is no C6+, C8+ or C10+ in the sample to calculate these factors.

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.

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

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SAMPLE TEMP. :	44 ºf	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
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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	---	0.00	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.08	0.12	---	---
Carbon Dioxide	---	1.28	3.07	---	---
Methane	P1	89.6578	78.3703	---	---
Ethane	P2	6.0081	9.8435	1.602	1.611
Propane	P3	1.9092	4.5871	0.525	0.528
i-Butane	I4	0.3112	0.9856	0.102	0.103
Methanol	X1	0.0014	0.0025	0.000	0.000
n-Butane	P4	0.3600	1.1401	0.113	0.114
2,2-Dimethylpropane	I5	0.0026	0.0102	0.001	0.001
i-Pentane	I5	0.0984	0.3868	0.036	0.036
n-Pentane	P5	0.0736	0.2893	0.027	0.027
2,2-Dimethylbutane	I6	0.0022	0.0104	0.001	0.001
Cyclopentane	N5	0.0036	0.0137	0.001	0.001
2,3-Dimethylbutane	I6	0.0040	0.0188	0.002	0.002
2-Methylpentane	I6	0.0181	0.0850	0.007	0.007
3-Methylpentane	I6	0.0096	0.0451	0.004	0.004
n-Hexane	P6	0.0243	0.1141	0.010	0.010
2,2-Dimethylpentane	I7	0.0005	0.0027	0.000	0.000
Methylcyclopentane	N6	0.0124	0.0569	0.004	0.004
2,4-Dimethylpentane	I7	0.0010	0.0055	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0002	0.0011	0.000	0.000
Benzene	A6	0.0053	0.0226	0.001	0.001
3,3-Dimethylpentane	I7	0.0003	0.0016	0.000	0.000
Cyclohexane	N6	0.0132	0.0605	0.004	0.004
2-Methylhexane	I7	0.0050	0.0273	0.002	0.002
2,3-Dimethylpentane	I7	0.0012	0.0065	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0010	0.0053	0.000	0.000

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3-Methylhexane	I7	0.0045	0.0246	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0018	0.0096	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0018	0.0096	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0016	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0027	0.0144	0.001	0.001
n-Heptane	P7	0.0123	0.0671	0.006	0.006
1c,2-Dimethylcyclopentane	N7	0.0003	0.0016	0.000	0.000
Methylcyclohexane	N7	0.0270	0.1444	0.011	0.011
2,2-Dimethylhexane	I8	0.0005	0.0031	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0001	0.0006	0.000	0.000
Ethylcyclopentane	N7	0.0009	0.0048	0.000	0.000
2,5-Dimethylhexane	I8	0.0005	0.0031	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0004	0.0025	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0004	0.0025	0.000	0.000
3,3-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0121	0.0608	0.004	0.004
2,3-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0024	0.0149	0.001	0.001
4-Methylheptane	I8	0.0007	0.0044	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	0.0016	0.0100	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0037	0.0226	0.002	0.002
3-Ethylhexane	I8	0.0003	0.0019	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0016	0.0098	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0031	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0014	0.0086	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0067	0.0417	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0012	0.0074	0.001	0.001
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,2-Dimethylheptane	I9	0.0003	0.0021	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0016	0.0110	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0009	0.0055	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0025	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,5-Dimethylheptane	I9	0.0006	0.0042	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0013	0.0075	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0077	0.0445	0.003	0.003
1,4-Dimethylbenzene (p-Xylene)	A8	0.0025	0.0144	0.001	0.001
3,4-Dimethylheptane (2)	I9	0.0002	0.0014	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0005	0.0035	0.000	0.000
2-Methyloctane	I9	0.0008	0.0056	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0006	0.0041	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0017	0.0098	0.001	0.001

i-Butylcyclopentane	N9	0.0004	0.0027	0.000	0.000
n-Nonane	P9	0.0001	0.0007	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0007	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0009	0.0063	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0001	0.0007	0.000	0.000
Tetrahydronaphthalene	A10	0.0001	0.0007	0.000	0.000
1,3-Di-n-propylbenzene	A12	0.0001	0.0009	0.000	0.000
n-Hexadecane	P16	0.0001	0.0013	0.000	0.000
n-Heptadecane	P17	0.0002	0.0026	0.000	0.000
n-Octadecane	P18	0.0003	0.0041	0.000	0.000
UnknownC18s	U18	0.0001	0.0014	0.000	0.000
n-Nonadecane	P19	0.0006	0.0088	0.001	0.001
UnknownC19s	U19	0.0003	0.0044	0.000	0.000
n-Eicosane	P20	0.0011	0.0168	0.001	0.001
UnknownC20s	U20	0.0006	0.0092	0.001	0.001
n-Heneicosane	P21	0.0003	0.0049	0.000	0.000
UnknownC21s	U21	0.0008	0.0129	0.001	0.001
n-Docosane	P22	0.0001	0.0017	0.000	0.000
UnknownC22s	U22	0.0009	0.0153	0.001	0.001
UnknownC23s	U23	0.0003	0.0053	0.000	0.000
UnknownC24s	U24	0.0002	0.0037	0.000	0.000
TOTAL		100.00000	100.00000	2.4916	2.5049

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0053	0.0226
TOLUENE	0.0121	0.0608
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TOTAL BTEX	0.0306	0.1596

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HHV	GROSS DRY REAL :	1099.1	**/scf**	1105.1	**/scf**
	GROSS WET REAL :	1079.9	**/scf**	1085.9	**/scf**
	NET HEATING VALUE (60 °F ideal reaction):			20569.5	**Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):			22764.6	**Btu/lbm**
	RELATIVE DENSITY (AIR=1):			0.6331	
	DENSITY			0.04836	**lb/scf**
	COMPRESSIBILITY FACTOR :			0.9974	
	REGULAR WOBBE INDEX			1382.1	

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

Net Dry Ideal BTU	5055.5 **/scf**	Relative Density - SG (Air=1)	3.4943		***C6+factors***
Gross Dry Ideal BTU	5426.3 **/scf**	**Z** Compressiblity Factor	0.99387		0.99299
Net Dry Ideal BTU	19705.3 **/lb**	Density Factor	266.725	**lbm/1000 ft3**	
Gross Dry Ideal BTU	21149.2 **/lb**	Molar Mass or MW	101.218	**g/mol**	
		Volume Liquid Ideal gas	0.085	**scf/gal**	23

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.