EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-045-19134**	NAME/DESCRIP :	**SGV FEDERAL #8-11D (8D)**
LEASE #:	**300115259, COC-58670**		**CASING**
FIELD/AREA:	**PARACHUTE - #67350**		
PROJECT NO. :	**202405083**	ANALYSIS NO. :	**05**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 20, 2024 08:41
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. :	74 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-755
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	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	---	0.09	0.13	---	---
Carbon Dioxide	---	1.13	2.66	---	---
Methane	P1	89.6729	76.8424	---	---
Ethane	P2	5.5080	8.8467	1.468	1.476
Propane	P3	1.8022	4.2449	0.495	0.497
i-Butane	I4	0.3469	1.0770	0.113	0.114
Methanol	X1	0.0083	0.0142	0.001	0.001
n-Butane	P4	0.4185	1.2993	0.132	0.133
2,2-Dimethylpropane	I5	0.0039	0.0150	0.001	0.001
i-Pentane	I5	0.1680	0.6475	0.061	0.061
n-Pentane	P5	0.1451	0.5592	0.052	0.052
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,2-Dimethylbutane	I6	0.0058	0.0267	0.002	0.002
Cyclopentane	N5	0.0090	0.0337	0.003	0.003
2,3-Dimethylbutane	I6	0.0113	0.0520	0.005	0.005
2-Methylpentane	I6	0.0532	0.2449	0.022	0.022
3-Methylpentane	I6	0.0287	0.1321	0.012	0.012
n-Hexane	P6	0.0762	0.3508	0.031	0.031
2,2-Dimethylpentane	I7	0.0017	0.0091	0.001	0.001
Methylcyclopentane	N6	0.0387	0.1740	0.014	0.014
2,4-Dimethylpentane	I7	0.0035	0.0188	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0007	0.0037	0.000	0.000
Benzene	A6	0.0107	0.0447	0.003	0.003
3,3-Dimethylpentane	I7	0.0012	0.0064	0.001	0.001
Cyclohexane	N6	0.0435	0.1956	0.015	0.015
2-Methylhexane	I7	0.0192	0.1028	0.009	0.009
2,3-Dimethylpentane	I7	0.0049	0.0262	0.002	0.002

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1,1-Dimethylcyclopentane	N7	0.0035	0.0184	0.001	0.001
3-Methylhexane	I7	0.0175	0.0937	0.008	0.008
1c,3-Dimethylcyclopentane	N7	0.0071	0.0372	0.003	0.003
1t,3-Dimethylcyclopentane	N7	0.0064	0.0335	0.003	0.003
3-Ethylpentane	I7	0.0007	0.0037	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0104	0.0545	0.005	0.005
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0451	0.2414	0.021	0.021
1c,2-Dimethylcyclopentane	N7	0.0007	0.0037	0.000	0.000
Methylcyclohexane	N7	0.0995	0.5219	0.040	0.040
2,2-Dimethylhexane	I8	0.0023	0.0141	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0034	0.0178	0.001	0.001
2,5-Dimethylhexane	I8	0.0023	0.0141	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0020	0.0122	0.001	0.001
2,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0021	0.0126	0.001	0.001
3,3-Dimethylhexane	I8	0.0007	0.0043	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0288	0.1418	0.010	0.010
2,3-Dimethylhexane	I8	0.0023	0.0141	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0003	0.0018	0.000	0.000
2-Methylheptane	I8	0.0137	0.0836	0.007	0.007
4-Methylheptane	I8	0.0040	0.0244	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0004	0.0025	0.000	0.000
3,4-Dimethylhexane	I8	0.0004	0.0025	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0092	0.0561	0.005	0.005
1c,2t,3-Trimethylcyclopentane	N8	0.0212	0.1271	0.011	0.011
3-Ethylhexane	I8	0.0009	0.0055	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0081	0.0486	0.004	0.004
1,1-Dimethylcyclohexane	N8	0.0025	0.0150	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0009	0.0054	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0008	0.0048	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0010	0.0060	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0002	0.0012	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0077	0.0462	0.004	0.004
1t,3-Dimethylcyclohexane	N8	0.0007	0.0042	0.000	0.000
n-Octane	P8	0.0458	0.2795	0.023	0.023
1c,4-Dimethylcyclohexane	N8	0.0069	0.0413	0.004	0.004
i-Propylcyclopentane	I8	0.0005	0.0030	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0006	0.0041	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0002	0.0014	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0003	0.0020	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0002	0.0012	0.000	0.000
2,2-Dimethylheptane	I9	0.0022	0.0151	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0091	0.0614	0.005	0.005
2,2,3-Trimethylhexane	I9	0.0013	0.0089	0.001	0.001
2,4-Dimethylheptane	I9	0.0004	0.0027	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0020	0.0120	0.001	0.001
n-Propylcyclopentane	N8	0.0017	0.0102	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0006	0.0041	0.000	0.000
2,5-Dimethylheptane	I9	0.0010	0.0068	0.001	0.001
3,3-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0028	0.0159	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	0.0046	0.0261	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0023	0.0130	0.001	0.001
3,4-Dimethylheptane (2)	I9	0.0004	0.0027	0.000	0.000
4-Methyloctane	I9	0.0002	0.0014	0.000	0.000
2-Methyloctane	I9	0.0002	0.0014	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0013	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0005	0.0028	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0009	0.0061	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
1,3-Methylethylbenzene	A9	0.0004	0.0026	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0013	0.000	0.000
2-Methylnonane	I10	0.0002	0.0015	0.000	0.000
t-Butylbenzene	A10	0.0005	0.0036	0.000	0.000
UnknownC9s	U9	0.0003	0.0020	0.000	0.000
n-Decane	P10	0.0001	0.0008	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0001	0.0008	0.000	0.000
n-Undecane	P11	0.0001	0.0009	0.000	0.000
UnknownC11s	U11	0.0001	0.0009	0.000	0.000
n-Dodecane	P12	0.0001	0.0009	0.000	0.000
UnknownC12s	U12	0.0001	0.0009	0.000	0.000
n-Tridecane	P13	0.0001	0.0010	0.000	0.000
UnknownC13s	U13	0.0001	0.0010	0.000	0.000
n-Tetradecane	P14	0.0001	0.0011	0.000	0.000
n-Hexadecane	P16	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	2.6187	2.6325

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0107	0.0447
TOLUENE	0.0288	0.1418
ETHYLBENZENE	0.0028	0.0159
XYLENES	0.0074	0.0419
TOTAL BTEX	0.0497	0.2443

**(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 :	1014.1 /scf	1019.7 /scf	
	NET WET REAL :	996.4 /scf	1002.0 /scf	
HHV	GROSS DRY REAL :	1121.7 /scf	1127.8 /scf	
	GROSS WET REAL :	1102.1 /scf	1108.2 /scf	
	NET HEATING VALUE (60 °F ideal reaction):		20596.9	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		22780.3	Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6460	
	DENSITY		0.04933	lb/scf
	COMPRESSIBILITY FACTOR :		0.9974	
	REGULAR WOBBE INDEX		1396.3	

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

Net Dry Ideal BTU	4891.4 /scf	Relative Density - SG (Air=1)	3.365		***C6+factors***
Gross Dry Ideal BTU	5258.9 /scf	**Z** Compressiblity Factor	0.99361		0.99289
Net Dry Ideal BTU	19349.2 /lb	Density Factor	256.812	lbm/1000 ft3	
Gross Dry Ideal BTU	20803.1 /lb	Molar Mass or MW	97.45	g/mol	
		Volume Liquid Ideal gas	0.293	scf/gal	23.5

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.