EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-19135**	NAME/DESCRIP :	**SGV FEDERAL #8-12A (8D)**
LEASE #:	**300115266, COC-58670**		**BRAIDEN HEAD**
FIELD/AREA:	**PARACHUTE - #67350**		

PROJECT NO. :	**202405084**	ANALYSIS NO. :	**02**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 20, 2024 14:48
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. :	130	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-736
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	50	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
HELIUM	0.01	0.00	---	---
HYDROGEN	0.10	0.01	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.17	0.27	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	91.4019	81.8341	---	---
ETHANE	5.4288	9.1102	1.4471	1.4550
PROPANE	1.7109	4.2105	0.4697	0.4723
I-BUTANE	0.3310	1.0736	0.1079	0.1085
N-BUTANE	0.3390	1.0996	0.1069	0.1075
I-PENTANE	0.1424	0.5728	0.0510	0.0512
N-PENTANE	0.0865	0.3483	0.0310	0.0311
HEXANES PLUS	0.2595	1.4209	0.0990	0.0993
TOTALS	100.00000	100.00000	2.3126	2.3249

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0003	0.0013
TOLUENE	0.0003	0.0016
ETHYLBENZENE	0.0007	0.0041
XYLENES	0.0009	0.0054
TOTAL BTEX	0.0022	0.0124

CALCULATED VALUES**

	BTU @	14.65	14.73
LHV	NET DRY REAL :	998.7 /scf	1004.1 /scf
	NET WET REAL :	981.2 /scf	986.6 /scf
HHV	GROSS DRY REAL :	1105.8 /scf	1111.8 /scf
	GROSS WET REAL :	1086.5 /scf	1092.5 /scf

NET HEATING VALUE (60 °F ideal reaction):	21189.4 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	23457.1 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.6171
DENSITY	0.04721 lbm/scf
COMPRESSIBILITY FACTOR :	0.9975
REGULAR WOBBE INDEX	1408.6

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*

Mod ASTM D6730,GPA 2261 & GPA 2286.

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

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202405084	ANALYSIS NO. :	02
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MAY 20, 2024 14:48
ACCOUNT NO. :		SAMPLE DATE :	MAY 9, 2024 9:00
PRODUCER :	CAERUS PICEANCE LLC	CYLINDER NO. :	ECA-736
LEASE NO. :	300115266, COC-58670	SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	SGV FEDERAL #8-12A (8D) BRAIDEN HEAD		
FIELD DATA		SAMPLE TEMP. :	50
SAMPLE PRES. :	130	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	***SPOT*** ***NO PROBE***		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.10	0.01
Carbon Dioxide	0.02	0.05
Nitrogen	0.17	0.27
Methane	91.4019	81.8341
Ethane	5.4288	9.1102
Propane	1.7109	4.2105
Isobutane	0.3310	1.0736
n-Butane	0.3390	1.0996
Isopentane	0.1379	0.5552
n-Pentane	0.0865	0.3483
Cyclopentane	0.0045	0.0176
n-Hexane	0.0291	0.1400
Cyclohexane	0.0168	0.0789
Other Hexanes	0.0752	0.3596
Heptanes	0.0462	0.2569
Methylcyclohexane	0.0329	0.1803
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0003	0.0013
Toluene	0.0003	0.0016
Ethylbenzene	0.0007	0.0041
Xylenes	0.0009	0.0054
C8+ Heavies	0.0570	0.3922
Subtotal	100.00000	100.00000
Oxygen/Argon	0.00	0.00
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	998.7	4974.6	6181.8	7478.2	**Btu/scf**
	Net Wet Real:	981.2	4887.6	6073.7	7347.5	**Btu/scf**
HHV	Gross Dry Real:	1105.8	5358.2	6659.1	8091.5	**Btu/scf**
	Gross Wet Real:	1086.5	5264.5	6542.7	7950.1	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1408.6	2897.8	3231.8	3578.6	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		21189.4	19413.6	19624.9	19010.3	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		23457.1	20910.3	21142.3	20560.6	**Btu/lbm**
Molar Mass (MW):		17.91809	98.22	123.32	148.906	**g/mol**
Relative Density (AIR=1):		0.6171	3.3922	4.2566	5.1414	**SG**
Density:		0.04721	0.25884	0.32493	0.39240	**lbm/scf**
Compressiblity Factor:		0.9975	0.9929	0.9981	0.9997	**Z**
Liquid Volume real gas @:	**14.65**	17.7463	0.0987	0.0189	0.001	**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

PRIMARY DB KEY:	**05-045-19135**	NAME/DESCRIP :	**SGV FEDERAL #8-12A (8D)**
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FIELD/AREA:	**PARACHUTE - #67350**		
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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. :	130 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-736
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	50 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	---	0.01	0.00	---	---
Hydrogen	---	0.10	0.01	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.17	0.27	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	91.4019	81.8341	---	---
Ethane	P2	5.4288	9.1102	1.447	1.455
Propane	P3	1.7109	4.2105	0.470	0.472
i-Butane	I4	0.3310	1.0736	0.108	0.109
n-Butane	P4	0.3390	1.0996	0.107	0.108
2,2-Dimethylpropane	I5	0.0037	0.0149	0.001	0.001
i-Pentane	I5	0.1342	0.5403	0.049	0.049
n-Pentane	P5	0.0865	0.3483	0.031	0.031
2,2-Dimethylbutane	I6	0.0041	0.0197	0.002	0.002
Cyclopentane	N5	0.0045	0.0176	0.001	0.001
2,3-Dimethylbutane	I6	0.0076	0.0366	0.003	0.003
2-Methylpentane	I6	0.0283	0.1361	0.012	0.012
3-Methylpentane	I6	0.0169	0.0813	0.007	0.007
n-Hexane	P6	0.0291	0.1400	0.012	0.012
2,2-Dimethylpentane	I7	0.0010	0.0056	0.000	0.000
Methylcyclopentane	N6	0.0183	0.0859	0.006	0.006
2,4-Dimethylpentane	I7	0.0020	0.0112	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0028	0.000	0.000
Benzene	A6	0.0003	0.0013	0.000	0.000
3,3-Dimethylpentane	I7	0.0006	0.0033	0.000	0.000
Cyclohexane	N6	0.0168	0.0789	0.006	0.006
2-Methylhexane	I7	0.0076	0.0425	0.004	0.004
2,3-Dimethylpentane	I7	0.0024	0.0134	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0019	0.0104	0.001	0.001

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3-Methylhexane	I7	0.0067	0.0374	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0031	0.0170	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0028	0.0153	0.001	0.001
3-Ethylpentane	I7	0.0005	0.0028	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0041	0.0225	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0113	0.0632	0.005	0.005
1c,2-Dimethylcyclopentane	N7	0.0004	0.0022	0.000	0.000
Methylcyclohexane	N7	0.0329	0.1803	0.013	0.013
2,2-Dimethylhexane	I8	0.0010	0.0064	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0002	0.0012	0.000	0.000
Ethylcyclopentane	N7	0.0010	0.0055	0.000	0.000
2,5-Dimethylhexane	I8	0.0009	0.0057	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0009	0.0057	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0007	0.0044	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0013	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	0.0003	0.0016	0.000	0.000
2,3-Dimethylhexane	I8	0.0008	0.0051	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0031	0.0198	0.002	0.002
4-Methylheptane	I8	0.0012	0.0076	0.001	0.001
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	0.0023	0.0147	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0053	0.0332	0.003	0.003
3-Ethylhexane	I8	0.0005	0.0032	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0023	0.0144	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0007	0.0044	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	0.0002	0.0012	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0003	0.0019	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0019	0.0119	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
UnknownC7s	U7	0.0001	0.0006	0.000	0.000
n-Octane	P8	0.0042	0.0268	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0012	0.0075	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
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0017	0.0120	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0003	0.0021	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0012	0.0075	0.001	0.001
n-Propylcyclopentane	N8	0.0006	0.0037	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0014	0.000	0.000
2,5-Dimethylheptane	I9	0.0009	0.0064	0.001	0.001
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0014	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0007	0.0041	0.000	0.000

1,3-Dimethylbenzene (m-Xylene)	A8	0.0005	0.0030	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0002	0.0012	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0008	0.0057	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0014	0.000	0.000
3-Methyloctane	I9	0.0002	0.0014	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0011	0.0078	0.001	0.001
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0002	0.0012	0.000	0.000
i-Butylcyclopentane	N9	0.0008	0.0056	0.000	0.000
n-Nonane	P9	0.0020	0.0143	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0004	0.0028	0.000	0.000
i-Propylbenzene	A9	0.0003	0.0020	0.000	0.000
i-Propylcyclohexane	N9	0.0003	0.0021	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,4-Dimethyloctane	I10	0.0002	0.0016	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
2,5-Dimethyloctane	I10	0.0002	0.0016	0.000	0.000
n-Butylcyclopentane	N9	0.0006	0.0042	0.000	0.000
3,3-Dimethyloctane	I10	0.0003	0.0024	0.000	0.000
n-Propylbenzene	A9	0.0006	0.0040	0.000	0.000
3,6-Dimethyloctane	I10	0.0002	0.0016	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0016	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0013	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0013	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0008	0.000	0.000
5-Methylnonane	I10	0.0003	0.0024	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0007	0.000	0.000
2-Methylnonane	I10	0.0003	0.0024	0.000	0.000
3-Ethyloctane	I10	0.0002	0.0016	0.000	0.000
3-Methylnonane	I10	0.0003	0.0024	0.000	0.000
t-Butylbenzene	A10	0.0005	0.0037	0.000	0.000
i-Butylcyclohexane	N10	0.0002	0.0016	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0008	0.000	0.000
UnknownC9s	U9	0.0024	0.0172	0.001	0.001
n-Decane	P10	0.0008	0.0064	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
3-Ethylnonane	I10	0.0001	0.0009	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Dimethyl-3-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Ethyl-i-propylbenzene	A10	0.0001	0.0008	0.000	0.000
1,4-Methyl-t-butylbenzene	A11	0.0001	0.0008	0.000	0.000
UnknownC10s	U10	0.0018	0.0143	0.001	0.001
n-Undecane	P11	0.0006	0.0052	0.000	0.000
1,4-Ethyl-i-propylbenzene	A11	0.0001	0.0008	0.000	0.000
1,2-Methyl-n-butylbenzene	A11	0.0001	0.0008	0.000	0.000
1,2-Ethyl-n-propylbenzene	A11	0.0001	0.0008	0.000	0.000

n-Pentylbenzene	A11	0.0001	0.0008	0.000	0.000
1,2-Di-n-propylbenzene	A11	0.0001	0.0009	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0001	0.0009	0.000	0.000
Tetrahydronaphthalene	A10	0.0001	0.0007	0.000	0.000
Naphthalene	A10	0.0001	0.0007	0.000	0.000
1-t-Butyl-3,5-dimethylbenzene	A12	0.0001	0.0009	0.000	0.000
1,4-Ethyl-t-butylbenzene	A11	0.0001	0.0009	0.000	0.000
UnknownC11s	U11	0.0007	0.0061	0.000	0.000
n-Dodecane	P12	0.0003	0.0028	0.000	0.000
1,3,5-Triethylbenzene	A12	0.0001	0.0009	0.000	0.000
1,4-Methyl-n-pentylbenzene	A12	0.0001	0.0009	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0008	0.000	0.000
UnknownC12s	U12	0.0005	0.0043	0.000	0.000
n-Tridecane	P13	0.0002	0.0021	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
UnknownC14s	U14	0.0001	0.0011	0.000	0.000
UnknownC15s	U15	0.0002	0.0023	0.000	0.000
TOTAL		100.00000	100.00000	2.3126	2.3249

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0003	0.0013
TOLUENE	0.0003	0.0016
ETHYLBENZENE	0.0007	0.0041
XYLENES	0.0009	0.0054
TOTAL BTEX	0.0022	0.0124

**(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 :	998.7	/scf	1004.1	/scf
	NET WET REAL :	981.2	/scf	986.6	/scf
HHV	GROSS DRY REAL :	1105.8	/scf	1111.8	/scf
	GROSS WET REAL :	1086.5	/scf	1092.5	/scf
	NET HEATING VALUE (60 °F ideal reaction):			21189.4	Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):			23457.1	Btu/lbm
	RELATIVE DENSITY (AIR=1):			0.6171	
	DENSITY			0.04721	lb/scf
	COMPRESSIBILITY FACTOR :			0.9975	
	REGULAR WOBBE INDEX			1408.6	

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

Net Dry Ideal BTU	4955	/scf	Relative Density - SG (Air=1)	3.3922		***C6+factors***
Gross Dry Ideal BTU	5337.1	/scf	**Z** Compressiblity Factor	0.99294		0.99173
Net Dry Ideal BTU	19413.6	/lb	Density Factor	258.836	lbm/1000 ft3	
Gross Dry Ideal BTU	20910.3	/lb	Molar Mass or MW	98.22	g/mol	
			Volume Liquid Ideal gas	0.099	scf/gal	22.5

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.