EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-045-19132**	NAME/DESCRIP :	**SGV FEDERAL #8-11C (8D)**
LEASE #:	**300115258, COC-58670**		**CASING**
FIELD/AREA:	**PARACHUTE - #67350**		

PROJECT NO. :	**202405084**	ANALYSIS NO. :	**05**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 21, 2024 08:42
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. :	105	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	ECA-746
LAB PRES:		psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	49	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	0.0158	0.0262	0.0020	0.0020
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.07	0.10	---	---
CARBON DIOXIDE	2.33	5.31	---	---
METHANE	88.1122	73.2213	---	---
ETHANE	5.5678	8.6723	1.4842	1.4923
PROPANE	1.7030	3.8899	0.4678	0.4703
I-BUTANE	0.3601	1.0842	0.1179	0.1186
N-BUTANE	0.4609	1.3877	0.1449	0.1457
I-PENTANE	0.2166	0.8084	0.0780	0.0784
N-PENTANE	0.1766	0.6600	0.0640	0.0643
HEXANES PLUS	0.9770	4.8400	0.3980	0.3996
TOTALS	100.00000	100.00000	2.7568	2.7712

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0276	0.1117
TOLUENE	0.0764	0.3647
ETHYLBENZENE	0.0036	0.0198
XYLENES	0.0280	0.1540
TOTAL BTEX	0.1356	0.6502

**(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 :	1016.2 /scf	1021.7 /scf
	NET WET REAL :	998.4 /scf	1003.9 /scf
HHV	GROSS DRY REAL :	1122.9 /scf	1129.1 /scf
	GROSS WET REAL :	1103.3 /scf	1109.5 /scf

NET HEATING VALUE (60 °F ideal reaction):	19999.3	**Btu/lbm**
GROSS HEATING VALUE (60°F ideal reaction):	22107.5	**Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.6656	
DENSITY	0.05087	**lbm/scf**
COMPRESSIBILITY FACTOR :	0.9974	
REGULAR WOBBE INDEX	1377.1	

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202405084	ANALYSIS NO. :	05
COMPANY NAME :	CAERUS OIL & GAS LLC	ANALYSIS DATE:	MAY 21, 2024 08:42
ACCOUNT NO. :		SAMPLE DATE :	MAY 9, 2024 9:00
PRODUCER :	CAERUS PICEANCE LLC	CYLINDER NO. :	ECA-746
LEASE NO. :	300115258, COC-58670	SAMPLED BY :	ALEX GALLEGOS
NAME/DESCRIP :	SGV FEDERAL #8-11C (8D) CASING		
FIELD DATA		SAMPLE TEMP. :	49
SAMPLE PRES. :	105	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.33	5.31
Nitrogen	0.07	0.10
Methane	88.1122	73.2213
Ethane	5.5678	8.6723
Propane	1.7030	3.8899
Isobutane	0.3601	1.0842
n-Butane	0.4609	1.3877
Isopentane	0.2054	0.7677
n-Pentane	0.1766	0.6600
Cyclopentane	0.0112	0.0407
n-Hexane	0.1047	0.4674
Cyclohexane	0.0693	0.3021
Other Hexanes	0.1776	0.7872
Heptanes	0.1868	0.9652
Methylcyclohexane	0.1619	0.8234
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0276	0.1117
Toluene	0.0764	0.3647
Ethylbenzene	0.0036	0.0198
Xylenes	0.0280	0.1540
C8+ Heavies	0.1410	0.8439
Subtotal	99.98420	99.97380
Oxygen/Argon	0.00	0.00
Alcohols	0.0158	0.0262
Total	100.00000	100.00000

Calculated Values BTU @ 14.65		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1016.2	4786.9	5659.7	7120.1	**Btu/scf**
	Net Wet Real:	998.4	4703.2	5560.8	6995.6	**Btu/scf**
HHV	Gross Dry Real:	1122.9	5136.5	6073.9	7621.7	**Btu/scf**
	Gross Wet Real:	1103.3	5046.7	5967.7	7488.5	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1377.1	2817.9	3067.1	3424.3	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19999.3	19196.7	19652.3	18770.0	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		22107.5	20600.1	21096.0	20089.3	**Btu/lbm**
Molar Mass (MW):		19.30579	95.607	113.705	144.272	**g/mol**
Relative Density (AIR=1):		0.6656	3.3013	3.9261	4.9814	**SG**
Density:		0.05087	0.25195	0.29962	0.38018	**lbm/scf**
Compressiblity Factor:		0.9974	0.9936	0.9974	0.9996	**Z**
Liquid Volume real gas @:	**14.65**	18.0065	0.3968	0.0768	0	**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.

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

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-045-19132**	NAME/DESCRIP :	**SGV FEDERAL #8-11C (8D)**
LEASE #:	**300115258, COC-58670**		**CASING**
FIELD/AREA:	**PARACHUTE - #67350**		
PROJECT NO. :	**202405084**	ANALYSIS NO. :	**05**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 21, 2024 08:42
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. :	105 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-746
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	49 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	---	0.00	0.00	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.07	0.10	---	---
Carbon Dioxide	---	2.33	5.31	---	---
Methane	P1	88.1122	73.2213	---	---
Ethane	P2	5.5678	8.6723	1.484	1.492
Propane	P3	1.7030	3.8899	0.468	0.470
i-Butane	I4	0.3601	1.0842	0.118	0.119
Methanol	X1	0.0158	0.0262	0.002	0.002
n-Butane	P4	0.4609	1.3877	0.145	0.146
2,2-Dimethylpropane	I5	0.0039	0.0146	0.001	0.001
i-Pentane	I5	0.2015	0.7531	0.074	0.074
n-Pentane	P5	0.1766	0.6600	0.064	0.064
2,2-Dimethylbutane	I6	0.0066	0.0295	0.003	0.003
Cyclopentane	N5	0.0112	0.0407	0.003	0.003
2,3-Dimethylbutane	I6	0.0139	0.0621	0.006	0.006
2-Methylpentane	I6	0.0653	0.2915	0.027	0.027
3-Methylpentane	I6	0.0376	0.1678	0.015	0.015
n-Hexane	P6	0.1047	0.4674	0.043	0.043
2,2-Dimethylpentane	I7	0.0025	0.0130	0.001	0.001
Methylcyclopentane	N6	0.0542	0.2363	0.019	0.019
2,4-Dimethylpentane	I7	0.0049	0.0254	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0010	0.0052	0.000	0.000
Benzene	A6	0.0276	0.1117	0.008	0.008
3,3-Dimethylpentane	I7	0.0018	0.0093	0.001	0.001
Cyclohexane	N6	0.0693	0.3021	0.024	0.024
2-Methylhexane	I7	0.0272	0.1412	0.013	0.013
2,3-Dimethylpentane	I7	0.0069	0.0358	0.003	0.003
1,1-Dimethylcyclopentane	N7	0.0056	0.0285	0.002	0.002

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

3-Methylhexane	I7	0.0253	0.1313	0.012	0.012
1c,3-Dimethylcyclopentane	N7	0.0101	0.0514	0.005	0.005
1t,3-Dimethylcyclopentane	N7	0.0096	0.0489	0.004	0.004
3-Ethylpentane	I7	0.0010	0.0052	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0148	0.0753	0.007	0.007
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0693	0.3597	0.032	0.032
1c,2-Dimethylcyclopentane	N7	0.0012	0.0061	0.001	0.001
Methylcyclohexane	N7	0.1619	0.8234	0.065	0.065
2,2-Dimethylhexane	I8	0.0032	0.0190	0.001	0.001
1,1,3-Trimethylcyclopentane	N7	0.0006	0.0035	0.000	0.000
Ethylcyclopentane	N7	0.0050	0.0254	0.002	0.002
2,5-Dimethylhexane	I8	0.0030	0.0178	0.002	0.002
2,2,3-Trimethylpentane	I8	0.0027	0.0160	0.001	0.001
2,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0027	0.0157	0.001	0.001
3,3-Dimethylhexane	I8	0.0009	0.0053	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0002	0.0012	0.000	0.000
Toluene	A7	0.0764	0.3647	0.026	0.026
2,3-Dimethylhexane	I8	0.0027	0.0160	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0003	0.0018	0.000	0.000
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0128	0.0757	0.007	0.007
4-Methylheptane	I8	0.0037	0.0219	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0005	0.0030	0.000	0.000
3,4-Dimethylhexane	I8	0.0004	0.0024	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0082	0.0485	0.004	0.004
1c,2t,3-Trimethylcyclopentane	N8	0.0219	0.1273	0.011	0.011
3-Ethylhexane	I8	0.0009	0.0053	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0089	0.0518	0.005	0.005
1,1-Dimethylcyclohexane	N8	0.0030	0.0175	0.001	0.001
2,2,5-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0007	0.0041	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0006	0.0035	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0009	0.0052	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0068	0.0395	0.003	0.003
1t,3-Dimethylcyclohexane	N8	0.0003	0.0018	0.000	0.000
n-Octane	P8	0.0258	0.1527	0.013	0.013
1c,4-Dimethylcyclohexane	N8	0.0044	0.0256	0.002	0.002
i-Propylcyclopentane	I8	0.0003	0.0018	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0004	0.0026	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0002	0.0014	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0002	0.0011	0.000	0.000
2,2-Dimethylheptane	I9	0.0015	0.0100	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0056	0.0366	0.003	0.003
2,2,3-Trimethylhexane	I9	0.0007	0.0047	0.000	0.000
2,4-Dimethylheptane	I9	0.0003	0.0020	0.000	0.000
Ethylcyclohexane	N8	0.0022	0.0128	0.001	0.001
n-Propylcyclopentane	N8	0.0013	0.0076	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0004	0.0026	0.000	0.000
2,5-Dimethylheptane	I9	0.0017	0.0113	0.001	0.001
3,3-Dimethylheptane	I9	0.0003	0.0020	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	0.0036	0.0198	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000

2,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0184	0.1012	0.007	0.007
1,4-Dimethylbenzene (p-Xylene)	A8	0.0064	0.0352	0.002	0.002
3,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0004	0.0026	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0010	0.0066	0.001	0.001
2-Methyloctane	I9	0.0015	0.0100	0.001	0.001
1c,2t,3-Trimethylcyclohexane	N9	0.0002	0.0013	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	0.0016	0.0105	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	0.0032	0.0176	0.001	0.001
i-Butylcyclopentane	N9	0.0010	0.0065	0.001	0.001
1,3-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
2-Methylnonane	I10	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0012	0.0080	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	2.7568	2.7712

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0276	0.1117
TOLUENE	0.0764	0.3647
ETHYLBENZENE	0.0036	0.0198
XYLENES	0.0280	0.1540
TOTAL BTEX	0.1356	0.6502

**(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 :	1016.2 /scf	1021.7 /scf
	NET WET REAL :	998.4 /scf	1003.9 /scf
HHV	GROSS DRY REAL :	1122.9 /scf	1129.1 /scf
	GROSS WET REAL :	1103.3 /scf	1109.5 /scf
	NET HEATING VALUE (60 °F ideal reaction):		19999.3 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		22107.5 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6656
	DENSITY		0.05087 lb/scf
	COMPRESSIBILITY FACTOR :		0.9974
	REGULAR WOBBE INDEX		1377.1

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

Net Dry Ideal BTU	4771.4 /scf	Relative Density - SG (Air=1)	3.3013		***C6+factors***
Gross Dry Ideal BTU	5119.9 /scf	**Z** Compressiblity Factor	0.99364		0.99297
Net Dry Ideal BTU	19196.7 /lb	Density Factor	251.949	lbm/1000 ft3	
Gross Dry Ideal BTU	20600.1 /lb	Molar Mass or MW	95.607	g/mol	
		Volume Liquid Ideal gas	0.398	scf/gal	24.3

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.

ISOTOPIC NATURAL GAS ANALYSIS

PRIMARY DB KEY:	**05-045-19132**	NAME/DESCRIP :	**SGV FEDERAL #8-11C (8D)**
LEASE #:	**300115258, COC-58670**		**CASING**
FIELD/AREA:	**PARACHUTE - #67350**		
PROJECT NO. :	**202405084**	ANALYSIS NO. :	**05**
COMPANY NAME :	**CAERUS OIL & GAS LLC**	ANALYSIS DATE:	MAY 28, 2024 15:34
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. :	105 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	ECA-746
LAB PRES:	psig	SAMPLED BY :	ALEX GALLEGOS
SAMPLE TEMP. :	49 °f	SAMPLING COMPANY:	CAERUS OIL & GAS LLC
AMBIENT TEMP.:	°f	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

COMPONENTS	NORM. MOLE%	GPM @ 14.65	d13C ‰ VPDB	dD ‰ VSMOW
HELIUM	0.01	-	-	-
HYDROGEN	0.00	-	-	-
OXYGEN/ARGON	0.00	-	-	-
NITROGEN	0.07	-	-	-
CO2	2.33	-	-5.7	-
METHANE	88.11	-	-38.7	-184
ETHANE	5.57	1.4872	-27.7	-
PROPANE	1.70	0.4698	-25.5	-
ISOBUTANE	0.36	0.1179	-25.8	-
N-BUTANE	0.46	0.1449	-24.9	-
ISOPENTANE	0.22	0.0730	-25.3	-
N-PENTANE	0.18	0.0650	-24.8	-
HEXANES+	0.99	0.3508	-	-
TOTAL	100.00	2.7086		

BTU @ 60 DEG F	**14.65**	
GROSS DRY REAL =	1116.1	**/scf**
GROSS SATURATED REAL =	1096.6	**/scf**

RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F)	0.661
GRAVITY (LB/SCF)	0.05045
COMPRESSIBILITY FACTOR :	0.99740

NOTE: REFERENCE GPA 2261(ASTM D1945 & ASME-PTC), 2145, & 2172 CURRENT PUBLICATIONS

Reference: Per GPA 2172-14 sec 9 ***The C6+ is derived from the following ratios of C6, C7 & C8+ respectively:*** **60% 30% 10%**

The NG Composition File #: **202405084-05-A-147**
The Isotopic Data File #: **DIG-035594**

Note:Stable isotope results based on multi-point laboratory calibration
Presicion $\delta^{13}C$ < 0.5 ‰ **Precision δD < 5.0 ‰**
Values in red represent low peak heights. Interpret with caution.