

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	NAME/DESCRIP :	FORT LUPTON GAS PLANT
LEASE #:		PLANT RESIDUE
FIELD/AREA:		
PROJECT NO. :	202306105	ANALYSIS NO. : 01
COMPANY NAME :	ROCKY MOUNTAIN MIDSTREAM, LLC	ANALYSIS DATE: JUNE 20, 2023 16:08
OFFICE / BRANCH:	FT. LUPTON, CO	SAMPLE DATE : JUNE 19, 2023 14:00
CUSTOMER REF:		TO:
PRODUCER :		EFFECTIVE DATE:

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

SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	186 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	1694
LAB PRES:	psig	SAMPLED BY :	DANTE MARTINEZ
SAMPLE TEMP. :	113 °f	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:	°f	H2S BY STAIN TUBE:	— ppm mol
H2O BY STAIN TUBE:	— #/mmcf	CO2 BY STAIN TUBE:	— Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.73</u>	<u>GPM @ 14.65</u>
ALCOHOLS	0.0008	0.0014	0.0000	0.0000
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.66	1.02	---	---
CARBON DIOXIDE	2.01	4.88	---	---
METHANE	87.3387	77.2896	---	---
ETHANE	9.6531	16.0114	2.5873	2.5732
PROPANE	0.3104	0.7550	0.0854	0.0849
I-BUTANE	0.0035	0.0112	0.0010	0.0010
N-BUTANE	0.0033	0.0106	0.0010	0.0010
I-PENTANE	0.0001	0.0004	0.0000	0.0000
N-PENTANE	0.0001	0.0004	0.0000	0.0000
HEXANES PLUS	0.0000	0.0000	0.0000	0.0000
TOTALS	100.00000	100.00000	2.6747	2.6601

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>
BENZENE	0.0000	0.0000
TOLUENE	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0000	0.0000
TOTAL BTEX	0.0000	0.0000

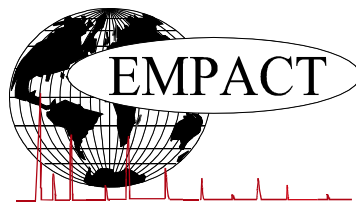
	<u>CALCULATED VALUES**</u>	
	<u>14.73</u>	<u>14.65</u>
LHV NET DRY REAL :	962.6 /scf	957.3 /scf
NET WET REAL :	945.9 /scf	940.6 /scf
HHV GROSS DRY REAL :	1066.0 /scf	1060.2 /scf
GROSS WET REAL :	1047.5 /scf	1041.7 /scf
NET HEATING VALUE (60 °F ideal reaction):		20052.1 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):		22210.5 Btu/lbm
RELATIVE DENSITY (AIR=1):		0.6259
DENSITY		0.04777 lbm/scf
COMPRESSIBILITY FACTOR :		0.9976
REGULAR WOBBE INDEX		1341.0

*(DETAILED HYDROCARBON ANALYSIS/NJ 1993)

Mod ASTM D6730, GPA 2261 & GPA 2286.

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

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



**EXTENDED NATURAL GAS ANALYSIS (*DHA)
GLYCALC INFORMATION**

PROJECT NO. :	202306105	ANALYSIS NO. :	01
COMPANY NAME :	ROCKY MOUNTAIN MIDSTREAM, LLC	ANALYSIS DATE:	JUNE 20, 2023 16:08
ACCOUNT NO. :		SAMPLE DATE :	JUNE 19, 2023 14:00
PRODUCER :		CYLINDER NO. :	1694
LEASE NO. :		SAMPLED BY :	DANTE MARTINEZ
NAME/DESCRIP :	FORT LUPTON GAS PLANT PLANT RESIDUE		

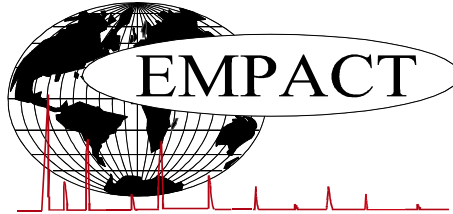
FIELD DATA		SAMPLE TEMP. :	113
SAMPLE PRES. :	186	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	—		
COMMENTS :	<i>SPOT</i>		<i>NO PROBE</i>

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.01	4.88
Nitrogen	0.66	1.02
Methane	87.3387	77.2896
Ethane	9.6531	16.0114
Propane	0.3104	0.7550
Isobutane	0.0035	0.0112
n-Butane	0.0033	0.0106
Isopentane	0.0001	0.0004
n-Pentane	0.0001	0.0004
Cyclopentane	0.0000	0.0000
n-Hexane	0.0000	0.0000
Cyclohexane	0.0000	0.0000
Other Hexanes	0.0000	0.0000
Heptanes	0.0000	0.0000
Methylcyclohexane	0.0000	0.0000
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylenes	0.0000	0.0000
C8+ Heavies	0.0000	0.0000
<u>Subtotal</u>	<u>99.98920</u>	<u>99.97860</u>
Oxygen/Argon	0.01	0.02
Alcohols	0.0008	0.0014
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

	<u>Total</u>	<u>C6+</u>	<u>C8+</u>	<u>C10+</u>	
Calculated Values BTU @ 14.73	Sample	Fraction	Fraction	Fraction	
LHV Net Dry Real:	962.6	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Net Wet Real:	945.9	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
HHV Gross Dry Real:	1066.0	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Gross Wet Real:	1047.5	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Other Calculated Values					
Regualr Wobbe Index*	1341.0	#DIV/0!	#DIV/0!	#DIV/0!	Btu/scf
Net Heating Value (60 °F ideal reaction):	20052.1	#DIV/0!	#DIV/0!	#DIV/0!	Btu/lbm
Gross Heating Value (60°F ideal reaction):	22210.5	#DIV/0!	#DIV/0!	#DIV/0!	Btu/lbm
Molar Mass (MW):	18.12822	#DIV/0!	#DIV/0!	#DIV/0!	g/mol
Relative Density (AIR=1):	0.6259	#DIV/0!	#DIV/0!	#DIV/0!	SG
Density:	0.04777	#DIV/0!	#DIV/0!	#DIV/0!	lbm/scf
Compressibility Factor:	0.9976	#DIV/0!	#DIV/0!	#DIV/0!	Z
Liquid Volume real gas @:	14.73	17.8883	0	0	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 underscore) indicates there was no tube pulled for H2S.

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**EXTENDED NATURAL GAS ANALYSIS (*DHA)
DHA COMPONENT LIST**

PRIMARY DB KEY: NAME/DESCRIP : **FORT LUPTON GAS PLANT**
 LEASE #: **PLANT RESIDUE**
 FIELD/AREA:

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

SAMPLE CYCLE: SAMPLE TYPE: **SPOT**
 SAMPLE PRES. : 186 psig PROBE : **NO**
 FLOW PRES. : psig CYLINDER NO. : **1694**
 LAB PRES: psig SAMPLED BY : **DANTE MARTINEZ**
 SAMPLE TEMP. : 113 °f SAMPLING COMPANY: **EMPACT**
 AMBIENT TEMP.: °f 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 @	GPM @
				14.73	14.65
Helium	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.66	1.02	---	---
Carbon Dioxide	---	2.01	4.88	---	---
Methane	P1	87.3387	77.2896	---	---
Ethane	P2	9.6531	16.0114	2.587	2.573
Propane	P3	0.3104	0.7550	0.085	0.085
i-Butane	I4	0.0035	0.0112	0.001	0.001
Methanol	X1	0.0008	0.0014	0.000	0.000
n-Butane	P4	0.0033	0.0106	0.001	0.001
i-Pentane	I5	0.0001	0.0004	0.000	0.000
n-Pentane	P5	0.0001	0.0004	0.000	0.000
TOTAL		100.0000	100.0000	2.6747	2.6601

CALCULATED VALUES**

BTX COMPONENTS	MOLE%	WT%	BTU @	
			14.73	14.65
BENZENE	0.0000	0.0000	LHV NET DRY REAL :	962.6 /scf 957.3 /scf
TOLUENE	0.0000	0.0000	NET WET REAL :	945.9 /scf 940.6 /scf
ETHYLBENZENE	0.0000	0.0000	HHV GROSS DRY REAL :	1066.0 /scf 1060.2 /scf
XYLENES	0.0000	0.0000	GROSS WET REAL :	1047.5 /scf 1041.7 /scf
TOTAL BTX	0.0000	0.0000	NET HEATING VALUE (60 °F ideal reaction):	20052.1 Btu/lbm
			GROSS HEATING VALUE (60 °F ideal reaction):	22210.5 Btu/lbm
			RELATIVE DENSITY (AIR=1):	0.6259
			DENSITY	0.04777 lb/scf
			COMPRESSIBILITY FACTOR :	0.9976
			REGULAR WOBBE INDEX	1341.0

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

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

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

Net Dry Ideal BTU	#DIV/0! /scf	Relative Density - SG (Air=1)	#DIV/0!	C6+ factors
Gross Dry Ideal BTU	#DIV/0! /scf	Z Compressibility Factor	#DIV/0!	#DIV/0!
Net Dry Ideal BTU	#DIV/0! /lb	Density Factor	#DIV/0! lbm/1000 ft3	
Gross Dry Ideal BTU	#DIV/0! /lb	Molar Mass or MW	#DIV/0! g/mol	
		Volume Liquid Ideal gas	0 scf/gal	#DIV/0!

**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.**

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