



NATURAL GAS ANALYSIS

PRIMARY DB KEY: NAME/DESCRIP : SALEN WELLHEAD
 LEASE #:
 FIELD/ AREA:

PROJECT NO. : 202110125 ANALYSIS NO. : 03
 COMPANY NAME : GRAND MESA OPERATING ANALYSIS DATE: OCTOBER 26, 2021 07:30
 OFFICE / BRANCH: WICHITA, KS SAMPLE DATE : OCTOBER 14, 2021
 CUSTOMER REF: TO:
 PRODUCER : EFFECTIVE DATE:

FIELD DATA

SAMPLE CYCLE: SAMPLE TYPE:
 SAMPLE PRES. : psig PROBE :
 FLOW PRES. : psig CYLINDER NO. : 1L TEDLAR
 LAB PRES: psig SAMPLED BY :
 SAMPLE TEMP. : °f SAMPLING COMPANY: GRAND MESA OPERATING
 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 @ 14.73	GPM @ 14.65
HELIUM	0.15	-	-
HYDROGEN	0.01	-	-
OXYGEN/ARGON	3.06	-	-
NITROGEN	24.43	-	-
CO2	3.17	-	-
METHANE	29.65	-	-
ETHANE	11.73	3.1520	3.1349
PROPANE	20.03	5.5445	5.5143
ISOBUTANE	4.64	1.5261	1.5178
N-BUTANE	1.92	0.6084	0.6051
ISOPENTANE	0.41	0.1511	0.1503
N-PENTANE	0.37	0.1350	0.1343
HEXANES+	0.43	0.1874	0.1863
TOTAL	100.00	11.3045	11.2430

BTU @ 60 DEG F

	14.73	14.65
GROSS DRY REAL =	1287.2 /scf	1280.2 /scf
GROSS SATURATED REAL =	1264.8 /scf	1257.8 /scf
RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F)	1.0743	
DENSITY (lbm/scf)	0.08200	
COMPRESSIBILITY FACTOR :	0.9950	

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 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.



SULFUR IN NATURAL GAS ANALYSIS

SN/PRIMARY DB KEY
LEASE #/ PROJECT #:
FIELD/AREA:

NAME/DESCRIP : SALEN WELLHEAD

PROJECT NO. : 202110125
COMPANY NAME : GRAND MESA OPERATING
OFFICE / BRANCH: WICHITA, KS
CUSTOMER REF:
PRODUCER :

ANALYSIS NO. : 03
ANALYSIS DATE: OCTOBER 26, 2021 08:49
SAMPLE DATE : OCTOBER 14, 2021
TO:
EFFECTIVE DATE:

FIELD DATA

SAMPLE CYCLE:
SAMPLE PRES. : psig
FLOW PRES. : psig
LAB PRES: psig
SAMPLE TEMP. : °f
AMBIENT TEMP.: °f
H2O BY STAIN TUBE: - #/mmcf
FIELD COMMENTS:
LAB COMMENTS:

SAMPLE TYPE:
PROBE :
CYLINDER NO. : 1L TEDLAR
SAMPLED BY :
SAMPLING COMPANY: GRAND MESA OPERATING
H2S BY STAIN TUBE: - ppm mol
CO2 BY STAIN TUBE: - Mol %

COMPONENT	SULFUR	
	ppm mole (ul/L)	ppm wt (ug/g)
Hydrogen Sulfide (H2S)	7.2	7.5
Carbonyl Sulfide (COS)/Sulfur Dioxide (SO2)	BDL	
Methanethiol (MeSH)	BDL	
Ethanethiol (EtSH)	BDL	
Dimethylsulfide (DMS)	BDL	
Carbon Disulfide (CS2)	BDL	
i-Propanethiol (i-PrSH)	BDL	
t-Butanethiol (t-BuSH)	BDL	
n-Propanethiol (n-PrSH)	BDL	
Methylethylsulfide (MES)	BDL	
s-Butanethiol (s-BuSH)	BDL	
i-Butanethiol (i-BuSH)	BDL	
Thiophene (TP)	BDL	
Diethylsulfide (DES)	BDL	
n-Butanethiol (n-BuSH)	BDL	
Dimethyldisulfide (DMDS)	BDL	
Unidentified Sulfurs - Light Ends	BDL	
Methylthiophenes (MTP)	BDL	
2-Ethylthiophene (2-ETP)	BDL	
Methylethylsulfide (MEDS)	BDL	
Dimethylthiophenes (DMTP)	BDL	
Diethyldisulfide (DEDS)	BDL	
Benzothiophene (BzTP)	BDL	
Unidentified Sulfurs - Mid Range	BDL	
Methylbenzothiophenes (MBzTP)	BDL	
Dimethylbenzothiophenes (DMBzTP)	1.5	1.6
Trimethylbenzothiophenes (TMBzTP)	BDL	
Dibenzothiophenes (DBzTP)	BDL	
Methylbenzothiophenes (MDBzTP)	BDL	
<u>Unidentified Sulfurs - Heavy Ends</u>	<u>0.3</u>	<u>0.4</u>
TOTAL SULFUR	9.0	9.5

GRAINS OF H2S	0.4591 / 100 scf	TOTAL GRAINS OF SULFUR	0.5452 / 100 scf
POUNDS OF H2S	0.00066 / 1000 scf	TOTAL POUNDS OF SULFUR	0.0008 / 1000 scf
WT% OF H2S	0.00075 / 1000 scf	TOTAL WT% OF SULFUR	0.00095 / 1000 scf

* ASTM D5504 ** DETECTION LIMIT DETERMINED TO BE 0.1 ppm (ul/L) Sulfur - BDL (BELOW DETECTION LIMIT)
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.