

# Gas Composition and Properties

Anadarko, Kerr McGee Gath, Western Gas  
Partners

Effective November 2, 2017 00:00 - January 18, 2038 21:14

Source #: 100203301  
Name: STATE P #1-#4

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	2.4463		3.7631
Nitrogen, N2	1.4369		1.4070
Methane, C1	55.7897		31.2837
Ethane, C2	15.6143	4.2031	16.4109
Propane, C3	13.4588	3.7321	20.7440
iso-Butane, iC4	1.5307	0.5042	3.1097
n-Butane, nC4	5.3677	1.7033	10.9049
iso-Pentane, iC5	1.2377	0.4556	3.1213
n-Pentane, nC5	1.4608	0.5330	3.6839
Neo-Pentane, NeoC5			
Hexanes, C6	0.8128	0.3364	2.4483
Heptanes, C7	0.5782	0.2685	2.0251
Octanes, C8	0.1934	0.0997	0.7722
Nonanes Plus, C9+	0.0727	0.0412	0.3259
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			

Property	Total Sample	C9 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure	77.280	
Cricondentherm	181.072	
HV, Dry @ Base P, T	1613.63	
HV, Sat @ Base P, T	1585.55	
HV, Sat @ Sample P, T	1517.48	
Relative Density	0.9941	

Totals	100.0000	11.8770	100.0000
--------	----------	---------	----------

## Sample

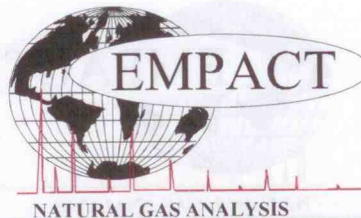
Date: 11/01/2017      Pressure: 25.1  
Type: Spot      Temperature 130.0  
Tech: C. RIOS      H2O: lbs/mm  
H2S: 3 ppm

Remarks:

## Analysis

Date: 11/07/2017      Instrument: 102  
Cylinder:  
Tech: B. GEHRMAN

Remarks:



PRIMARY DB KEY: NAME/DESCRIP: STATE OF COLORADO P TANK BATTERY  
 LEASE #: 05-001-06321  
 FIELD/ AREA:

PROJECT NO.: 201907047 ANALYSIS NO.: 09  
 COMPANY NAME: RENEGADE OIL & GAS COMPANY ANALYSIS DATE: JULY 16, 2019 09:11  
 OFFICE / BRANCH: AURORA, CO SAMPLE DATE: JULY 8, 2019  
 CUSTOMER REF:  
 PRODUCER: TO:  
 EFFECTIVE DATE:

\*\*\*FIELD DATA\*\*\*

SAMPLE CYCLE: SAMPLE TYPE:  
 SAMPLE PRES.: 22 psig PROBE:  
 FLOW PRES.: psig CYLINDER NO.: 0096  
 LAB PRES.: psig SAMPLED BY: CODY BAYLIS  
 SAMPLE TEMP.: 83 °f SAMPLING COMPANY: RENEGADE  
 AMBIENT TEMP.: °f H2S BY STAIN TUBE: .75 ppm  
 H2O BY STAIN TUBE: #/mmcf CO2 BY STAIN TUBE: - Mol %  
 FIELD COMMENTS:  
 LAB COMMENTS:

COMPONENTS	NORM. MOLE%	GPM @ 14.65	GPM @ 14.73
HELIUM	0.01	-	-
HYDROGEN	0.00	-	-
OXYGEN/ARGON	0.01	-	-
NITROGEN	0.98	-	-
CO2	2.34	-	-
METHANE	56.01	-	-
ETHANE	14.01	3.7495	3.7700
PROPANE	12.30	3.3913	3.4098
ISOBUTANE	1.40	0.4585	0.4610
N-BUTANE	5.75	1.8141	1.8240
ISOPENTANE	1.63	0.5970	0.6003
N-PENTANE	2.08	0.7545	0.7586
HEXANES+	3.48	1.5110	1.5193
TOTAL	100.00	12.2759	12.3430

BTU @ 60 DEG F

GROSS DRY REAL = 14.65 1688.9 /scf 14.73 1698.2 /scf  
 GROSS SATURATED REAL = 1659.4 /scf 1668.7 /scf

RELATIVE DENSITY (AIR=1 @ 14.696 PSIA 60F) 1.0361  
 GRAVITY (LB/SCF) 0.07907  
 COMPRESSIBILITY FACTOR: 0.99354

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.