

Natural Gas Analysis Report SAN JUAN DIVISION

JUL 10 2015

30-0cf5-28919 Sample Information

Sample Information	
Sample Name	GALLEGOSFEDERAL 26-13-14-1 BH
TECH	Tim Doering
GC Serial	GC1008B621
Report Date	2015-07-09 07:55:28

Component Results

Component Name	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)
Nitrogen	0.6103	0.0	0.00590	0.067
Oxygen	0.0415	0.0	0.00046	0.004
Methane	94.3477	955.1	0.52259	16.036
Carbon Dioxide	0.0868	0.0	0.00132	0.015
Ethane	2.1338	37.8	0.02215	0.572
Propane	0.4434	11.2	0.00675	0.122
I-Butane	0.1566	5.1	0.00314	0.051
N-Butane	0.1849	6.0	0.00371	0.058
I-Pentane	0.0877	3.5	0.00218	0.032
N-Pentane	0.1311	5.3	0.00327	0.048
Hexanes	0.2226	10.6	0.00662	0.092
Heptanes	0.4009	22.1	0.01387	0.185
Octanes	0.8499	53.2	0.03352	0.437
Nonanes	0.3028	21.2	0.01341	0.171
Hydrogen Sulfide	0.0000	0.0	0.00000	0.000
Water	0.0000	0.0	0.00000	0.000
Total:	100.0000	1131.3	0.63890	17.891

Results Summary

Result	Dry	Sat
Total Normalized Mole%	100.0000	100.0000
Pressure Base (psia)	14.730	
Flowing Temperature (Deg. F)	65.0	
Flowing Pressure (psia)	12.0	
Gross Heating Value (BTU / Real cu.ft.)	1134.5	1115.1
Relative Density (G), Real	0.6404	0.6404
Compressibility (Z) Factor	0.9972	0.9968
Total GPM	17.891	17.686

Natural Gas Analysis Report **SAN JUAN DIVISION**

JUL 10 2015

Sample Information

Sample Information	
Sample Name	GALLEGOSFEDERAL 26-13-14-1 CASING
TECH	Tim Doering
GC Serial	GC1008B621
Report Date	2015-07-09 07:47:49

Component Results

Component Name	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)	
Nitrogen	8.4895	0.0	0.08211	0.936	
Oxygen	9.2329	0.0	0.10201	0.821	
Methane	75.9241	768.6	0.42054	12.893	
Carbon Dioxide	2.8358	0.0	0.04309	0.485	
Ethane	3.0608	54.3	0.03178	0.820	
Propane	0.0317	0.8	0.00048	0.009	
I-Butane	0.0466	1.5	0.00094	0.015	
N-Butane	0.1100	3.6	0.00221	0.035	
I-Pentane	0.0426	1.7	0.00106	0.016	
N-Pentane	0.0674	2.7	0.00168	0.024	
Hexanes	0.0813	3.9	0.00242	0.033	
Heptanes	0.0317	1.7	0.00110	0.015	
Octanes	0.0337	2.1	0.00133	0.017	
Nonanes	0.0119	0.8	0.00053	0.007	
Hydrogen Sulfide	0.0000	0.0	0.00000	0.000	
Water	0.0000	0.0	0.00000	0.000	
Total:	100.0000	841.8	0.69126	16.125	

Results Summary

Result	Dry	Sat.	
Total Normalized Mole%	100.0000	100.0000	
Pressure Base (psia)	14.730		
Flowing Temperature (Deg. F)	65.0		
Flowing Pressure (psia)	5.0		
Gross Heating Value (BTU / Real cu.ft.)	843.4	829.0	
Relative Density (G), Real	0.6923	0.6913	
Compressibility (Z) Factor	0.9981	0.9978	
Total GPM	16.125	15.949	

Natural Gas Analysis Report SAN JUAN DIVISION

JUL 10 2015

Sample Information

Sample Information	
Sample Name	GALLEGOSFEDERAL 26-13-14-1 TUBING
TECH	Tim Doering
GC Serial	GC1008B621
Report Date	2015-07-09 07:35:48

Component Results

Component Name	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)	
Nitrogen	0.8261	0.0	0.00799	0.091	
Oxygen	0.5594	0.0	0.00618	0.050	
Methane	91.9949	931.3	0.50956	15.629	
Carbon Dioxide	2.0262	0.0	0.03079	0.347	
Ethane	3.6407	64.6	0.03780	0.976	
Propane	0.0300	0.8	0.00046	0.008	
I-Butane	0.0966	3.1	0.00194	0.032	
N-Butane	0.2522	8.2	0.00506	0.080	
I-Pentane	0.0986	4.0	0.00246	0.036	
N-Pentane	0.1874	7.5	0.00467	0.068	
Hexanes	0.1923	9.2	0.00572	0.079	
Heptanes	0.0502	2.8	0.00174	0.023	
Octanes	0.0338	2.1	0.00133	0.017	
Nonanes	0.0116	0.8	0.00051	0.007	
Hydrogen Sulfide	0.0000	0.0	0.00000	0.000	
Water	0.0000	0.0	0.00000	0.000	
Total:	100.0000	1034.4	0.61620	17.442	

Results Summary

Result	Dry	Sat.
Total Normalized Mole%	100.0000	100.0000
Pressure Base (psia)	14.730	
Flowing Temperature (Deg. F)	65.0	
Flowing Pressure (psia)	5.0	
Gross Heating Value (BTU / Real cu.ft.)	1036.8	1019.1
Relative Density (G), Real	0.6174	0.6177
Compressibility (Z) Factor	0.9977	0.9973
Total GPM	17.442	17.244

Units of Measurement: Standard

Solids Analysis Report

Production Company: XTO
 Well Name: Gallegos Fed 26-13-14 1
 Sample Point: Wellhead
 Sample Date: 6/23/2015
 Sample ID: SO-215761

Sales Rep: Jeffery Jim
 Lab Tech: Melissa Ashwood

Sample Properties:

Magnetic: Some Inclusions

Appearance: Brown Flakes

Flame Loop Test:

Calcium Sulfate:

Solids Analysis Results

Reactivity Results

	Wgt %	mg
Hydrocarbons:	18.32 %	19.00
Soluble Salts:	9.06 %	9.40
Calcium Carbonates:	3.38 %	3.50
Iron Compounds:	7.04 %	7.30
Acid Insolubles:	62.20 %	64.50
Totals:	100.00 %	103.70

20% Acetic Acid Reaction:

☐ No Reaction ☐ Weak ☒ Strong

15% Hydrochloric Acid Reaction:

☐ No Reaction ☐ Weak ☒ Strong

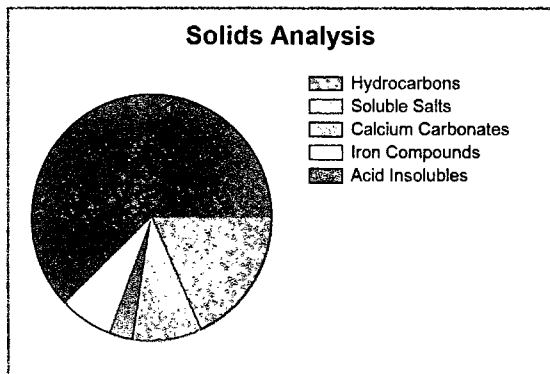
Acid Indicator Color:

☐ No Color ☐ Lt. Yellow ☒ Yellow

H2S Presence:

☐ Negative ☒ Positive ☐ Strong Positive

Solids Analysis



% Organic: 19.39 %

% Inorganic: 80.61 %

Specific Procedures Used

☐ Soxhlet Extraction ☐ X-Ray Diffraction ☒ Crucible
☐ Flame Loop Test ☐ FTIR Spectroscopy ☒ Solubility Test

Procedure Descriptions:

Soxhlet Extraction: Two-phased process used to remove any Oil, Hydrocarbon, Paraffin or Asphaltene that may be present in a sample.

X-Ray Diffraction Scan: Used to help identify the HCl Insoluble portion of a crystalline solid.

Crucible: Placed in a furnace at 800°C, it helps determine the amount of organic and inorganic matter contained in a sample.

Flame Loop: Used to help identify the presence of Barium and/or Strontium present in a sample.

FTIR: Used to help identify/classify many organic compounds as well as some inorganic compounds.

Solubility Test: A series of washes used to remove Hydrocarbons, Sodium Chloride, Calcium Carbonate and Iron. The remaining is called the HCl Insoluble portion.

Iron Compounds Present

☐ Iron Oxide ☒ Iron Sulfide ☐ Iron Carbonate

Notes: Awaiting results to determine if sample is cement or mud.

HALLIBURTON

Permian Basin, Odessa

Lab Results-PE

Job Information

Request ID	2017035/1	Rig Name	N/A	Date	29/JUL/2015
Submitted By	Mindy Sandmann	Job Type	Misc Pumping	Well	G.T. 26-14-1 1st
Customer	XTO	Location	N/A		

Well Information

Formation	N/A	Depth MD	N/A	BHST	N/A
Pressure	N/A	Depth TVD	N/A	Cool Down Temperature	N/A

Fluid Results Request ID 2017035/ 1

Water Analysis

Tank Number/Source	pH	Calcium (mg/L)	Dissolved Iron (mg/L)
1. Cement	N/A	3600	N/A
2. Cement	N/A	5100	5080
3. Unknown	7.44	40	573
4. WBM	7.39	900	1002
5. WBM	8.07	600	N/A
6. Cement	11.7	N/A	N/A
7. Cement	12.12	N/A	N/A

Analyst (1-5): H118419

Analysts (6,7): H128542, H165793

1: iFacts #2259970-2

2: iFacts #2259770

3: XTO/G.T. 26-14-1 1st

4: Oxy/Barnett Deep 2128 #1 WA (TOA: 7/25/15, 16:29)*

5: Oxy/Patterson Unit 2707 WA, production (TOA: 7/8/15, 16:45)*

6: iFacts #2259090-2

7: iFacts #2247439-3

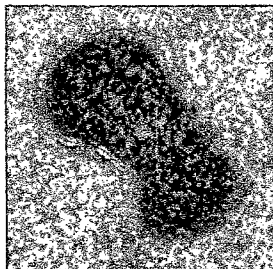
*Large dilution necessary in order to create a fluid in which a color change could be seen for the calcium test (1:299). A very small amount of titrant caused a color change. This could indicate calcium levels are lower than reported for samples 4 and 5.

Sample was water-based, so only WBM was used in comparison testing. Iron levels were measured as a positive/negative cement test. Once it was determined that WBM also contained a large quantity of iron, calcium and pH became the major focus of the investigation.

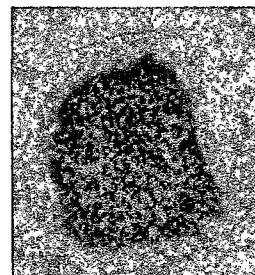
Paper accompanying unknown sample says "From Bradenhead Gallgoms"? "Fed-26-13-14 #1"

Phenolphthalein Test: A dark pink color indicates the presence of cement

Before
Phenolphthalein:



After
Phenolphthalein:



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