# Natural Gas Analysis Report SAN JUAN DIVISION

JUL 1 0 2015

30-645-28919 Sample Information

	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	2007.120	
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	entransia kangangan kangangan kangangan kangangan kangangan kangangan kangan kangan kangan kangan kangan kanga Bangan kangangan kangan ka
Ethane	2.1338	37.8	0.02215	0.572	and the second s
Propane	0.4434	11.2	0.00675	0.122	tion of the committee of the supplementation
I-Butane	0.1566	5.1	0.00314	0.051	THE THE PERSON WAS A STATE OF THE PERSON OF
N-Butane	0.1849	6.0	0.00371	0.058	от не при него под при него под него него него него него него него него
I-Pentane	0.0877	3.5	0.00218	0.032	· · · · · · · · · · · · · · · · · · ·
N-Pentane	0.1311	5.3	0.00327	0.048	A THE COLOR OF THE PARTY OF THE COLOR OF THE PARTY OF THE
Hexanes	0.2226	10.6	0.00662	0.092	
Heptanes	0.4009	22.1	0.01387	0.185	AMARIAN MARIA A A LIPA CHARANTER A MARIAN MARIAN CONTRACTOR A CONTRACT
Octanes	0.8499	53.2	0.03352	0.437	одина вистем выполня выполня в принципального под
Nonanes	0.3028	21.2	0.01341	0.171	
Hydrogen Sulfide	0.0000	0.0	0.00000	0.000	The Company of the Co
Water	0.0000	0.0	0.00000	0.000	
Total:	100.0000	1131.3	0.63890	17.891	

### **Results Summary**

Result	Dry	Sat.	
Total Normalzed 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

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# **Sample Information**

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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	Norm%	Gross HV (Dry)	Relative Gas	GPM (Dry)	
Name		(BTU / Ideal cu.ft.)	Density (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	en e
Propane	0.0317	0.8	0.00048	0.009	
I-Butane	0.0466	1.5	0.00094	0.015	<u></u>
N-Butane	0.1100	3.6	0.00221	0.035	pengeneriki (1 kil
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	ander gereget er en en en gerege (1915) anglementen er en en syndromenten er en en syndromente
Heptanes	0.0317	1.7	0.00110	0.015	
Octanes	0.0337	2.1	0.00133	0.017	от о
Nonanes	0.0119	0.8	0.00053	0.007	
Hydrogen Sulfide	0.0000	0.0	6.00000	0.000	WWW.974-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
Water	0.0000	0.0	0.00000	0.000	
Total:	100.0000	841.8	0.69126	16.125	1000 ppg

# **Results Summary**

Result	Dry	Sat.	Alternative Action of the Assessment Assessm
Total Normalzed Mole%	100.0000	100.0000	
Pressure Base (psia)	14.730		
Flowing Temperature (Deg. F)	65.0		
Flowing Pressure (psia)	5.0		20 C. 7.0. (10) (10) (10) (10) (10) (10) (10) (10)
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 1 0 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.))		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	ученда на компения на постоя н
Carbon Dioxide	2.0262	0.0	<b>6</b> .03079	0.347	
Ethane	3.6407	64.6	0.03780	0.976	The state of the s
Propane	0.0300	0.8	0.00046	0.008	
I-Butane	0.0966	3.1	0.00194	0.032	A commence of the second secon
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	м <del>айшинай А</del> ни Анитон <b>па</b> минин помьми <i>на</i> мини по то
Hexanes	0.1923	9.2	0.00572	0.079	
Heptanes	0.0502	2.8	0.00174	0.023	Control and the Association of the
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 Normalzed 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	Autoria Autori

#### **Multi-Chem Analytical Laboratory**

1122 S. FM1788 Midland, TX 76706



Units of Measurement:

**Production Company:** 

Standard

Solids Analysis Report

хто

Well Name:

Gallegos Fed 26-13-14 1

Sample Point:

Wellhead

Sample Date: Sample ID:

6/23/2015 SO-215761

**Sample Properties:** 

Magnetic:

Some Inclusions

Appearance:

**Brown Flakes** 

Jeffery Jim

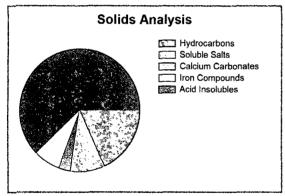
Melissa Ashwood

Sales Rep:

Lab Tech:

Flame Loop Test: Calcium Sulfate:

Solids Analysis Res	ults	
	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



% Organic:

19.39 %

% Inorganic: 80.61 %

#### Iron Compounds Present

() Iron Oxide

(X) Iron Sulfide

() Iron Carbonate

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

20% Acetic Acid Reaction:

() No Reaction

Reactivity Results

() Weak

(X) Strong

15% Hydrochloric Acid Reaction:

() No Reaction

() Weak

(X) Strong

**Acid Indicator Color:** 

() No Color

() Lt. Yellow

(x) Yellow

**H2S Presence:** 

() Negative

(X) Positive

() Strong Positive

Specific Procedures Used

() Soxhlet Extraction

() X-Ray Diffraction

(X) Crucible

() Flame Loop Test

() FTIR Spectroscopy

(X) 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 HCI Insoluble portion.

# HALLIBURTON

#### Lab Results-PE

#### Permian Basin, Odessa

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	11	Patricular source in the			
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	рН	Calcium (mg/L)	Dissolved Iron (mg/L)	)
<ol> <li>Cement</li> </ol>	N/A	3600	N/A	
2.5 Cement	N/A	5100	/5080	
<ol><li>Unknown</li></ol>	7.44	40	573	
4 WBM	影 4 739 景 5 克	900	1002	
5. WBM	8.07	600	N/A	
6 Cement		N/A	$\downarrow N/A$	
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.

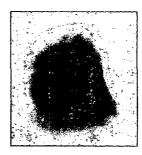
Paper accompanying unknown sample says "From Bradenhead Gallggoms"? "Fed-26-13-14 #1"

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

Before Phenolphthalein:



After Phenolphthalein:



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