COGCC doc # 2597281

# Caerus
# SURFACE POST JOB REPORT

**Puckett 31C-26-697 05-045-23361**
**S:26 T:6N R:97W Garfield CO**

CallSheet #: 632
Proposal #: 13069

## SURFACE Post Job Report

**Attention:** Mr. Steve Schmitz | (720) 880-6412 | sschmitz@caerusoilandgas.com
Caerus
1001 17th Street, Suite 1600 | Denver, CO 80202

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Dear Mr. Schmitz,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,

**Oscar Medrano**
Technical Specialist-II | (307) 996-6222 | Oscar.Medrano@bjservices.com

| | |
|---|---|
| **Field Office** | 1716 East Allison Rd., Cheyenne WY, 82007<br>Phone: (307) 638-5585 |
| **Sales Office** | 475 17th St. Suite 460 Denver Co., 80202<br>Phone: (303) 296-1158 |

# Table of Contents

# 1 Job Details & Summary

## 1.1 Geometry

| Type | Function | OD (in) | ID (in) | Weight (lb/ft) | Thread | Top (ft) | Bottom (ft) | Excess (%) |
|---|---|---|---|---|---|---|---|---|
| Casing | Inner | 9.625 | 8.835 | 36 | LTC | 0 | 2526 | 0 |
| Open Hole | Outer | n/a | 14.75 | n/a | n/a | 100 | 2000 | 25 |
| Open Hole | Outer | n/a | 14.75 | n/a | n/a | 2000 | 2532 | 0 |
| Casing | Outer | 20 | 19.5 | 53 | n/a | 0 | 100 | 0 |

## 1.2 Equipment / People

| Unit Type | Unit | Employee #1 | Employee #2 |
|---|---|---|---|
| Cement Pump | 104 | Acuna, Roger | Martinez, Michael |
| Cement Chemical | 401 | | |
| Light Duty Pickups | 5 | Staples, Anthony | Vasquez, Mike |
| Silo | 650 | | |
| Silo | 651 | | |
| Silo | 652 | | |

## 1.3 Timing

| Event | Date/Time |
|---|---|
| Call Out | 3/16/2017 22:00 |
| Depart Facility | 3/16/2017 22:15 |
| On Location | 3/16/2017 23:30 |
| Rig Up Iron | 3/16/2017 23:45 |
| Job Started | 3/17/2017 01:54 |
| Job Completed | 3/17/2017 09:30 |
| Rig Down Iron | 3/17/2017 09:31 |
| Depart Location | 3/17/2017 11:00 |

## 1.4 General Job Information

| Metrics | Value |
|---|---|
| Well Fluid Density | 9.2 lb/gal |
| Well Fluid Type | WBM |
| Rig Circulation Vol | 315 bbls |
| Rig Circulation Time | 1.5 hours |
| Calculated Displacement | 191.88 bbls |
| Actual Displacement | 192 bbls |
| Total Spacer to Surface | 0 bbls |
| Total CMT to Surface | 0 bbls |
| Well Topped Out | Yes |
| Top Out Volume | 7.5 bbls |

## 1.5 Well Fluid Details

| Metrics | Value |
|---|---|
| Plastic Viscosity | 18 |
| Yield Point | 17 |
| 10 sec. SGS | 5 |
| 10 min. SGS | 12 |
| 30 min. SGS | 38 |

## 1.6 Job Details

| Metrics | Value |
|---|---|
| Flare Prior to Job | No |
| Flare During Job | No |
| Flare at End of Job | No |
| Well Full Prior to Job | Yes |
| Well Fluid Density Into Well | 9.2 lb/gal |
| Well Fluid Density Out of Well | 9.2 lb/gal |

## 1.7 Job Details (cont.)

| Metrics | Value |
|---|---|
| BHCT | 94 °F |
| BHST | 128 °F |

## 1.8 Circulation

| Lost Circulation Experienced | Losses into Spacer |
|---|---|
| Yes | 10 |

**Circulation Details:**
Lost Circulation about 10 bbls into Spacer and never came back

## 1.9 Job Execution Information

| Job | Fluid | Product | Function | Density (lb/gal) | Yield ($ft^3$/sk) | Water Rq. (gal/sk) | Water Rq. (gal/bbl) | Volume (sks) | Volume (bbl) | Top (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Water | Flush | 8.33 | | | 42.00 | | 20.00 | 0 |
| 1 | 2 | Sodium Silicate | Flush | 10.00 | | | 21.00 | | 20.00 | 0 |
| 1 | 3 | Water | Flush | 8.33 | | | 42.00 | | 20.00 | 0 |
| 1 | 4 | ALTCem S100-12 | Lead | 12.00 | 2.53 | 14.85 | | 703.00 | 316.33 | 0 |
| 1 | 5 | ALTCem S100-12 | Tail | 12.50 | 2.22 | 12.58 | | 161.00 | 63.76 | 2028 |
| 1 | 6 | Water | Displacement | 8.33 | | | 42.00 | | 10.00 | 2328 |
| 1 | 7 | Mud | Displacement | 8.33 | | | 42.00 | | 160.00 | 218 |
| 1 | 8 | Water | DisplacementFinal | 8.33 | | | 42.00 | | 17.00 | 0 |
| 1 | 9 | ALTCem S100-12 | Topout | 12.50 | 2.22 | 12.58 | | 19.00 | 7.50 | 0 |

## 1.10 Job Fluid Details

| Job | Fluid | Type | Fluid | Product | Function | Conc. | Uom |
|---|---|---|---|---|---|---|---|
| 1 | 2 | Flush | Sodium Silicate | ASF-10 | Extender | 21.00 | gal/bbl |
| 1 | 4 | Lead | ALTCem S100-12 | AC3-10 | Cement | 100.00 | % |
| 1 | 4 | Lead | ALTCem S100-12 | ACL-10 | Accelerator | 2.00 | lb/sk |
| 1 | 4 | Lead | ALTCem S100-12 | ACL-20 | Accelerator | 5.00 | %BWOB |
| 1 | 4 | Lead | ALTCem S100-12 | ADF-11 | Defoamer | 0.30 | %BWOB |
| 1 | 4 | Lead | ALTCem S100-12 | ALC-10 | LostCirculation | 0.13 | lb/sk |
| 1 | 4 | Lead | ALTCem S100-12 | AXE-30 | Extender | 2.00 | lb/sk |
| 1 | 5 | Tail | ALTCem S100-12 | AC3-10 | Cement | 100.00 | % |
| 1 | 5 | Tail | ALTCem S100-12 | ACL-10 | Accelerator | 2.00 | lb/sk |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1** | 5 | Tail | ALTCem S100-12 | ACL-20 | Accelerator | 5.00 | %BWOB |
| **1** | 5 | Tail | ALTCem S100-12 | ADF-11 | Defoamer | 0.30 | %BWOB |
| **1** | 5 | Tail | ALTCem S100-12 | ALC-10 | LostCirculation | 0.13 | lb/sk |
| **1** | 5 | Tail | ALTCem S100-12 | AXE-30 | Extender | 2.00 | lb/sk |
| **1** | 9 | Topout | ALTCem S100-12 | AC3-10 | Cement | 100.00 | % |
| **1** | 9 | Topout | ALTCem S100-12 | ACL-10 | Accelerator | 2.00 | lb/sk |
| **1** | 9 | Topout | ALTCem S100-12 | ACL-20 | Accelerator | 5.00 | %BWOB |
| **1** | 9 | Topout | ALTCem S100-12 | ADF-11 | Defoamer | 0.30 | %BWOB |
| **1** | 9 | Topout | ALTCem S100-12 | ALC-10 | LostCirculation | 0.13 | lb/sk |
| **1** | 9 | Topout | ALTCem S100-12 | AXE-30 | Extender | 2.00 | lb/sk |

## 2 Job Logs

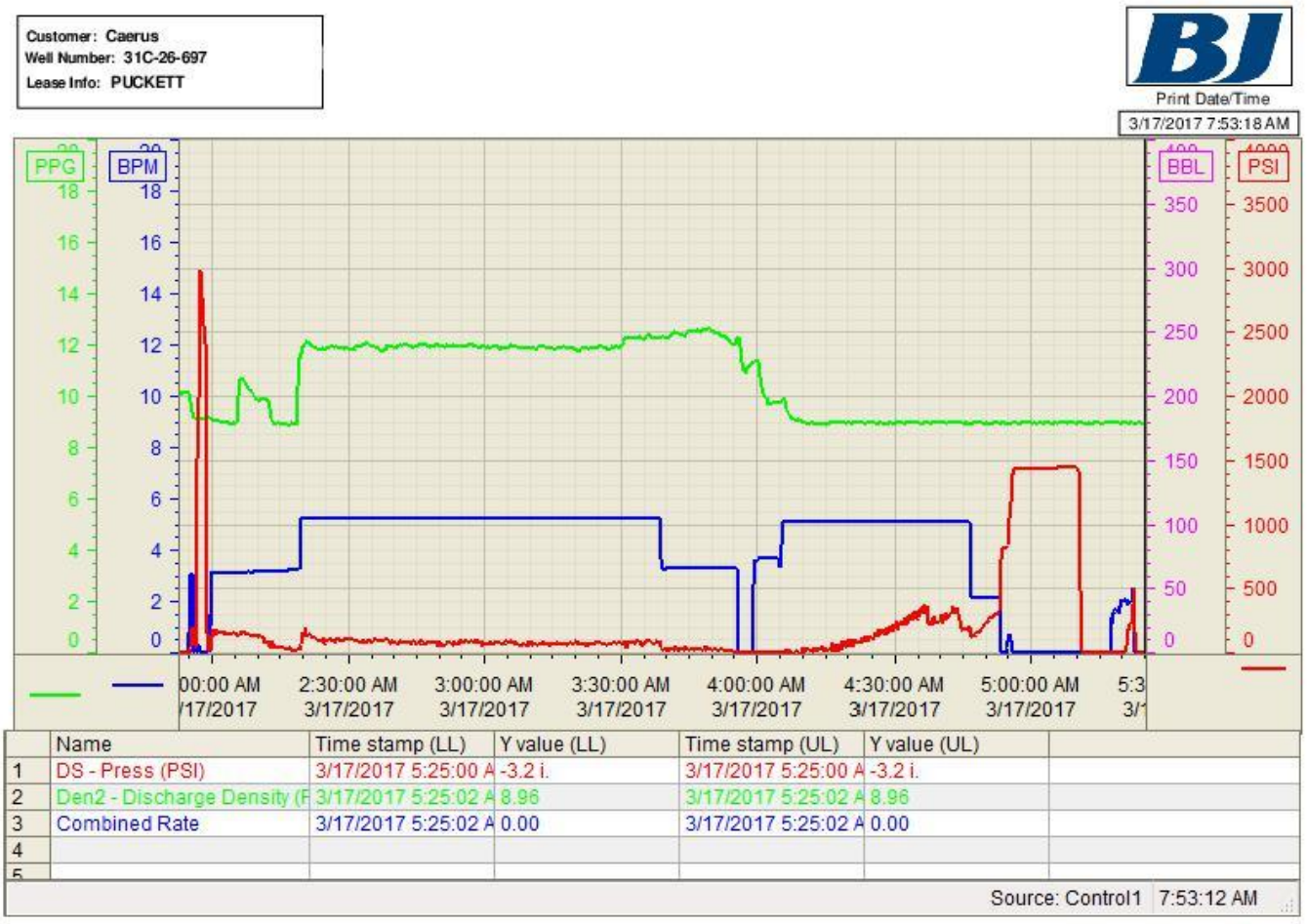
| Line | Event | Date (MM/DD/YY) | Time (HH:MM) | Density (lb/gal) | Pump Rate (bpm) | Pump Volume (bbls) | Pipe Pressure (psi) | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | Call Out | 3/16/2017 | 22:00 | | | | | |
| 2 | Arrive on Location | 3/16/2017 | 23:30 | | | | | Rig Finishing Up Running Casing |
| 3 | Spot Trucks | 3/16/2017 | 23:40 | | | | | |
| 4 | Rig Up | 3/16/2017 | 23:45 | | | | | |
| 5 | Safety Meeting | 3/17/2017 | 00:30 | | | | | |
| 6 | Load Lines | 3/17/2017 | 01:54 | 8.34 | 2 | 2 | 200 | |
| 7 | Pressure Test | 3/17/2017 | 01:56 | 8.34 | | | 3082 | |
| 8 | Spacer | 3/17/2017 | 01:59 | 8.34 | 3 | 18 | 210 | Fresh Water |
| 9 | Spacer | 3/17/2017 | 02:05 | 10 | 3 | 20 | 200 | Sodium Silicate |
| 10 | Spacer | 3/17/2017 | 02:12 | 8.34 | 3 | 20 | 200 | Fresh Water |
| 11 | Lead Cement | 3/17/2017 | 02:18 | 12 | 3 | 10 | 200 | Batch, Weigh, and Pump 703sks of 12# Lead Cement |
| 12 | Rate Change | 3/17/2017 | 02:21 | 12 | 5 | 306 | 120 | Total Pumped 316 Bbls |
| 13 | Tail Cement | 3/17/2017 | 03:30 | 12.5 | 5 | 33 | 100 | Pump 161sks of 12.5# Tail Cement. Calculated top of Tail Cement is 2028ft |
| 14 | Rate Change | 3/17/2017 | 03:38 | 12.5 | 3 | 31 | 90 | Total Pumped 64 Bbls |
| 15 | Shut Down | 3/17/2017 | 03:55 | 8.34 | | | | Wash Up Mixing Tub |
| 16 | Drop Plug | 3/17/2017 | 03:58 | | | | | |
| 17 | Displacement | 3/17/2017 | 03:59 | 8.34 | 4 | 10 | 0 | |
| 18 | Displacement | 3/17/2017 | 04:15 | 8.34 | 5 | 40 | 50 | 50 bbls Away |
| 19 | Displacement | 3/17/2017 | 04:26 | 8.34 | 5 | 50 | 200 | 100 bbls Away |
| 20 | Displacement | 3/17/2017 | 04:39 | 8.34 | 5 | 50 | 320 | 150 bbls Away |
| 21 | Displacement | 3/17/2017 | 04:46 | 8.34 | 2 | 30 | 200 | 180 bbls Away Drop Rate to 2bpm |
| 22 | Displacement | 3/17/2017 | 04:52 | 8.34 | 2 | 11 | 400 | 191 bbls Away |
| 23 | Bump | 3/17/2017 | 04:53 | 8.34 | | | 900 | Bumped Plug @ 191 Bbls away Final Lift was 400psi landed 900 psi. No Cement and No Returns During Cementing |
| 24 | Casing Test | 3/17/2017 | 04:55 | 8.34 | | | 1514 | Increased Psi from 900 psi to 1514 psi for the Casing Test |
| 25 | Check Floats | 3/17/2017 | 05:10 | 8.34 | | | | Check Floats. 1 bbl back |
| 26 | Pump | 3/17/2017 | 05:17 | 8.34 | 2 | 10 | 0 | Pumped 10 bbls sugar water down parasite line |
| 27 | Shut Down | 3/17/2017 | 05:23 | | | | | |
| 28 | Rig Down Head | 3/17/2017 | 05:24 | | | | | Rigged Down Head, Waiting Until Top Out can Be Done |
| 29 | Batch Up | 3/17/2017 | 09:15 | 12.5 | | | | Batch Up Tub For Top Out |
| 30 | Pump | 3/17/2017 | 09:21 | 12.5 | | 4 | 0 | Pumped 10sks of 12.5# Top Out |
| 31 | Pump | 3/17/2017 | 09:26 | 12.5 | | 3.5 | 0 | Pumped 9sks of 12.5# Top Out |
| 32 | Rig Down Job | 3/17/2017 | 09:30 | | | | | COGCC Comment: Email stated 0.5bbls top out cement to surface |
| 33 | Leave Location | 3/17/2017 | 11:00 | | | | | |

# 3 Water Analysis

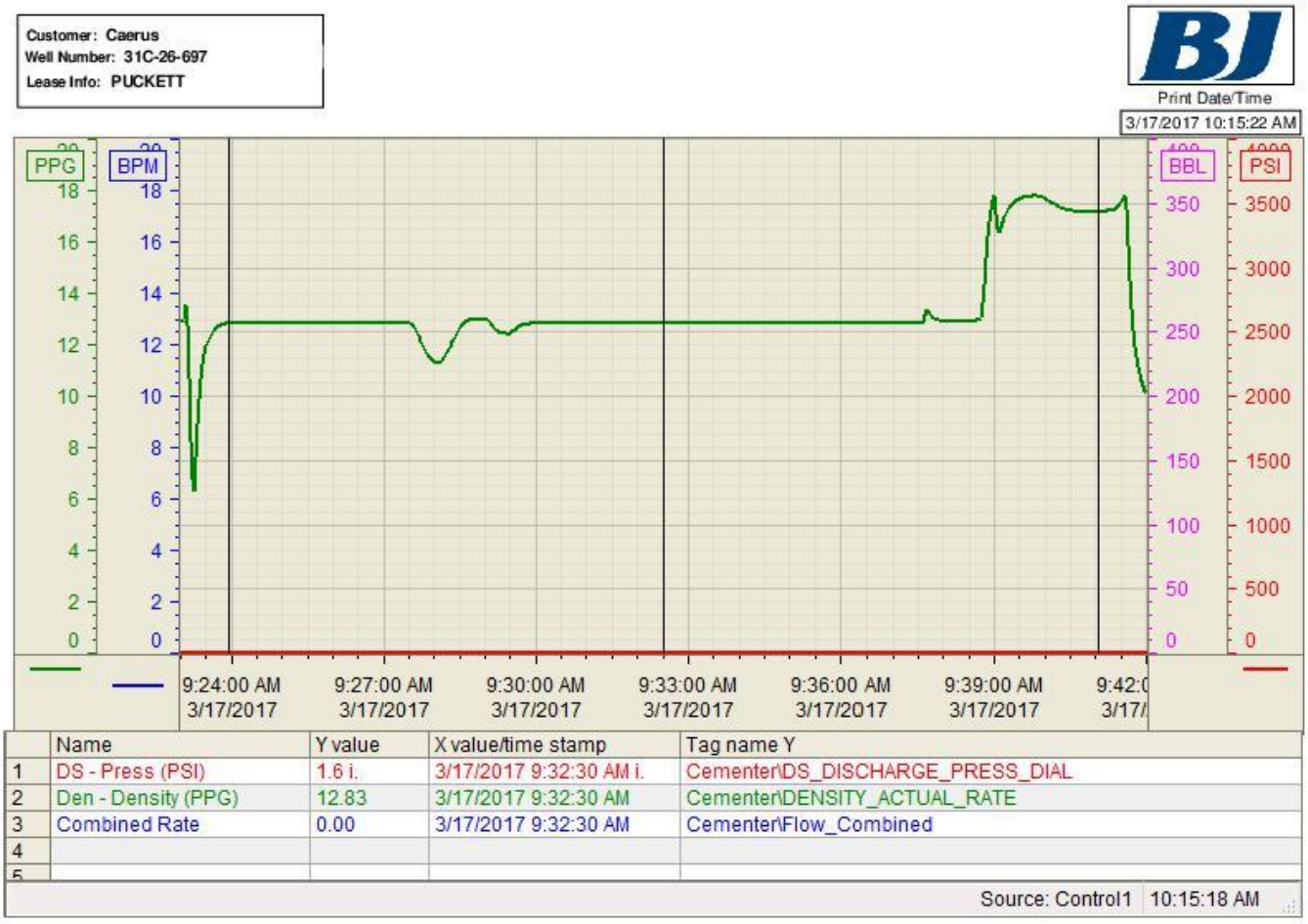
| Metrics | Value | Recommended |
|---|---|---|
| Water Source | Upright Rig Tank | |
| Temperature | 88 °F | 50-80 °F |
| pH Level | 6 | 5.5-8.5 |
| Chlorides | 0 mg/L | 0-3000 mg/L |
| Total Alkalinity | 120 | 0-1000 |
| Total Hardness | 250 mg/L | 0-500 mg/L |
| Carbonates | 70 mg/L | 0-100 mg/L |
| Sulfates | >200 mg/L | 0-1500 mg/L |
| Potassium | 250 mg/L | 0-3000 mg/L |
| Iron | 1 mg/L | 0-300 mg/L |

# 4 Pump Diagrams

Job Chart



Top-Out Chart




| | Name | Y value | X value/time stamp | Tag name Y |
|---|---|---|---|---|
| 1 | DS - Press (PSI) | 1.6 i. | 3/17/2017 9:32:30 AM i. | Cementer\DS_DISCHARGE_PRESS_DIAL |
| 2 | Den - Density (PPG) | 12.83 | 3/17/2017 9:32:30 AM | Cementer\DENSITY_ACTUAL_RATE |
| 3 | Combined Rate | 0.00 | 3/17/2017 9:32:30 AM | Cementer\Flow_Combined |
| 4 | | | | |
| 5 | | | | |

Source: Control1 10:15:18 AM