

## 1 Job Details & Summary

### 1.1 Geometry

| Type      | Function | OD (in) | ID (in) | Weight (lb/ft) | Thread | Top (ft) | Bottom (ft) | Excess (%) |
|-----------|----------|---------|---------|----------------|--------|----------|-------------|------------|
| Casing    | Outer    | 9.625   | 8.921   | 36             | n/a    | 0        | 1542        | 0          |
| Open Hole | Outer    | n/a     | 8.5     | n/a            | n/a    | 1550     | 12130       | 18         |
| Casing    | Inner    | 5.5     | 4.892   | 17             | n/a    | 0        | 12120       | 0          |

### 1.2 Equipment / People

| Unit Type          | Unit | Employee #1      | Employee #2      | Mileage |
|--------------------|------|------------------|------------------|---------|
| Bulk Trailer       | 504  | Hamilton, Daniel | Henderson, Ethan | 140     |
| Silo               | 657  |                  |                  | 140     |
| Silo               | 658  |                  |                  | 140     |
| Light Duty Pickups | 7    | Acuna, Roger     |                  | 140     |
| Cement Pump        | 102  | Montoya, Hector  |                  | 140     |

### 1.3 Timing

| Event           | Date/Time      |
|-----------------|----------------|
| Call Out        | 6/6/2017 03:30 |
| Depart Facility | 6/6/2017 06:30 |
| On Location     | 6/6/2017 08:30 |
| Rig Up Iron     | 6/6/2017 09:00 |
| Job Started     | 6/6/2017 11:17 |
| Job Completed   | 6/6/2017 14:04 |
| Rig Down Iron   | 6/6/2017 14:15 |
| Depart Location | 6/6/2017 15:30 |

### 1.4 General Job Information

| Metrics                 | Value       |
|-------------------------|-------------|
| Well Fluid Density      | 10.1 lb/gal |
| Well Fluid Type         | WBM         |
| Rig Circulation Vol     | 1848 bbls   |
| Rig Circulation Time    | 3:30 hours  |
| Calculated Displacement | 281 bbls    |
| Actual Displacement     | 281 bbls    |
| Total Spacer to Surface | 40 bbls     |
| Total CMT to Surface    | 41 bbls     |

### 1.5 Well Fluid Details

| Metrics           | Value |
|-------------------|-------|
| Plastic Viscosity | 12    |
| Yield Point       | 8     |
| 10 sec. SGS       | 5     |
| 10 min. SGS       | 20    |
| 30 min. SGS       | 25    |
| Filtrate          | 6     |
| Flow Line Temp.   | 90    |

### 1.6 Job Details

| Metrics                        | Value       |
|--------------------------------|-------------|
| Flare Prior to Job             | Yes         |
| Flare Prior to Job             | 800 units   |
| Flare During Job               | No          |
| Flare at End of Job            | No          |
| Well Full Prior to Job         | Yes         |
| Well Fluid Density Into Well   | 10.1 lb/gal |
| Well Fluid Density Out of Well | 10.1 lb/gal |

### 1.7 Job Details (cont.)

| Metrics | Value  |
|---------|--------|
| BHCT    | 220 °F |
| BHST    | 220 °F |



### 1.8 Circulation

|                              |
|------------------------------|
| Lost Circulation Experienced |
| No                           |

### 1.9 Job Execution Information

| Job | Fluid | Product                              | Function          | Density (lb/gal) | Yield (ft <sup>3</sup> /sk) | Water Rq. (gal/sk) | Water Rq. (gal/bbl) | Volume (sk) | Volume (bbl) | Top (ft) |
|-----|-------|--------------------------------------|-------------------|------------------|-----------------------------|--------------------|---------------------|-------------|--------------|----------|
| 1   | 1     | Water                                | Flush             | 8.33             |                             |                    | 42.00               |             | 40.00        | 0        |
| 1   | 2     | CD Spacer                            | Spacer            | 11.00            |                             |                    | 33.75               |             | 40.00        | 0        |
| 1   | 3     | ALTCem P100-X2                       | Lead              | 12.50            | 2.06                        | 11.77              |                     | 200.00      | 73.49        | 3        |
| 1   | 4     | ALTCem P100-X2                       | Lead              | 12.50            | 2.07                        | 11.81              |                     | 700.00      | 258.11       | 1537     |
| 1   | 5     | ALTCem P50-X1                        | Tail              | 13.50            | 1.47                        | 7.43               |                     | 960.00      | 252.13       | 6875     |
| 1   | 7     | Water w/ Clay Protection and Biocide | DisplacementFinal | 8.33             |                             |                    | 41.91               |             | 281.00       | 0        |



### 1.10 Job Fluid Details

| Job | Fluid | Type              | Fluid                                | Product | Function              | Conc.  | Uom     |
|-----|-------|-------------------|--------------------------------------|---------|-----------------------|--------|---------|
| 1   | 2     | Spacer            | CD Spacer                            | ASR-20  | StrengthRetrogression | 179.29 | lb/bbl  |
| 1   | 2     | Spacer            | CD Spacer                            | AR-31   | Retarder              | 0.51   | lb/bbl  |
| 1   | 2     | Spacer            | CD Spacer                            | AVS-10  | Viscosifier           | 1.00   | lb/bbl  |
| 1   | 3     | Lead              | ALTCem P100-X2                       | AC3-10  | Cement                | 100.00 | %       |
| 1   | 3     | Lead              | ALTCem P100-X2                       | ADF-11  | Defoamer              | 0.30   | %BWOB   |
| 1   | 3     | Lead              | ALTCem P100-X2                       | AFL-10  | FluidLoss             | 0.30   | %BWOB   |
| 1   | 3     | Lead              | ALTCem P100-X2                       | AR-31   | Retarder              | 0.20   | %BWOB   |
| 1   | 3     | Lead              | ALTCem P100-X2                       | AVS-20  | Viscosifier           | 0.10   | %BWOB   |
| 1   | 4     | Lead              | ALTCem P100-X2                       | AC3-10  | Cement                | 100.00 | %       |
| 1   | 4     | Lead              | ALTCem P100-X2                       | ABX-30  | BondEnhancer          | 0.40   | %BWOB   |
| 1   | 4     | Lead              | ALTCem P100-X2                       | ADF-11  | Defoamer              | 0.30   | %BWOB   |
| 1   | 4     | Lead              | ALTCem P100-X2                       | AFL-10  | FluidLoss             | 0.30   | %BWOB   |
| 1   | 4     | Lead              | ALTCem P100-X2                       | AR-31   | Retarder              | 0.20   | %BWOB   |
| 1   | 4     | Lead              | ALTCem P100-X2                       | AVS-20  | Viscosifier           | 0.10   | %BWOB   |
| 1   | 5     | Tail              | ALTCem P50-X1                        | ACG-10  | Cement                | 50.00  | %       |
| 1   | 5     | Tail              | ALTCem P50-X1                        | AFA-10  | Extender              | 50.00  | %       |
| 1   | 5     | Tail              | ALTCem P50-X1                        | ADF-11  | Defoamer              | 0.30   | %BWOB   |
| 1   | 5     | Tail              | ALTCem P50-X1                        | AFL-50  | FluidLoss             | 0.20   | %BWOB   |
| 1   | 5     | Tail              | ALTCem P50-X1                        | AR-20   | Retarder              | 0.10   | %BWOB   |
| 1   | 5     | Tail              | ALTCem P50-X1                        | AVS-10  | Viscosifier           | 0.10   | %BWOB   |
| 1   | 5     | Tail              | ALTCem P50-X1                        | AVS-50  | Viscosifier           | 2.00   | %BWOB   |
| 1   | 7     | DisplacementFinal | Water w/ Clay Protection and Biocide | ASF-50  | ClayProtection        | 0.08   | gal/bbl |
| 1   | 7     | DisplacementFinal | Water w/ Clay Protection and Biocide | Biocide | Other                 | 0.01   | gal/bbl |

## 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    | Called Out         | 6/6/2017        | 03:30        |                  |                 |                    |                     | Called out  |
| 2    | Pre-Convoy         | 6/6/2017        | 06:00        |                  |                 |                    |                     | Pre-journey management  |
| 3    | Depart Camp        | 6/6/2017        | 06:30        |                  |                 |                    |                     | Depart Cheyenne WY  |
| 4    | Arrive to Location | 6/6/2017        | 08:30        |                  |                 |                    |                     | Arrive to location, check in with company man, 12120' 5.5" 17ppf in 8.5" OH, PCSG 9.625" 36ppf @ 1542'  |
| 5    | Safety Meeting     | 6/6/2017        | 08:45        |                  |                 |                    |                     | Pre-rig up safety meeting   |
| 6    | Rig up Iron        | 6/6/2017        | 09:00        |                  |                 |                    |                     | Rig up iron   |
| 7    | Waiting on Rig     | 6/6/2017        | 09:15        |                  |                 |                    |                     | Rig had casing on bottom when we showed up and circulating 2 bottoms up   |
| 8    | Safety Meeting     | 6/6/2017        | 11:00        |                  |                 |                    |                     | Pre-job safety meeting  |
| 9    | Start Job          | 6/6/2017        | 11:17        |                  |                 |                    |                     | Start job   |
| 10   | Fill Lines         | 6/6/2017        | 11:18        | 8.33             | 2               | 2                  | 300                 | Fill lines 2bbls fresh water  |
| 11   | Test Lines         | 6/6/2017        | 11:19        |                  |                 |                    | 4000                | Test lines 4000psi, test good   |
| 12   | Pump Fresh Water   | 6/6/2017        | 11:22        | 8.33             | 5               | 38                 | 600                 | Pump 38bbls fresh water spacer  |
| 13   | Pump CD Spacer     | 6/6/2017        | 11:31        | 11               | 6               | 40                 | 800                 | Pump 40bbls CD spacer @ 11ppg   |
| 14   | Pump Lead Cement   | 6/6/2017        | 11:37        | 12.5             | 6               | 74                 | 550                 | Pump 74bbls lead @ 12.5ppg (200sk 2.06yld 11.77gps) lead cement w/o ABX-30  |
| 15   | Pump Lead Cement   | 6/6/2017        | 11:49        | 12.5             | 6               | 258                | 550                 | Pump 258bbls lead @ 12.5ppg (700sk 2.07yld 11.81gps) lead cement w/ ABX-30  |
| 16   | Pump Tail          | 6/6/2017        | 12:33        | 13.5             | 6               | 251                | 300                 | Pump 251bbls tail @ 13.5ppg (960sk 1.47yld 7.43gps)   |
| 17   | Shutdown           | 6/6/2017        | 13:16        |                  |                 |                    |                     | Shutdown, wash pumps and lines to the pit   |
| 18   | Drop Bottom Plug   | 6/6/2017        | 13:22        |                  |                 |                    |                     | Drop bottom plug only due to Airlock floatation problems  |
| 19   | Displacement       | 6/6/2017        | 13:23        | 8.33             | 8               | 281                | 2100                | Pump displacement w/ biocide and ASF-50, we saw the plug land on the floatation collar at 183bbls away 2800psi  |
| 20   | Cement to Surface  | 6/6/2017        | 13:48        |                  |                 |                    |                     | Cement to surface, we saw 41bbls back to the pit  |
| 21   | Shutdown           | 6/6/2017        | 13:58        |                  |                 |                    |                     | Shutdown, no plug to bump due to the airlock floatation collar not shifting to allow the plug to get to the float collar, total displacement pumped 281bbls |



|    |                 |          |       |  |  |  |  |   |
|----|-----------------|----------|-------|--|--|--|--|---|
| 22 | Check Floats    | 6/6/2017 | 14:03 |  |  |  |  | Check floats, floats held getting 1bbl back to the pump |
| 23 | End Job         | 6/6/2017 | 14:04 |  |  |  |  | End job   |
| 24 | Safety Meeting  | 6/6/2017 | 14:10 |  |  |  |  | Pre-rig down safety meeting                             |
| 25 | Rig down Iron   | 6/6/2017 | 14:15 |  |  |  |  | Rig down iron   |
| 26 | Pre-Convoy      | 6/6/2017 | 15:15 |  |  |  |  | Pre-journey management                                  |
| 27 | Depart Location | 6/6/2017 | 15:30 |  |  |  |  | Depart Location   |

### 3 Water Analysis

| Metrics          | Value            | Recommended |
|------------------|------------------|-------------|
| Water Source     | Upright Rig Tank |             |
| Temperature      | 65 °F            | 50-80 °F    |
| pH Level         | 7                | 5.5-8.5     |
| Chlorides        | 0 mg/L           | 0-3000 mg/L |
| Total Alkalinity | 250              | 0-1000      |
| Total Hardness   | 250 mg/L         | 0-500 mg/L  |
| Carbonates       | 0 mg/L           | 0-100 mg/L  |
| Sulfates         | Below 200 mg/L   | 0-1500 mg/L |
| Potassium        | 450 mg/L         | 0-3000 mg/L |
| Iron             | 0 mg/L           | 0-300 mg/L  |

### 4 Pump Diagrams

Customer: Cub Creek  
Well Number: Litzenberger  
Lease Info: 5



Print Date/Time  
6/6/2017 2:38:22 PM

