

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Date: Sunday, March 01, 2015

Kodak 3

Frontier 10

Job Date: Saturday, February 21, 2015

Sincerely,
Jennifer Dattolo

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Kodak 3** cement **Intermediate** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton Brighton

Job Times

| | Date | Time | Time Zone |
|--------------------------|-------------|-------------|------------------|
| Called Out | 2/20/2015 | 2100 | MST |
| On Location | 2/21/2015 | 0230 | MST |
| Job Started | 2/21/2015 | 1130 | MST |
| Job Completed | 2/21/2015 | 1300 | MST |
| Departed Location | 2/21/2015 | 1600 | MST |

1.2 Cementing Job Summary



Cementing Job Summary

The Road to Excellence Starts with Safety

| | | | |
|--|---------------------|------------------------------------|---------------------------|
| Sold To #: 369404 | Ship To #: 3647448 | Quote #: | Sales Order #: 0902150725 |
| Customer: EXTRACTION OIL & GAS | | Customer Rep: Hugh | |
| Well Name: KODAK | Well #: 3 | API/UWI #: 05-123-41120-00 | |
| Field: WATTENBERG | City (SAP): WINDSOR | County/Parish: WELD | State: COLORADO |
| Legal Description: NW NW-27-6N-67W-1245FNL-1043FWL | | | |
| Contractor: FRONTIER DRLG | | Rig/Platform Name/Num: FRONTIER 10 | |
| Job BOM: 7522 | | | |
| Well Type: HORIZONTAL OIL | | | |
| Sales Person: HALAMERICA\HB60191 | | Srvc Supervisor: Keaton Simmons | |
| Job | | | |

| | | | |
|------------------------|--------|--|-------------------|
| Formation Name | | | |
| Formation Depth (MD) | Top | | Bottom |
| Form Type | | | BHST 225 degF |
| Job depth MD | 7580ft | | Job Depth TVD |
| Water Depth | | | Wk Ht Above Floor |
| Perforation Depth (MD) | From | | To |

| Well Data | | | | | | | | | | |
|-------------------|------------|---------|-------|---------------|--------|-------|-----------|--------------|------------|---------------|
| Description | New / Used | Size in | ID in | Weight lbm/ft | Thread | Grade | Top MD ft | Bottom MD ft | Top TVD ft | Bottom TVD ft |
| Casing | 0 | 9.625 | 8.921 | 36 | BTC | J-55 | 0 | 805 | 0 | 0 |
| Casing | 0 | 7 | 6.276 | 26 | BTC | P-110 | 0 | 7580 | 0 | 0 |
| Open Hole Section | | | 8.75 | | | | 805 | 7595 | 0 | 0 |

| Tools and Accessories | | | | | | | | | |
|-----------------------|---------|-----|------|----------|----------------|---------|-----|------|--|
| Type | Size in | Qty | Make | Depth ft | Type | Size in | Qty | Make | |
| Guide Shoe | 7 | | | 7580 | Top Plug | 7 | | HES | |
| Float Shoe | 7 | | | | Bottom Plug | 7 | | HES | |
| Float Collar | 7 | | | | SSR plug set | 7 | | HES | |
| Insert Float | 7 | | | | Plug Container | 7 | | HES | |
| Stage Tool | 7 | | | | Centralizers | 7 | | HES | |

| Miscellaneous Materials | | | | | | | | |
|-------------------------|------|------------|------|-----------|------|------|--|--|
| Gelling Agt | Conc | Surfactant | Conc | Acid Type | Qty | Conc | | |
| Treatment Fld | Conc | Inhibitor | Conc | Sand Type | Size | Qty | | |
| | | | | | | | | |

| Fluid Data | | | | | | | | | |
|-----------------|-------------|-------------|-----|---------|------------------------|----------------|---------------|--------------|---------------------|
| Stage/Plug #: 1 | | | | | | | | | |
| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal |
| 1 | Fresh Water | Fresh Water | 0 | bbl | 8.33 | 0 | | 6 | |
| 42 gal/bbl | | FRESH WATER | | | | | | | |

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Cementing Job Summary

| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/mi n | Total Mix Fluid Gal |
|--|--|---------------------------|--------------------------------------|--------------------------------|---------------------------|-------------------|------------------|---------------------|---------------------------|
| 2 | 11.5 lb/gal Tuned Spacer III | Tuned Spacer III | 40 | bbl | 11.5 | 3.76 | 24.2 | 6 | |
| 149.34 lbm/bbl | | | BARITE, BULK (100003681) | | | | | | |
| 36.20 gal/bbl | | | FRESH WATER | | | | | | |
| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/mi n | Total Mix Fluid Gal |
| 3 | Lead Cement | ECONOCEM (TM) SYSTEM | 490 | sack | 12.7 | 1.89 | | 6 | 9.99 |
| 9.99 Gal | | | FRESH WATER | | | | | | |
| 61.10 lbm | | | TYPE I / II CEMENT, BULK (101439798) | | | | | | |
| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/mi n | Total Mix Fluid Gal |
| 4 | Tail Cement | EXPANDACEM (TM) SYSTEM | 290 | sack | 13.8 | 1.67 | | 6 | 7.73 |
| 0.10 % | | | HR-5, 50 LB SK (100005050) | | | | | | |
| 7.73 Gal | | | FRESH WATER | | | | | | |
| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft3/sack | Mix Fluid Gal | Rate bbl/mi n | Total Mix Fluid Gal |
| 5 | Displacement | Displacement | 0 | bbl | 8.33 | | | | |
| Cement Left In Pipe | Amount | 42 ft | | | Reason | | | Shoe Joint | |
| Mix Water:pH ## | Mix Water Chloride:## ppm | | | Mix Water Temperature:## °F °C | | | | | |
| Cement Temperature:## °F °C | Plug Displaced by:## lb/gal kg/m3 XXXX | | | Disp. Temperature:## °F °C | | | | | |
| Plug Bumped?Yes/No | Bump Pressure:#### psi MPa | | | Floats Held?Yes/No | | | | | |
| Cement Returns:## bbl m3 | Returns Density:## lb/gal kg/m3 | | | Returns Temperature:## °F °C | | | | | |
| Comment 50 bbls cement back to surface | | | | | | | | | |

last updated on 2/21/2015 2:57:07 PM

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1.3 Planned Pumping Schedule

1. **Fill Lines with Water**
 - a. Density = 8.33ppg
 - b. Volume = 2bbl
2. **Pressure Test Lines to 4000 psi**
3. **Pump Tuned Spacer**
 - a. Density = 11.5 lb/gal
 - b. Volume = 40 bbl
 - c. Rate = 5.0 bpm
4. **Drop Bottom Plug**
5. **Pump EconoCem (Lead)**
 - a. Density = 12.7 lb/gal
 - b. Yield = 1.89 ft³/sk
 - c. Water Requirement =9.99 gal/sk
 - d. Volume = 490 sks (165 bbls)
 - e. Rate = 6.0 bpm
6. **Pump ExpandaCem (Tail)**
 - a. Density = 13.8 lb/gal
 - b. Yield = 1.67 ft³/sk
 - c. Water Requirement =7.73 gal/sk
 - d. Volume = 290 sks (86 bbls)
 - e. Rate = 5.0 bpm
7. **Drop Top Plug**
8. **Start Displacement**
9. **Pump Displacement Mud**
 - a. Density = 9.9 lb/gal
 - b. Volume = 283 bbls
 - c. Rate = 8.0 bpm
10. Land Plug – Anticipated Final Circulation Pressure 2000 psi

Calculated Total Displacement =283 bbls

1.4 Job Overview

| | | Units | Description |
|-----------|--|--------------|---------------------|
| 1 | Surface temperature at time of job | °F | 45 |
| 2 | Mud type (OBM, WBM, SBM, Water, Brine) | - | wbm |
| 3 | Actual mud density | lb/gal | 10 |
| 4 | Time circulated before job | HH:MM | 30 |
| 5 | Mud volume circulated | Bbls | 240 |
| 6 | Rate at which well was circulated | Bpm | 8 |
| 7 | Pipe movement during hole circulation | Y/N | n |
| 8 | Rig pressure while circulating | Psi | 1100 |
| 9 | Time from end mud circulation to start of job | HH:MM | 15 |
| 10 | Pipe movement during cementing | Y/N | n |
| 11 | Calculated displacement | Bbls | 286 |
| 12 | Job displaced by | Rig/HES | 282 by HES 4 by rig |
| 13 | Annular flow before job? | Y/N | n |
| 14 | Annular flow after job? | Y/N | n |
| 15 | Length of rat hole | Ft | 18 |
| 16 | Units of gas detected while circulating | Units | 0 |
| 17 | Was lost circulation experienced at any time ? | Y/N | n |

1.5 Water Field Test

| Item | Recorded Test Value | Units | Max. Acceptable Limit | Potential Problems in Exceeding Limit |
|------------------|---------------------|-------|-----------------------|---|
| pH | 7 | ---- | 6.0 - 8.0 | Chemicals in the water can cause severe retardation |
| Chlorides | 0 | ppm | 3000 ppm | Can shorten thickening time of cement |
| Sulfates | 200 | ppm | 1500 ppm | Will greatly decrease the strength of cement |
| Total Hardness | 425 | ppm | 500 mg/L | High concentrations will accelerate the set of the cement |
| Calcium | 0 | ppm | 500 ppm | High concentrations will accelerate the set of the cement |
| Total Alkalinity | 0 | ppm | 1000 ppm | Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3). |
| Bicarbonates | 0 | ppm | 1000 ppm | Cement is greatly retarded to the point where it may not set up at all |
| Potassium | 0 | ppm | 5000 ppm | High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides) |
| Iron | 52 | ppm | 300 ppm | High concentrations will accelerate the set of the cement |
| Temperature | 7 | °F | 50-80 °F | High temps will accelerate; Low temps may risk freezing in cold weather |

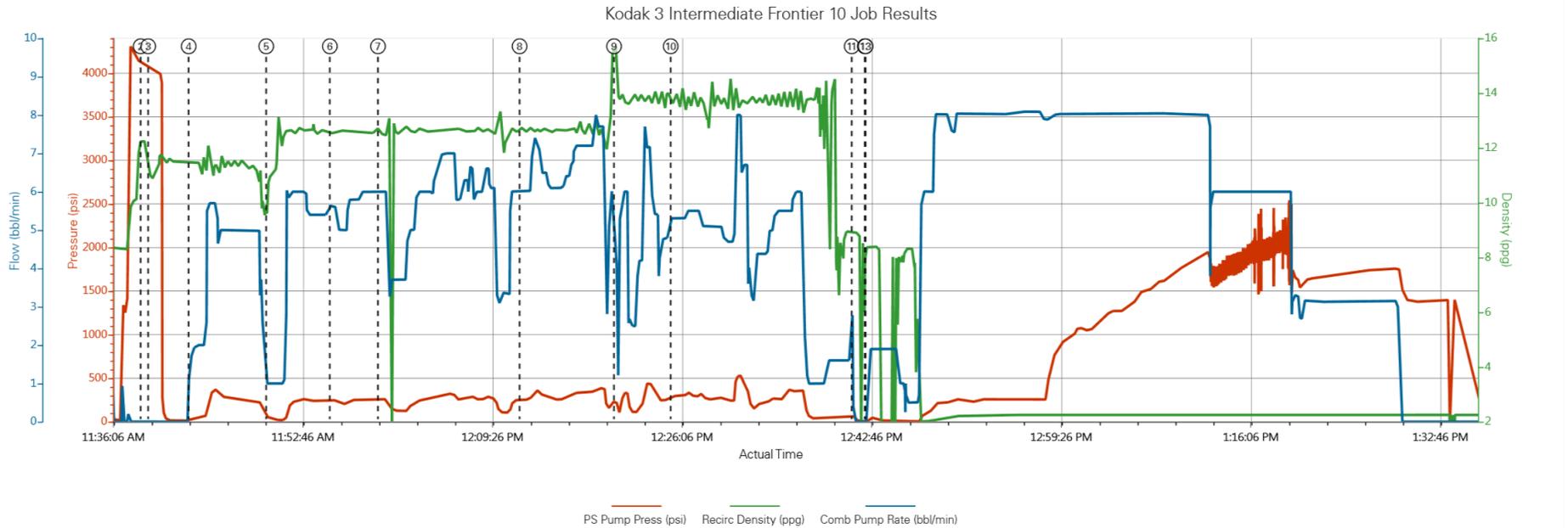
Submitted Respectfully by: Keaton Simmons

1.6 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | Downhole Density <i>(ppg)</i> | Pass-Side Pump Pressure <i>(psi)</i> | Combined Pump Rate <i>(bbl/min)</i> | Comments |
|-------|----------|-------------------|----------------------------|-----------|----------|--------|----------------------------------|---|--|--|
| Event | 1 | End Job | End Job | 2/21/2015 | 01:55:00 | USER | | | | |
| Event | 2 | Start Job | Start Job | 2/21/2015 | 11:38:41 | COM7 | 8.33 | 0.00 | 0.00 | |
| Event | 3 | Start Job | Test Lines | 2/21/2015 | 11:39:21 | COM7 | 8.33 | 4000.00 | 0.00 | Rig water no additives |
| Event | 4 | Pump Spacer 1 | Tuned Spacer III @11.5 PPG | 2/21/2015 | 11:42:54 | COM7 | 11.50 | 23.00 | 5.00 | added red dye last 10 bbls spacer |
| Event | 5 | Pump Lead Cement | Econocem mixed @ 12.7PPG | 2/21/2015 | 11:49:43 | COM7 | 12.70 | 43.00 | 6.00 | 490 sks 1.89 ft3/sk and 9.99 gal/sk |
| Event | 6 | Check Weight | Check weight | 2/21/2015 | 11:55:19 | COM7 | 12.70 | 247.00 | 6.00 | |
| Event | 7 | Check Weight | Check weight | 2/21/2015 | 11:59:33 | COM7 | 12.70 | 264.00 | 6.00 | |
| Event | 8 | Check Weight | Check weight | 2/21/2015 | 12:12:00 | COM7 | 12.70 | 252.00 | 6.00 | |
| Event | 9 | Pump Tail Cement | Expandacem mixed @ 13.8PPG | 2/21/2015 | 12:20:18 | COM7 | 13.80 | 224.00 | 5.00 | 290 sks 1.67 ft3/sk and 7.73 gal/sk |
| Event | 10 | Check Weight | Check weight | 2/21/2015 | 12:25:17 | COM7 | 13.80 | 295.00 | 5.00 | |
| Event | 11 | Shutdown | Shutdown | 2/21/2015 | 12:41:12 | COM7 | 13.80 | 47.00 | 0.00 | washed on top of plug per company rep |
| Event | 12 | Drop Top Plug | Drop Top Plug | 2/21/2015 | 12:42:21 | COM7 | 13.80 | 5.00 | 0.00 | Preloaded HWE top plug |
| Event | 13 | Pump Displacement | Drilling Mud @ 10 PPG | 2/21/2015 | 12:42:25 | COM7 | 9.90 | 5.00 | 8.00 | Caught cement at 90 bbls away Spcr back 195 away CMT back @ 243 away.transmisson on Deck motor went out with 3bbls left to bump, turned over to rig and the bumped on calculated |

2.0 Attachments

2.1 Job Results



- ① End Job n/a,n/a,n/a ④ Tuned Spacer III @ 11.5 PPG 23;11.44;1.7 ⑦ Check weight 264;12.57;6 ⑩ Check weight 295;13.53;5.3 ⑬ Drilling Mud @ 10 PPG 5;8.39;0
- ② Start Job 4098;12.25;0 ⑤ Econocem mixed @ 12.7PPG 43;10.71;1 ⑧ Check weight 252;12.72;6 ⑪ Shutdown 47;8.93;0
- ③ Test Lines 4060;10.94;0 ⑥ Check weight 247;12.51;5.6 ⑨ Expandacem mixed @ 13.8PPG 224;15.45;4.1 ⑫ Drop Top Plug 5;8.38;0