

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

| | | | | | | | | | | | |
|---|------------------------------|--|------------------|----------------------------|-----------------------------------|----------------------------|------------------------|-----------------------------|---------------|--------------|---------------------|
| Sold To #: 300466 | | Ship To #: 3794476 | | Quote #: 0022332066 | | Sales Order #: 0904184654 | | | | | |
| Customer: ANADARKO PETROLEUM CORP-EBUS | | | | Customer Rep: Albert Bryan | | | | | | | |
| Well Name: RW | | | Well #: 38N-31HZ | | | API/UWI #: 05-123-44614-00 | | | | | |
| Field: WATTENBERG | | City (SAP): HUDSON | | County/Parish: WELD | | | State: COLORADO | | | | |
| Legal Description: SE SW-29-3N-65W-442FSL-1614FWL | | | | | | | | | | | |
| Contractor: Xtreme | | | | | Rig/Platform Name/Num: Xtreme 22 | | | | | | |
| Job BOM: 7523 7523 | | | | | | | | | | | |
| Well Type: HORIZONTAL GAS | | | | | | | | | | | |
| Sales Person: HALAMERICA\HX41066 | | | | | Srvc Supervisor: Steven Markovich | | | | | | |
| Job | | | | | | | | | | | |
| | | | | | | | | | | | |
| Formation Name | | | | | | | | | | | |
| Formation Depth (MD) | | Top | | | Bottom | | | | | | |
| Form Type | | | | | BHST | | | | | | |
| Job depth MD | | 12759ft | | | 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 | | | 9.625 | 8.921 | 36 | | J-55 | 0 | 1878 | 0 | 0 |
| Casing | | | 5.5 | 4.778 | 20 | LTC | HCP110 | 0 | 12759 | 0 | 0 |
| Open Hole Section | | | | 7.875 | | | | 1878 | 12769 | 0 | 0 |
| | | | | | | | | | | | |
| Tools and Accessories | | | | | | | | | | | |
| Type | Size in | Qty | Make | Depth ft | | Type | Size in | Qty | Make | | |
| Guide Shoe | 5.5 | | | 12759 | | Top Plug | 5.5 | | HES | | |
| Float Shoe | 5.5 | | | | | Bottom Plug | 5.5 | | HES | | |
| Float Collar | 5.5 | | | | | SSR plug set | 5.5 | | HES | | |
| Insert Float | 5.5 | | | | | Plug Container | 5.5 | | HES | | |
| Stage Tool | 5.5 | | | | | Centralizers | 5.5 | | HES | | |
| | | | | | | | | | | | |
| Fluid Data | | | | | | | | | | | |
| Stage/Plug #: 1 | | | | | | | | | | | |
| Fluid # | Stage Type | Fluid Name | | | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft ³ /sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal |
| 1 | 10.5 lb/gal Tuned Spacer III | Tuned Spacer III | | | 60 | bbl | 10.5 | 6.43 | | | |
| 86.45 lbm/bbl | | BARITE, BULK (100003681) | | | | | | | | | |
| 37.70 gal/bbl | | FRESH WATER | | | | | | | | | |
| 0.70 gal/bbl | | DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665) | | | | | | | | | |
| 0.25 gal/bbl | | D-AIR 3000L, 5 GAL PAIL (101007444) | | | | | | | | | |
| 0.70 gal/bbl | | MUSOL A, 330 GAL TOTE - (790828) | | | | | | | | | |

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| 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 | ElastiCem - Cap Cement | ELASTICEM (TM) SYSTEM | 150 | sack | 13.2 | 1.57 | | 5 | 7.52 |
| 7.52 Gal | | FRESH WATER | | | | | | | |
| 0.90 % | | SCR-100 (100003749) | | | | | | | |
| 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 | ElastiCem | ELASTICEM (TM) SYSTEM | 400 | sack | 13.2 | 1.57 | | 5 | 7.53 |
| 0.10 % | | SUPER CBL, 50 LB PAIL (100003868) | | | | | | | |
| 0.40 % | | SCR-100 (100003749) | | | | | | | |
| 7.53 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 |
| 4 | EconoCem | ECONOCEM (TM) SYSTEM | 740 | sack | 13.5 | 1.68 | | 5 | 7.99 |
| 7.99 Gal | | FRESH WATER | | | | | | | |
| 0.35 % | | HR-5, 50 LB SK (100005050) | | | | | | | |
| 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 | Biocide Water and MMCR | Biocide Water and MMCR | 20 | bbl | 8.34 | | | | |
| 0.50 gal/bbl | | MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781) | | | | | | | |
| 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 |
| 6 | Biocide Water | Biocide Water | 260 | bbl | 8.34 | | | | |
| <p>Comment Spacer to surface at 278bbbls away bringing 2bbbls of spacer to surface. Final lifting pressure was 2346psi took 500 over and held. Did 15 min 3000psi casing test. Ending pressure was 3244psi. Estimated Top of Tail cement 7131' Estimated Top of Lead 2 10750' Estimated top of Lead 11716'</p> | | | | | | | | | |

2.0 Real-Time Job Summary

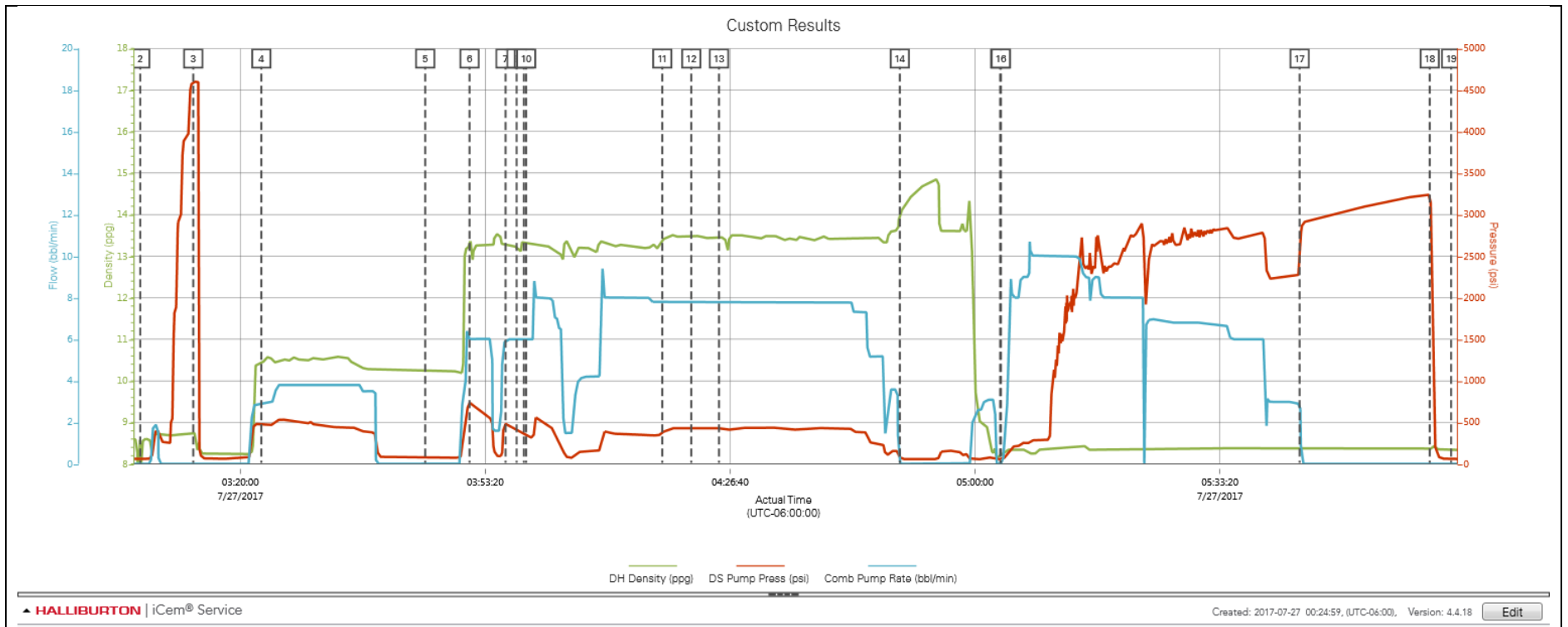
2.1 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | DH Density <i>(ppg)</i> | DS Pump Press <i>(psi)</i> | Comb Pump Rate <i>(bbl/min)</i> | Comments |
|-------|----------|------------------|------------------|-----------|----------|--------|----------------------------|-------------------------------|------------------------------------|---|
| Event | 1 | Call Out | Call Out | 7/26/2017 | 17:30:00 | USER | | | | Job Called out at 17:30 with an on location time of 23:30. Got all job materials and chemicals and headed to location. Arrived on location and did a hazard hunt with HES crew. Rig had 3000 feet still to run. |
| Event | 2 | Start Job | Start Job | 7/27/2017 | 03:06:22 | COM4 | 8.31 | 60.00 | 0.00 | TD 12769' TP 12759' FC 12712' 5 1/2 20#csg 7 7/8 OPH 1878' 9 5/8 sufcsg. Estimated top of Tail cement 7131' estimated top of lead 2 cement 10750' estimated top of lead cement 11761. Water test PH 6.5 Hardness >70 Iron 0 Sulfates >200 Chlorides 0 |
| Event | 3 | Test Lines | Test Lines | 7/27/2017 | 03:13:35 | COM4 | 8.74 | 4600.00 | 0.00 | Set kick outs to 500psi for kick out test. Then re set kick outs t 4500psi and half for 2 mins. |
| Event | 4 | Pump Spacer 1 | Pump Spacer 1 | 7/27/2017 | 03:22:51 | COM4 | 10.44 | 477.00 | 2.90 | Pump 60bbbls of 10.5ppg 6.43yield Tuned Spacer. Mixed in 40 gallons of Musol A and Dual surf B on the fly. Pumped at 4bbl/min 458psi. |
| Event | 5 | Check Weight | Check Weight | 7/27/2017 | 03:45:09 | COM4 | 10.24 | 79.00 | 0.00 | Weight verified by pressurized scales. |
| Event | 6 | Pump Lead Cement | Pump Lead Cement | 7/27/2017 | 03:51:11 | COM4 | 13.30 | 730.00 | 6.00 | Pump 41.94bbbls (150sks) of 13.2ppg 1.57 yield Lead cement. Pumped at 6bbl/min 750psi. |
| Event | 7 | Check Weight | Check Weight | 7/27/2017 | 03:56:05 | COM4 | 13.29 | 493.00 | 6.00 | Weight verified by pressurized scales. |
| Event | 8 | Drop Bottom Plug | Drop Bottom Plug | 7/27/2017 | 03:57:36 | USER | 13.23 | 410.00 | 6.00 | Plug loaded into HES plug container and verified by Company Rep. |
| Event | 9 | Pump Cement | Pump Cement | 7/27/2017 | 03:58:36 | COM4 | 13.33 | 350.00 | 6.00 | Pump 111.85bbbls (400sks) of 13.2ppg 1.57yield Cement. Pumped at 8bbl/min 360psi. |
| Event | 10 | Check Weight | Check Weight | 7/27/2017 | 03:58:54 | COM4 | 13.29 | 341.00 | 6.00 | Weight verified by pressurized scales. |
| Event | 11 | Pump Tail Cement | Pump Tail Cement | 7/27/2017 | 04:17:26 | COM4 | 13.43 | 388.00 | 7.80 | Pump 221.4bbbls (740sks) of 13.5ppg 1.68yield Tail cement. Pumped at 8bbl/min 345psi. |
| Event | 12 | Check Weight | Check Weight | 7/27/2017 | 04:21:22 | COM4 | 13.47 | 428.00 | 7.80 | Weight verified by pressurized scales. |

| | | | | | | | | | | |
|-------|----|-------------------|-------------------|-----------|----------|------|-------|---------|------|---|
| Event | 13 | Check Weight | Check Weight | 7/27/2017 | 04:25:08 | COM4 | 13.45 | 432.00 | 7.80 | Weight verified by pressurized scales. |
| Event | 14 | Clean Lines | Clean Lines | 7/27/2017 | 04:49:45 | COM4 | | | | Shutdown and clean pumps and lines |
| Event | 15 | Pump Displacement | Pump Displacement | 7/27/2017 | 05:03:25 | COM4 | | | | Pump 280.93bbls of Fresh H2O. First 20bbls with MMCR and then 260.93 with Biocide. Spacer to surface at 278away bringing 2bbls of spacer to surface. |
| Event | 16 | Drop Top Plug | Drop Top Plug | 7/27/2017 | 05:03:31 | COM4 | | | | Plug loaded into HES plug container and verified by Company Rep. |
| Event | 17 | Bump Plug | Bump Plug | 7/27/2017 | 05:44:10 | COM4 | 8.37 | 2343.00 | 2.70 | Bumped plug at calculated displacement, final lift pressure was 2343psi. took 500 over and held. We let pressure come up to 3000psi and held for 15 min casing test. Final pressure after 15mins was 3244psi. |
| Event | 18 | Check Floats | Check Floats | 7/27/2017 | 06:01:53 | USER | 8.37 | 3244.00 | 0.00 | Opened up release line to check floats. After 3bbls of water to the truck the floats held. |
| Event | 19 | End Job | End Job | 7/27/2017 | 06:04:48 | COM4 | | | | Thank you Steve Markovich and crew |

3.0 Attachments

3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

