

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

| Sold To #: 345242 | | Ship To #: 3805798 | | Quote #: | | Sales Order #: 0904265683 | | | | |
|---|---------------------------------------|--|------------------|----------------------------------|----------------------------------|---------------------------|---------------|--------------|---------------------|---------------|
| Customer: NOBLE ENERGY INC - EBUS | | | | Customer Rep: Gary Stapleton | | | | | | |
| Well Name: WELLS RANCH | | | Well #: BB11-658 | | API/UWI #: 05-123-44959-00 | | | | | |
| Field: WATTENBERG | | City (SAP): GILL | | County/Parish: WELD | | State: COLORADO | | | | |
| Legal Description: NW SW-11-5N-63W-2244FSL-235FWL | | | | | | | | | | |
| Contractor: H & P DRLG | | | | Rig/Platform Name/Num: H & P 517 | | | | | | |
| Job BOM: 7523 7523 | | | | | | | | | | |
| Well Type: HORIZONTAL OIL | | | | | Srv Supervisor: Steven Markovich | | | | | |
| Sales Person: HALAMERICA\HB70026 | | | | | | | | | | |
| Job | | | | | | | | | | |
| Formation Name | | | | | | | | | | |
| Formation Depth (MD) | | Top | | | Bottom | | | | | |
| Form Type | | | | | BHST | | 230 degF | | | |
| Job depth MD | | 16555ft | | | 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 | 1922 | 0 | 1922 |
| Casing | 0 | 5.5 | 4.778 | 20 | BUTTRESS | P-110 | 0 | 16589 | 0 | 6498 |
| Open Hole Section | | | 8.5 | | | | 2500 | 6919 | 0 | 6498 |
| Open Hole Section | | | 8.5 | | | | 6919 | 16589 | 0 | 6498 |
| 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 | 11.5 lb/gal Tuned Spacer III w/ Chems | Tuned Spacer III | 80 | bbl | 11.5 | 3.78 | | | | |
| 34.70 gal/bbl | | FRESH WATER | | | | | | | | |
| 0.60 gal/bbl | | DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665) | | | | | | | | |
| 147.42 lbm/bbl | | BARITE, BULK (100003681) | | | | | | | | |
| 0.60 gal/bbl | | MUSOL A, 330 GAL TOTE - (790828) | | | | | | | | |
| 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 | |
| 2 | ElastiCem Cap | ELASTICEM (TM) SYSTEM | 150 | sack | 13.2 | 1.57 | | 6 | 7.53 | |
| 0.60 % | | SCR-100 (100003749) | | | | | | | | |
| 7.53 Gal | | FRESH WATER | | | | | | | | |

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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 |
|--|----------------------|-----------------------|------|---------|---------------------------|-------------------|------------------|---------------------|---------------------------|
| 3 | ElastiCem w/ SCBL | ELASTICEM (TM) SYSTEM | 515 | sack | 13.2 | 1.61 | | 6 | 7.7 |
| 7.70 Gal | | FRESH WATER | | | | | | | |
| 0.25 % | | 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 |
| 4 | NeoCem NT1 | NeoCem TM | 1145 | sack | 13.2 | 2.04 | | 6 | 9.75 |
| 9.75 Gal | | FRESH WATER | | | | | | | |
| 0.08 % | | 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 |
| 5 | Displacement | Displacement | 364 | bbl | 8.33 | | | | |
| Comment Estimated top of Tail Cement 6402' estimated top of Lead Cement 2 2783' estimated top of Lead Cement 1780' estimated top of Spacer 189' | | | | | | | | | |

2.0 Real-Time Job Summary

2.1 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | DH Density (ppg) | DS Pump Press (psi) | Comb Pump Rate (bbl/min) | Comments |
|-------|----------|---|---|-----------|----------|--------|---------------------|------------------------|-----------------------------|--|
| Event | 1 | Call Out | Call Out | 8/31/2017 | 15:30:00 | USER | | | | Job Called out at 15:30 with an on location time of 21:00 |
| Event | 2 | Arrive at Location from Service Center | Arrive at Location from Service Center | 8/31/2017 | 21:15:00 | USER | | | | Arrived on location, rig still running casing approx 500' |
| Event | 3 | Safety Meeting - Assessment of Location | Safety Meeting - Assessment of Location | 8/31/2017 | 21:30:00 | USER | | | | JSA and Hazard hunt with HES crew |
| Event | 4 | Rig-Up Equipment | Rig-Up Equipment | 8/31/2017 | 21:45:00 | USER | | | | Rigged up HES lines and equipment. |
| Event | 5 | Safety Meeting - Pre Job | Safety Meeting - Pre Job | 8/31/2017 | 23:30:00 | USER | | | | JSA with HES and rig crew on job procedure. |
| Event | 6 | Start Job | Start Job | 8/31/2017 | 23:43:17 | COM4 | | | | TD 16573' TP 16555' FC 16506' 5 1/2" 20# Production Casing 8 1/2" Open hole 9 5/8" Surface casing 1922' Estimated top of Tail Cement 6402' Estimated top of Lead Cement 2 2783' Estimated top of Lead Cement 1780' Estimated top of Spacer 189'. |
| Event | 7 | Drop Bottom Plug | Drop Bottom Plug | 8/31/2017 | 23:48:46 | COM4 | | | | Plug loaded in Casing by company rep. |
| Event | 8 | Test Lines | Test Lines | 8/31/2017 | 23:49:50 | COM4 | 8.59 | 4903.00 | | 500psi Kick out test, then bring pressure up to 4500psi and hold. |
| Event | 9 | Pump Spacer 1 | Pump Spacer 1 | 9/1/2017 | 00:01:45 | COM4 | 11.71 | 110.00 | 3.00 | Pump 60bbls of 11.5ppg 3.78yield Tuned Spacer. Added 48 gallons of Musol-A and Dual Spacer-B on the fly. Pumped at 4bbl/min 175psi. |
| Event | 10 | Check Weight | Check weight | 9/1/2017 | 00:02:13 | COM4 | | | | Weight verified by pressurized scales. |
| Event | 11 | Shutdown | Shutdown | 9/1/2017 | 00:20:16 | COM4 | | | | Shutdown |
| Event | 12 | Drop Bottom Plug | Drop Bottom Plug | 9/1/2017 | 00:22:18 | COM4 | | | | Plug loaded into the casing by company rep. |
| Event | 13 | Check Weight | Check weight | 9/1/2017 | 00:27:50 | COM4 | | | | Weight verified by pressurized scales. |
| Event | 14 | Pump Lead Cement | Pump Lead Cement | 9/1/2017 | 00:30:18 | COM4 | 13.63 | 356.00 | 4.30 | Pump 41.94bbls (150sks) of 13.2ppg 1.57yield Lead Cement. Pumped at 8bbl/min 600psi |
| Event | 15 | Check Weight | Check weight | 9/1/2017 | 00:31:23 | COM4 | 13.53 | 407.00 | 5.20 | Weight verified by pressurized scales. |

| | | | | | | | | | | |
|-------|----|-------------------|-------------------|----------|----------|------|-------|---------|------|--|
| Event | 16 | Check Weight | Check weight | 9/1/2017 | 00:37:18 | COM4 | 13.51 | 255.00 | 6.40 | Weight verified by pressurized scales. |
| Event | 17 | Pump Cement | Pump Cement | 9/1/2017 | 00:40:06 | COM4 | 13.33 | 651.00 | 8.00 | Pump 147.67bbbls (515sks) of 13.2ppg 1.61yield Lead Cement. Pumped at 8bbbl/min 765psi |
| Event | 18 | Pump Tail Cement | Pump Tail Cement | 9/1/2017 | 01:01:44 | COM4 | 13.11 | 1002.00 | 8.00 | Pump 416bbbls (1145sks) of 13.2ppg 3.04yield Lead Cement. Pumped at 8bbbl/min 1035psi |
| Event | 19 | Check Weight | Check weight | 9/1/2017 | 01:02:41 | COM4 | 13.18 | 972.00 | 7.90 | Weight verified by pressurized scales. |
| Event | 20 | Check Weight | Check weight | 9/1/2017 | 01:29:55 | COM4 | 13.15 | 1002.00 | 8.00 | Weight verified by pressurized scales. |
| Event | 21 | Shutdown | Shutdown | 9/1/2017 | 01:54:07 | COM4 | | | | Shutdown, clean pumps and lines. |
| Event | 22 | Drop Top Plug | Drop Top Plug | 9/1/2017 | 02:13:16 | COM4 | | | | Plug loaded into the casing by company rep. |
| Event | 23 | Pump Displacement | Pump Displacement | 9/1/2017 | 02:13:46 | COM4 | 8.36 | 460.00 | 9.00 | Pump 364.8bbbls. First 20bbbls with MMCR and then 344.8bbbls of biocide water. Pumped ay 9bbbl/min slowed rate with pressure increase. |
| Event | 24 | Bump Plug | Bump Plug | 9/1/2017 | 03:04:44 | COM4 | 8.43 | 1770.00 | 3.00 | Bumped plug at 364 bbls. Final lifting pressure was 1775psi, took 500psi over and held. |
| Event | 25 | Check Floats | Check Floats | 9/1/2017 | 03:08:13 | USER | | | | After 3 mins pressure was 2361psi. Opened release line to check floats, after 4bbbls back to the truck the floats held. |
| Event | 26 | End Job | End Job | 9/1/2017 | 03:16:11 | COM4 | | | | Thank you Steve Markovich and Crew |