

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Monday, November 26, 2018

Independence D30-743 Production

Job Date: Thursday, November 22, 2018

Sincerely,

Adam McKay

Legal Notice

Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Independence D30-743** cement **Production** 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 [Ft. Lupton]

The Road to Excellence Starts with Safety

| | | | | | | | | | | | |
|--|-------------------|-----------------------------|--------------|----------------------------|---|-------------------------------------|-------------------------------|-----------------------|----------------------|----------------------|----------------------------|
| Sold To #: 345242 | | Ship To #: 3899606 | | Quote #: | | Sales Order #: 0905288683 | | | | | |
| Customer: NOBLE ENERGY INC-EBUS | | | | | | Customer Rep: Thomas Churvut | | | | | |
| Well Name: INDEPENDENCE | | | | Well #: D30-743 | | API/UWI #: 05-123-47590-00 | | | | | |
| Field: WATTENBERG | | City (SAP): LA SALLE | | County/Parish: WELD | | State: COLORADO | | | | | |
| Legal Description: NE NE-19-3N-64W-300FNL-1157FEL | | | | | | | | | | | |
| Contractor: H & P DRLG | | | | | Rig/Platform Name/Num: H & P 517 | | | | | | |
| Job BOM: 7523 7523 | | | | | | | | | | | |
| Well Type: HORIZONTAL OIL | | | | | | | | | | | |
| Sales Person: HALAMERICA\HB70026 | | | | | Srvc Supervisor: Prince Perez | | | | | | |
| Job | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Formation Depth (MD) | | Top | 0' | | Bottom | 17,885' | | | | | |
| | | | | | | BHST | 230 degF | | | | |
| Job depth MD | | 17,868' | | Job Depth TVD | | 6,875' | | | | | |
| | | | | | | Wk Ht Above Floor | 4' | | | | |
| | | | | | | | | | | | |
| 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 | | | 0 | 1929 | 0 | 1929 | |
| Casing | | 5.5 | 4.778 | 20 | | | 0 | 17868 | 0 | 6875 | |
| Open Hole Section | | | 8.5 | | | | 1929 | 17885 | 1929 | 6875 | |
| Open Hole Section | | | 8.5 | | | | 1929 | 17885 | 1929 | 6875 | |
| | | | | | | | | | | | |
| Tools and Accessories | | | | | | | | | | | |
| Type | Size in | Qty | Make | Depth ft | | Type | Size in | Qty | Make | | |
| Guide Shoe | 5.5 | 1 | | 17,868 | | Top Plug | 5.5 | 1 | HES | | |
| | | | | | | Bottom Plug | 5.5 | 2 | HES | | |
| Float Collar | 5.5 | 1 | | 17,820.7' | | | | | | | |
| | | | | | | Plug Container | 5.5 | 1 | HES | | |
| | | | | | | Centralizers | 5.5 | 201 | SYNTEC | | |
| | | | | | | | | | | | |
| 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 | Spacer | Tuned Spacer III | | | 120 | bbl | 11.5 | 3.78 | 23.5 | 6 | 4,189 |

| 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 | Cap | ELASTICEM (TM) SYSTEM | 140 | sack | 13.2 | 1.68 | 8.04 | 6 | 1,126 |
| | | | | | | | | | |
| 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 |
| 3 | Lead | ELASTICEM (TM) SYSTEM | 418 | sack | 13.2 | 1.68 | 8.06 | 6 | 3,369 |
| | | | | | | | | | |
| 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 |
| 4 | Tail | NeoCem TM | 1,275 | sack | 13.2 | 2.04 | 9.75 | 8 | 12,431 |
| | | | | | | | | | |
| 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 |
| 5 | Displacement | Fresh Water | 395.6 | bbl | 8.34 | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Cement Left In Pipe | | Amount | 47 ft | | Reason | | | Shoe Joint | |
| Mix Water: | | pH 7 | Mix Water Chloride: | | <300 ppm | | Mix Water Temperature: | | 71 °F |
| Cement Temperature: | | 84 °F | Plug Displaced by: | | 8.34 lb/gal | | Disp. Temperature: | | 100 °F |
| Plug Bumped? | | Yes | Bump Pressure: | | 1,869 psi | | Floats Held? | | Yes |
| Cement Returns: | | 0 bbl | Returns Density: | | 9.2 lb/gal | | Returns Temperature: | | ## °F |
| Comment | | | | | | | | | |
| Pumped 120 bbls of Tuned Spacer III with 72 gallons of Musol A, 72 gallons of Dual B, and 20 gallons of D Air. | | | | | | | | | |
| Pumped 41.89 bbls of Cap cement. | | | | | | | | | |
| Pumped 125.07 bbls of Elasticem w/SCBL. | | | | | | | | | |
| Pumped 463.24 bbls of NeoCem. | | | | | | | | | |
| Pumped 395.6 bbls of Displacement with MMCR in the first 20 bbls and Aldacide throughout. | | | | | | | | | |
| No spacer back. | | | | | | | | | |
| 4.5 bbls back on the floats. | | | | | | | | | |

2.0 Real-Time Job Summary

2.1 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | DH Density (ppg) | Comb Pump Rate (bbl/min) | PS Pump Press (psi) | Comments |
|-------|----------|---|---|------------|----------|--------|---------------------|-----------------------------|------------------------|--|
| Event | 1 | Call Out | Call Out | 11/21/2018 | 15:00:00 | USER | | | | CREW CALLED OUT AT 15:00, REQUESTED ON LOCATION 20:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10025030, 10867415, AND PUMP 11189145. |
| Event | 2 | Pre-Convoy Safety Meeting | Pre-Convoy Safety Meeting | 11/21/2018 | 19:20:00 | USER | | | | CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW. |
| Event | 3 | Crew Leave Shop | Crew Leave Shop | 11/21/2018 | 19:30:00 | USER | | | | STARTED JOURNEY MANAGEMENT. |
| Event | 4 | Arrive at Location from Service Center | Arrive at Location from Service Center | 11/21/2018 | 20:00:00 | USER | | | | END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,929', 5.5" CASING: 20 LB/FT TOTAL 17,867.7', 8 1/2" HOLE, TD 17,885', 47' SHOE TRAC, TVD- 6,875'. PUMP FRESH WATER DISPLACEMENT. CASING LANDED @ 23:00 11/21/2018. |
| Event | 5 | Safety Meeting - Assessment of Location | Safety Meeting - Assessment of Location | 11/21/2018 | 20:10:00 | USER | | | | HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER. |
| Event | 6 | Rig-Up Equipment | Rig-Up Equipment | 11/21/2018 | 20:20:00 | USER | | | | RIG UP BULK AND MIXING EQUIPMENT. |
| Event | 7 | Rig-Up Completed | Rig-Up Completed | 11/21/2018 | 22:50:00 | USER | | | | |
| Event | 8 | Pre-Job Safety Meeting | Pre-Job Safety Meeting | 11/22/2018 | 00:00:00 | USER | | | | MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS. |
| Event | 9 | Start Job | Start Job | 11/22/2018 | 00:38:16 | COM4 | | | | BEGIN RECORDING JOB DATA. |
| Event | 10 | Test Lines | Test Lines | 11/22/2018 | 00:47:02 | COM4 | 8.34 | | 4657.00 | PRESSURE TESTED IRON TO 4,500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1,000 PSI, 5TH GEAR STALL OUT @ 1,850 PSI. 4,500 PRESSURE TEST KICKED OUT @ 4,500 PSI |
| Event | 11 | Test Lines | Test Lines | 11/22/2018 | 00:54:22 | COM4 | 8.34 | | 3587.00 | TESTED AGAINST THE IBOP TO 3,500 PSI FOR 2 MIN. |
| Event | 12 | Pump Spacer 1 | Pump Spacer 1 | 11/22/2018 | 01:02:34 | COM4 | 11.20 | 1.80 | 40.00 | PUMP 120 BBLs OF TUNED SPACER III @ 11.5 LB/GAL, 3.78 CUFT/SK, 23.5 GALL/SK. 20 GALS D-AIR, 75 GALS DUAL B, 75 GALS OF MUSOL A. 8.8 BBLs CALCULATED TO RETURN TO SURFACE. |

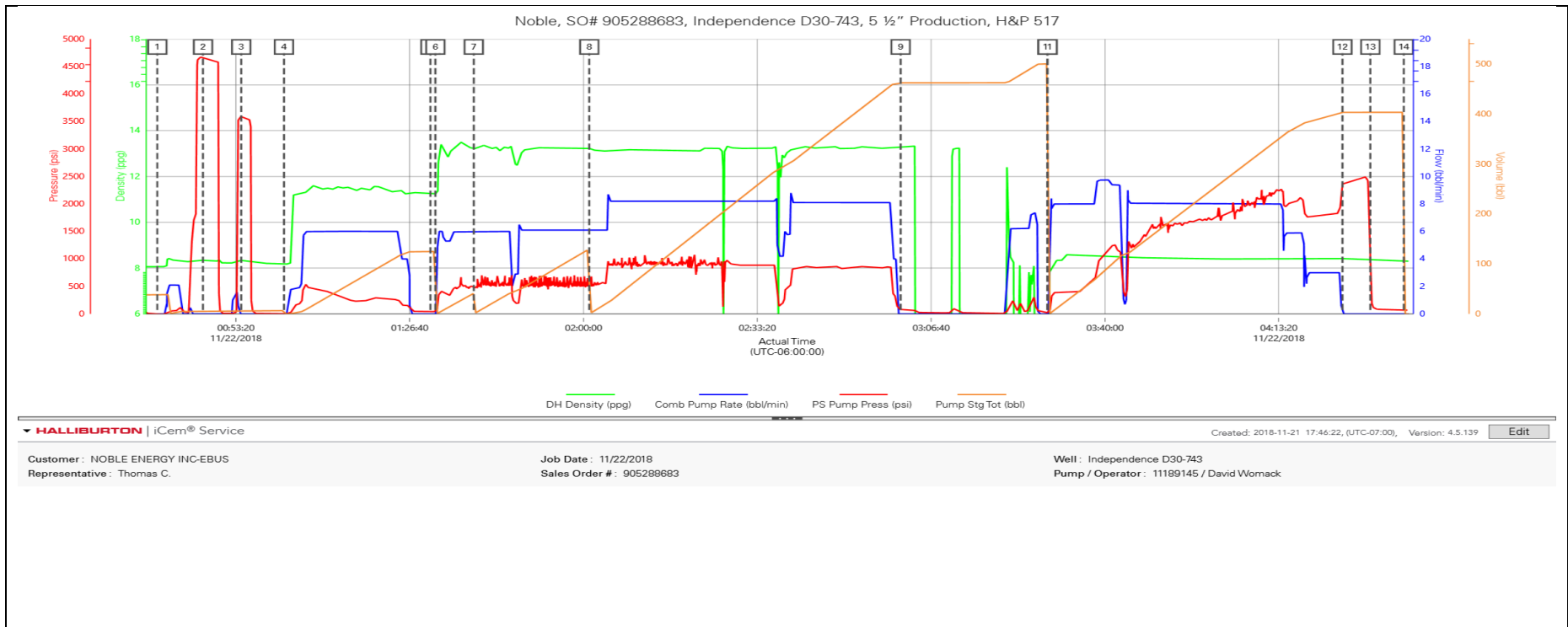
DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLs/MIN @ 725 PSI.

| | | | | | | | | | | |
|-------|----|--|--|------------|----------|------|-------|------|---------|---|
| Event | 13 | Drop Bottom Plug | Drop Bottom Plug | 11/22/2018 | 01:30:39 | COM4 | | | | PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. |
| Event | 14 | Pump Cement | Pump Cement | 11/22/2018 | 01:31:36 | COM4 | 12.73 | 5.30 | 338.00 | PUMPED 140 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.68 FT3/SK, 8.04 GAL/SK. 41.89 BBLs. HOC CALCULATED @ 1,026.7', TOC CALCULATED @ 2,447.2' DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 6 BBLs/MIN @ 450 PSI |
| Event | 15 | Pump Lead Cement | Pump Lead Cement | 11/22/2018 | 01:38:58 | COM4 | 13.25 | 6.00 | 500.00 | PUMPED 418 SKS OF ELASTICEM W/SCBL @ 13.2 LB/GAL, 1.68 FT3/SK, 8.06 GAL/SK. 125.07 BBLs, HOL CALCULATED @ 3,065.4', TOL CALCULATED @ 3,473.9'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 6 BBLs/MIN @ 500 PSI |
| Event | 16 | Pump Tail Cement | Pump Tail Cement | 11/22/2018 | 02:01:07 | COM4 | 13.28 | 6.10 | 538.00 | PUMP 1,275 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 FT3/SK, 9.75 GAL/SK, 463.24 BBLs. HOT CALCULATED @ 11,328.43', TOT CALCULATED @ 6,539.3'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLs/MIN @ 910 PSI. |
| Event | 17 | Shutdown | Shutdown | 11/22/2018 | 03:00:50 | USER | | | | SHUTDOWN TO WASH LINES. |
| Event | 18 | Drop Top Plug | Drop Top Plug | 11/22/2018 | 03:28:58 | COM4 | | | | PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. |
| Event | 19 | Pump Displacement | Pump Displacement | 11/22/2018 | 03:29:00 | COM4 | 8.00 | 8.00 | 390.00 | BEGIN CALCULATED DISPLACEMENT OF 395.6 BBLs WITH FRESH WATER. MMCR IN THE FIRST 20 BBLs AND ALDADICE THROUGHOUT. PUMP RATE 8 BPM @ 2,140 PSI. SLOW RATE TO 3 BPM @ 375 BBLs INTO DISPLACEMENT. |
| Event | 20 | Bump Plug | Bump Plug | 11/22/2018 | 04:25:33 | COM4 | 8.41 | 3.00 | 1834.00 | PLUG BUMPED AT CALCULATED DISPLACEMENT. 1,869 PSI PRESSURED 500 PSI OVER BUMP. SHUTDOWN FOR 5 MINUTES. |
| Event | 21 | Check Floats | Check Floats | 11/22/2018 | 04:30:54 | USER | | | | RELEASED PRESSURE, FLOATS HELD, 4.5 BBLs BACK. |
| Event | 22 | End Job | End Job | 11/22/2018 | 04:37:19 | COM4 | | | | STOP RECORDING JOB DATA. |
| Event | 23 | Post-Job Safety Meeting (Pre Rig-Down) | Post-Job Safety Meeting (Pre Rig-Down) | 11/22/2018 | 04:40:00 | USER | | | | DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES. |
| Event | 24 | Rig-Down Equipment | Rig-Down Equipment | 11/22/2018 | 04:50:00 | USER | | | | RIG DOWN BULK AND MIXING EQUIPMENT. |
| Event | 25 | Rig-Down Completed | Rig-Down Completed | 11/22/2018 | 06:10:00 | USER | | | | |
| Event | 26 | Pre-Convoy Safety Meeting | Pre-Convoy Safety Meeting | 11/22/2018 | 06:20:00 | USER | | | | CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW. |

| | | | | | | | |
|-------|----|---------------------|---------------------|------------|----------|------|--------------------------|
| Event | 27 | Crew Leave Location | Crew Leave Location | 11/22/2018 | 06:30:00 | USER | STOP RECORDING JOB DATA. |
|-------|----|---------------------|---------------------|------------|----------|------|--------------------------|

3.0 Attachments

3.1 Noble Independence D30-743-Custom Results.png



3.2 Noble Independence D30-743-Events.png

| Description | Actual Time (UTC-06:00:00) | DH Density (ppg) | Comb Pump Rate (bbl/min) | PS Pump Press (psi) | Pump Stg Tot (bbl) | |
|----------------------|-------------------------------|------------------|--------------------------|---------------------|--------------------|--|
| 1 Start Job | 00:38:16 | 8.06 | 0.00 | -6.00 | 38.20 | |
| 2 Test Lines | 00:47:02 | 8.34 | 0.00 | 4657.00 | 5.10 | |
| 3 Test Lines | 00:54:22 | 8.34 | 0.00 | 3587.00 | 6.60 | |
| 4 Pump Spacer 1 | 01:02:34 | 8.19 | 0.00 | 3.00 | 0.00 | |
| 5 Drop Bottom Plug | 01:30:39 | 11.26 | 0.00 | 40.00 | 124.90 | |
| 6 Pump Cement | 01:31:36 | 11.24 | 0.00 | 40.00 | 0.00 | |
| 7 Pump Lead Cement | 01:38:58 | 13.25 | 6.00 | 500.00 | 0.10 | |
| 8 Pump Tail Cement | 02:01:07 | 13.28 | 6.10 | 538.00 | 0.10 | |
| 9 Shutdown | 03:00:50 | 13.32 | 0.00 | 79.00 | 462.40 | |
| 10 Drop Top Plug | 03:28:58 | -0.15 | 0.00 | 21.00 | 500.30 | |
| 11 Pump Displacement | 03:29:00 | -0.15 | 0.00 | 21.00 | 500.30 | |
| 12 Bump Plug | 04:25:33 | 8.42 | 0.00 | 2369.00 | 403.40 | |
| 13 Check Floats | 04:30:54 | 8.32 | 0.00 | 1023.00 | 403.40 | |
| 14 End Job | 04:37:19 | 8.31 | 0.00 | 70.00 | 0.00 | |