

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS-EBUS**

Date: Monday, August 06, 2018

## **VT-LDS C3-16-18 PRODUCTION**

Job Date: Friday, July 13, 2018

Sincerely,  
**Julia Nichols**

## Legal Notice

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### Disclaimer:

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **VT LDS C3-16-18** 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.

**Approximately 43 barrels of cement were returned to surface.**

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 [Fort Lupton]**

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*Cementing Job Summary**The Road to Excellence Starts with Safety*

| Sold To #: 369404                                 | Ship To #: 3787028  | Quote #:                             | Sales Order #: 0904984825 |               |                        |                |               |              |                     |               |
|---|---------------------|--------------------------------------|---------------------------|---------------|------------------------|----------------|---------------|--------------|---------------------|---------------|
| Customer: EXTRACTION OIL & GAS                    |                     | Customer Rep: Larry Siegel           |                           |               |                        |                |               |              |                     |               |
| Well Name: VT-LDS                                 | Well #: C3-16-18    | API/UWI #: 05-123-44418-00           |                           |               |                        |                |               |              |                     |               |
| Field: WATTENBERG                                 | City (SAP): GREELEY | County/Parish: WELD                  | State: COLORADO           |               |                        |                |               |              |                     |               |
| Legal Description: SW NW-15-5N-85W-1895FNL-554FWL |                     |                                      |                           |               |                        |                |               |              |                     |               |
| Contractor:                                       |                     | Rig/Platform Name/Num: Patterson 901 |                           |               |                        |                |               |              |                     |               |
| Job BOM: 7523 7523                                |                     |                                      |                           |               |                        |                |               |              |                     |               |
| Well Type: HORIZONTAL OIL                         |                     |                                      |                           |               |                        |                |               |              |                     |               |
| Sales Person: HALAMERICA\HX38199                  |                     | Srvc Supervisor: Prince Perez        |                           |               |                        |                |               |              |                     |               |
| <b>Job</b>  |                     |                                      |                           |               |                        |                |               |              |                     |               |
|   |                     |                                      |                           |               |                        |                |               |              |                     |               |
| Formation Depth (MD)                              | Top 0'              | Bottom                               | 20,340'                   |               |                        |                |               |              |                     |               |
| Job depth MD                                      | 20330ft             | Job Depth TVD                        | 8,970'                    |               |                        |                |               |              |                     |               |
|   |                     | Wk Ht Above Floor                    | 5'                        |               |                        |                |               |              |                     |               |
|   |                     |                                      |                           |               |                        |                |               |              |                     |               |
| <b>Well Data</b>                                  |                     |                                      |                           |               |                        |                |               |              |                     |               |
| 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            |                        | J-55           | 0             | 1557         | 0                   | 1557          |
| Casing  | 0                   | 5.5                                  | 4.778                     | 20            | BTC                    | P-110          | 0             | 20330        | 0                   | 6970          |
| Open Hole Section                                 |                     |                                      | 8.75                      |               |                        |                | 1557          | 8129         | 0                   | 6970          |
| Open Hole Section                                 |                     |                                      | 8.5                       |               |                        |                | 8129          | 20340        | 0                   | 6970          |
|   |                     |                                      |                           |               |                        |                |               |              |                     |               |
| <b>Tools and Accessories</b>                      |                     |                                      |                           |               |                        |                |               |              |                     |               |
| Type  | Size in             | Qty                                  | Make                      | Depth ft      |                        | Type           | Size in       | Qty          | Make                |               |
| Guide Shoe  | 5.5                 | 1                                    |                           | 20,330        |                        | Top Plug       | 5.5           | 1            | ANTELOPE            |               |
| Float Shoe  | 5.5                 | 1                                    |                           |               |                        |                |               |              |                     |               |
| Float Collar                                      | 5.5                 | 1                                    |                           | 20,326        |                        |                |               |              |                     |               |
|   |                     |                                      |                           |               |                        | Plug Container | 5.5           | 1            | HES                 |               |
|   |                     |                                      |                           |               |                        | Centralizers   | 5.5           | 300          |                     |               |
|   |                     |                                      |                           |               |                        |                |               |              |                     |               |
| <b>Fluid Data</b>                                 |                     |                                      |                           |               |                        |                |               |              |                     |               |
| 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                     | 50                        | bbl           | 11.5                   | 3.73           | 23.4          | 4            | 1,761.2             |               |
|   |                     |                                      |                           |               |                        |                |               |              |                     |               |
| 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   | Cement              | ELASTICEM (TM) SYSTEM                | 3,260                     | sack          | 13.2                   | 1.57           | 7.53          | 8            | 24,547.8            |               |

last updated on 8/6/2018 10:11:55 AM

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(v. 4.5.139)

Created: Monday, August 06, 2018

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*Cementing Job Summary*

| Fluid #  | Stage Type   | Fluid Name  | Qty                 | Qty UoM | Mixing Density<br>lbm/gal | Yield<br>ft3/sack | Mix Fluid<br>Gal       | Rate<br>bbl/mi<br>n | Total Mix<br>Fluid<br>Gal |
|--|--------------|-------------|---------------------|---------|---------------------------|-------------------|------------------------|---------------------|---------------------------|
| 3  | Displacement | Fresh Water | 451.24              | bbl     | 8.33                      |                   |                        |                     |                           |
|  |              |             |                     |         |                           |                   |                        |                     |                           |
| Cement Left In Pipe  |              | Amount      | 0 ft                |         | Reason                    |                   |                        | Wet Shoe            |                           |
| Mix Water:   |              | Ph 7        | Mix Water Chloride: |         | 0 ppm                     |                   | Mix Water Temperature: |                     | 72 °F                     |
| Cement Temperature:  |              | 89 °F       | Plug Displaced by:  |         | 8.34 lb/gal               |                   | Disp. Temperature:     |                     | 83 °F                     |
| Plug Bumped?   |              | Yes         | Bump Pressure:      |         | 3,200 psi                 |                   | Floats Held?           |                     | Yes                       |
| Cement Returns:  |              | 43 bbl      | Returns Density:    |         | ## lb/gal                 |                   | Returns Temperature:   |                     | ## °F                     |
| Comment  |              |             |                     |         |                           |                   |                        |                     |                           |
| Pumped 50 bbls of Tuned Spacer III, 911.55 bbls of Elasticem, and 451bbls of freshwater Displacement. 43 bbls of cement back and 3 bbls back on the floats. Then pumped 60 bbls freshwater after the job to wash up the truck/stack. |              |             |                     |         |                           |                   |                        |                     |                           |

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

| Type  | Seq. No. | Activity                                | Graph Label                             | Date      | Time     | Source | DH Density<br>(ppg) | Comb Pump Rate<br>(bbl/min) | PS Pump Press<br>(psi) | Comments  |
|-------|----------|---|---|-----------|----------|--------|---------------------|-----------------------------|------------------------|---|
| Event | 1        | Call Out                                | Call Out                                | 7/13/2018 | 05:00:00 | USER   |                     |                             |                        | CREW CALLED OUT AT 05:00, REQUESTED ON LOCATION 11:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10784082, 11527037, AND PUMP 11512092.  |
| Event | 2        | Pre-Convoy Safety Meeting               | Pre-Convoy Safety Meeting               | 7/13/2018 | 09:00:00 | USER   |                     |                             |                        | CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.  |
| Event | 3        | Crew Leave Shop                         | Crew Leave Shop                         | 7/13/2018 | 09:10:00 | USER   |                     |                             |                        | STARTED JOURNEY MANAGEMENT.   |
| Event | 4        | Arrive at Location from Service Center  | Arrive at Location from Service Center  | 7/13/2018 | 10:10:00 | USER   |                     |                             |                        | END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,557', 5.5" CASING: 20 LB/FT TOTAL 20,330', 8 3/4" FROM 1,557' TO 8,129' AND 8 1/2" FROM 8,129' TO 20,340', TD 20,340', 6' SHOE TRAC, TVD- 6,970'. PUMP FRESH WATER DISPLACEMENT. CASING LANDED @ 13:30 7/13/2018. |
| Event | 5        | Safety Meeting - Assessment of Location | Safety Meeting - Assessment of Location | 7/13/2018 | 10:20:00 | USER   |                     |                             |                        | HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.   |
| Event | 6        | Rig-Up Equipment                        | Rig-Up Equipment                        | 7/13/2018 | 10:30:00 | USER   |                     |                             |                        | RIG UP BULK AND MIXING EQUIPMENT.   |
| Event | 7        | Rig-Up Completed                        | Rig-Up Completed                        | 7/13/2018 | 13:00:00 | USER   |                     |                             |                        |   |
| Event | 8        | Pre-Job Safety Meeting                  | Pre-Job Safety Meeting                  | 7/13/2018 | 13:10:00 | USER   |                     |                             |                        | MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.  |
| Event | 9        | Start Job                               | Start Job                               | 7/13/2018 | 14:49:16 | COM4   | 3.10                | 0.00                        | 1.00                   | BEGIN RECORDING JOB DATA.   |
| Event | 10       | Test Lines                              | Test Lines                              | 7/13/2018 | 14:56:21 | COM4   | 8.32                | 0.00                        | 4705.00                | PRESSURE TESTED IRON TO 4,700 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 420 PSI, 5TH GEAR STALL OUT @ 1,890 PSI. 4,700 PRESSURE TEST KICKED OUT @ 4,570 PSI   |
| Event | 11       | Pump Spacer 1                           | Pump Spacer 1                           | 7/13/2018 | 15:01:01 | COM4   | 11.32               | 2.60                        | 237.00                 | PUMP 50 BBLS OF TUNED SPACER III @ 11.5 LB/GAL, 3.73 CUFT/SK, 23.4 GALL/SK. 10 GALS D-AIR, 25 GALS DUAL B, 25 GALS OF MUSOL A. 50 BBLS CALCULATED TO RETURN.  |

DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 4 BBLS/MIN @ 225 PSI.

PUMPED 3,260 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 FT3/SK, 7.53 GAL/SK. 911.55 BBLS, 43.43 BBLS OF CEMENT TO RETURN. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 650 PSI

|       |    |  |  |           |          |      |       |      |         |   |
|-------|----|--|--|-----------|----------|------|-------|------|---------|---|
| Event | 12 | Pump Lead Cement                       | Pump Lead Cement                       | 7/13/2018 | 15:12:08 | COM4 | 13.33 | 7.40 | 727.00  |   |
| Event | 13 | Check Weight                           | Check Weight                           | 7/13/2018 | 15:14:52 | COM4 | 13.19 | 7.70 | 711.00  |   |
| Event | 14 | Shutdown                               | Shutdown                               | 7/13/2018 | 15:34:56 | COM4 | 14.77 | 0.00 | 51.00   | SHUTDOWN DUE TO A LEAK ON THE FLEX HOSE ON THE RIG FLOOR.                                     |
| Event | 15 | Check Weight                           | Check Weight                           | 7/13/2018 | 15:48:31 | COM4 | 13.43 | 8.10 | 652.00  |   |
| Event | 16 | Check Weight                           | Check Weight                           | 7/13/2018 | 16:04:00 | COM4 | 13.26 | 8.00 | 661.00  |   |
| Event | 17 | Shutdown                               | Shutdown                               | 7/13/2018 | 17:17:31 | COM4 | 2.10  | 0.00 | 6.00    | SHUTDOWN TO WASH LINES.   |
| Event | 18 | Drop Top Plug                          | Drop Top Plug                          | 7/13/2018 | 17:19:38 | COM4 | 8.17  | 0.00 | 9.00    | PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.   |
| Event | 19 | Pump Displacement                      | Pump Displacement                      | 7/13/2018 | 17:19:42 | COM4 | 8.17  | 0.00 | 9.00    | BEGIN CALCULATED DISPLACEMENT OF 451.24 BBLS WITH FRESH WATER. PUMP RATE 10 BPM @ 2,750 PSI   |
| Event | 20 | Bump Plug                              | Bump Plug                              | 7/13/2018 | 18:19:55 | COM4 | 8.12  | 0.80 | 3195.00 | PLUG BUMPED AT CALCULATED DISPLACEMENT. 2,700 PSI PRESSURED 500 PSI OVER BUMP.                |
| Event | 21 | Shift Tool - Lower                     | Shift Tool - Lower                     | 7/13/2018 | 18:22:26 | USER | 8.11  | 4.10 | 3375.00 | SHEARED @ 3,375 PSI   |
| Event | 22 | Check Floats                           | Check Floats                           | 7/13/2018 | 18:24:33 | USER | 8.08  | 0.00 | 2075.00 | 3 BBLS BACK.  |
| Event | 23 | End Job                                | End Job                                | 7/13/2018 | 18:26:32 | COM4 | 8.09  | 0.00 | -1.00   | STOP RECORDING JOB DATA.  |
| Event | 24 | Post-Job Safety Meeting (Pre Rig-Down) | Post-Job Safety Meeting (Pre Rig-Down) | 7/13/2018 | 18:30:00 | USER | 8.10  | 0.00 | 1.00    | DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES. |
| Event | 25 | Rig-Down Equipment                     | Rig-Down Equipment                     | 7/13/2018 | 18:40:00 | USER | -0.12 | 0.00 | -3.00   | RIG DOWN BULK AND MIXING EQUIPMENT.   |
| Event | 26 | Rig-Down Completed                     | Rig-Down Completed                     | 7/13/2018 | 19:40:00 | USER |       |      |         |   |
| Event | 27 | Pre-Convoy Safety Meeting              | Pre-Convoy Safety Meeting              | 7/13/2018 | 19:50:00 | USER |       |      |         | CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.                                    |
| Event | 28 | Crew Leave Location                    | Crew Leave Location                    | 7/13/2018 | 20:00:00 | USER |       |      |         | THANK YOU FOR USING HALLIBURTON – PRINCE PEREZ AND CREW.                                      |

## 3.0 Attachments

### 3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

