

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

Date: Friday, September 08, 2017

### **Leonard 5C Surface**

Job Date: Tuesday, August 29, 2017

Sincerely,

**Julia Nichols**

## Legal Notice

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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 **Leonard 5C** cement **Surface** 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 24 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 [Ft. Lupton]**

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

|   |                       |                                     |                           |
|---|-----------------------|-------------------------------------|---------------------------|
| Sold To #: 389404                                 | Ship To #: 3809744    | Quote #:                            | Sales Order #: 0904262240 |
| Customer: EXTRACTION OIL & GAS -                  |                       | Customer Rep: Shawn McIntyre        |                           |
| Well Name: LEONARD                                | Well #: 5C            | API/UWI #: 05-123-45048-00          |                           |
| Field: WATTENBERG                                 | City (SAP): FIRESTONE | County/Parish: WELD                 | State: COLORADO           |
| Legal Description: NW SW-21-2N-67W-1824FSL-494FWL |                       |                                     |                           |
| Contractor: UNKNOWN                               |                       | Rig/Platform Name/Num: WORKOVER RIG |                           |
| Job BOM: 7521 7521                                |                       |                                     |                           |
| Well Type: HORIZONTAL OIL                         |                       |                                     |                           |
| Sales Person: HALAMERICA\HX38199                  |                       | Srvc Supervisor: Bryce Muir         |                           |
| <b>Job</b>  |                       |                                     |                           |
| Formation Name                                    |                       |                                     |                           |
| Formation Depth (MD)                              | Top                   | Bottom                              |                           |
| Form Type   |                       | BHST                                |                           |
| Job depth MD                                      | 1564ft                | Job Depth TVD                       | 1564                      |
| Water Depth                                       |                       | Wk Ht Above Floor                   | 2 FT                      |
| Perforation Depth (MD)                            | From                  | To                                  |                           |
| <b>Well Data</b>                                  |                       |                                     |                           |
| Description                                       | New / Used            | Size in                             | ID in                     |
| Casing  | 0                     | 9.625                               | 8.921                     |
| Open Hole Section                                 |                       |                                     | 13.5                      |
| <b>Tools and Accessories</b>                      |                       |                                     |                           |
| Type  | Size in               | Qty                                 | Make                      |
| Guide Shoe  | 9.625                 |                                     |                           |
| Float Shoe  | 9.625                 | 1                                   | WF                        |
| Float Collar                                      | 9.625                 | 1                                   | WF                        |
| Insert Float                                      | 9.625                 |                                     |                           |
| Stage Tool  | 9.625                 |                                     |                           |
| <b>Fluid Data</b>                                 |                       |                                     |                           |
| Stage/Plug #: 1                                   |                       |                                     |                           |
| Fluid #   | Stage Type            | Fluid Name                          | Qty                       |
| 1   | Red Dye Spacer        | Red Dye Spacer                      | 10                        |
| <b>Fluid Data</b>                                 |                       |                                     |                           |
| Fluid #   | Stage Type            | Fluid Name                          | Qty                       |
| 2   | SwiftCem              | SWIFTCCEM (TM) SYSTEM               | 550                       |
| 9.20 Gal  |                       |                                     |                           |
| FRESH WATER                                       |                       |                                     |                           |

last updated on 10/2/2017 3:30:42 PM

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(v. 4.4.18)

Created: Friday, September 08, 2017

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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/min | Total Mix<br>Fluid<br>Gal |
|--|-------------|-------------|-------|---------|---------------------------|-------------------|------------------|-----------------|---------------------------|
| 3  | Fresh Water | Fresh Water | 117.5 | bbl     | 8.33                      |                   |                  |                 |                           |
|  |             |             |       |         |                           |                   |                  |                 |                           |
| Cement Left In Pipe  |             | Amount      | 44 ft |         | Reason                    |                   |                  | Shoe Joint      |                           |
|  |             |             |       |         |                           |                   |                  |                 |                           |
| Comment: WE ARRIVED ON LOCATION AT 0230 HOURS ON 08/29/2017. WE SPOTTED IN OUR EQUIPMENT AND RIGGED UP OUR IRON TO THE RED ZONE. THE RIG WAS STILL PERFORMING DRILLING OPERATIONS. WE WAITED ON LOCATION UNTIL THE WELL WAS DRILLED AND THE CASING WAS RAN. ON 08/29/2017 AT 1230 HOURS WE RIGGED UP THE PLUG CONTAINER AND BEGAN TO PERFORM THE CEMENT JOB. WE PUMPED 10 BBLs OF FRESH WATER SPACER WITH RED DYED ADDED TO THE 10 BBLs. WE THEN PUMPED OUR 170 BBLs OF PRIMARY CEMENT. WE PUMPED THE JOB AT 6 BARREL PER MINUTE MONITORING PRESSURE THROUGHOUT THE JOB. WHEN ALL THE CEMENT WAS PUMPED DOWNHOLE WE SHUTDOWN TO DROP THE TOP PLUG. 9.625" TOP PLUG WAS DROPPED BY BRYCE MUIR. WE WASHED UP ON TOP OF THE PLUG WITH THE FIRST 10 BBLs OF OUR 117.5 BBL DISPLACEMENT. WE SLOWED OUR RATE THE LAST 20 BBLs OF DISPLACEMENT TO 3 BARRELS PER MINUTE. WE GOT GOOD CEMENT TO SURFACE AT 93 BBLs DISPLACEMENT PUMPED FOR A TOTAL OF 24 BBLs OF CEMENT TO SURFACE. WE LANDED THE PLUG AT 117 BBLs PUMPED. PLUG WAS LANDED AT 472 PSI AND WE PRESSURED UP TO 1098 PSI. WE KICKED OUR PUMP BACK IN AND PRESSURED UP TO 1500 PSI TO PERFORM A FIVE MINUTE CASING TEST. CHECKED THE FLOATS AND THEY HELD. WE GOT 1 BBL OF FLUID BACK TO THE RED TIGER. |             |             |       |         |                           |                   |                  |                 |                           |

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

| Type  | Seq. No. | Activity                                 | Graph Label                              | Date      | Time     | Source | PS Pump Press<br>(psi) | DH Density<br>(ppg) | Comb Pump Rate<br>(bbl/min) | Comments   |
|-------|----------|--|--|-----------|----------|--------|------------------------|---------------------|-----------------------------|--|
| Event | 1        | Call Out                                 | Call Out                                 | 8/29/2017 | 00:00:00 | USER   |                        |                     |                             | CREW CALLED OUT FOR SURFACE CASING JOB. LOAD UP ALL MATERIALS AND EQUIPMENT REQUIRED FOR JOB.  |
| Event | 2        | Pre-Convoy Safety Meeting                | Pre-Convoy Safety Meeting                | 8/29/2017 | 01:45:00 | USER   |                        |                     |                             | DISCUSS HAZARDS ASSOCIATED WITH DRIVING TRUCKS TO LOCATION. DISCUSS SAFEST ROUTE OF TRAVEL, CONVOY ORDER, AND PLACES TO PULL OVER IF NEEDED. |
| Event | 3        | Depart from Service Center or Other Site | Depart from Service Center or Other Site | 8/29/2017 | 02:00:00 | USER   |                        |                     |                             |  |
| Event | 4        | Arrive at Location from Service Center   | Arrive at Location from Service Center   | 8/29/2017 | 02:30:00 | USER   |                        |                     |                             |  |
| Event | 5        | Assessment Of Location Safety Meeting    | Assessment Of Location Safety Meeting    | 8/29/2017 | 02:40:00 | USER   |                        |                     |                             | ASSESS LOCATION TO IDENTIFY BEST WAY TO SPOT EQUIPMENT DURING DRILLING OPERATIONS. SPOT EQUIPMENT.   |
| Event | 6        | Pre-Rig Up Safety Meeting                | Pre-Rig Up Safety Meeting                | 8/29/2017 | 03:00:00 | USER   |                        |                     |                             | DISCUSS HAZARDS ASSOCIATED WITH RIGGING UP AND PACKING IRON ON A DARK LOCATION DURING DRILLING OPERATIONS.                                   |
| Event | 7        | Rig-Up Equipment                         | Rig-Up Equipment                         | 8/29/2017 | 03:15:00 | USER   |                        |                     |                             |  |
| Event | 8        | Other                                    | Other                                    | 8/29/2017 | 03:30:00 | USER   |                        |                     |                             | WAIT FOR DRILLING RIG TO COMPLETE WELL AND RUN CASING.   |
| Event | 9        | Pre-Job Safety Meeting                   | Pre-Job Safety Meeting                   | 8/29/2017 | 12:15:00 | USER   | 15.30                  | 8.35                | 0.00                        | DISCUSS HES SAFETY AND JOB PROCEDURES WITH RIG CREW. IDENTIFY CLOSEST HOSPITALS, MUSTER AREAS, AND FIRST AID LOCATIONS.                      |
| Event | 10       | Rig-Up Equipment                         | Rig-Up Equipment                         | 8/29/2017 | 12:30:00 | USER   | -16.70                 | 8.36                | 0.00                        | RIG UP PLUG CONTAINER AND PUMPING LINES ON RIG FLOOR. PRE LOAD 9.625" TOP PLUG. PLUG LOADED BY BRYCE MUIR AND WITNESSED BY THE DRILLER.      |
| Event | 11       | Start Job                                | Start Job                                | 8/29/2017 | 12:45:52 | COM6   | -17.70                 | 0.66                | 0.00                        |  |
| Event | 12       | Other                                    | Other                                    | 8/29/2017 | 12:46:00 | USER   | -18.70                 | 5.21                | 0.00                        | PUMP 2 BBLS FRESH WATER TO FILL PUMPS AND LINES.   |

PUMPED AT 2 BPM AT 50 PSI.

|       |    |                             |                             |           |          |      |         |       |      |  |
|-------|----|-----------------------------|-----------------------------|-----------|----------|------|---------|-------|------|--|
| Event | 13 | Test Lines                  | Test Lines                  | 8/29/2017 | 12:46:35 | USER | -14.70  | 0.20  | 0.60 | CONDUCT A LOW PRESSURE TEST TO 500 PSI TO TEST RED TIGER PRESSURE KICKOUT.   |
| Event | 14 | Test Lines                  | Test Lines                  | 8/29/2017 | 12:51:37 | USER | 2504.30 | 8.47  | 0.00 | CONDUCT A HIGH PRESSURE TEST TO 2500 PSI TO TEST PUMP AND LINES.   |
| Event | 15 | Pump Spacer 1               | Pump Spacer 1               | 8/29/2017 | 12:54:37 | COM6 | 6.30    | 8.09  | 2.30 | PUMP 10 BBLS OF DYED SPACER. PUMPED AT 5 BPM AT 105 PSI. WE HAD GREAT CIRCULATION.   |
| Event | 16 | Check Weight                | Check weight                | 8/29/2017 | 13:03:02 | COM6 | 0.30    | 8.34  | 0.00 | WEIGHT VERIFIED BY PRESSURIZED MUD BALANCE.  |
| Event | 17 | Pump Cement                 | Pump Cement                 | 8/29/2017 | 13:06:18 | COM6 | 90.30   | 13.12 | 5.60 | PUMPED 170 BBLS OF PRIMARY CEMENT. 550 SACKS AT 13.5 #/GAL 1.74 CUFT/SK 9.2 GAL/SK. CEMENT WAS PUMPED AT 6 BPM AT 195 PSI. WE HAD GOOD CIRCULATION DURING CEMENT.  |
| Event | 18 | Shutdown                    | Shutdown                    | 8/29/2017 | 13:34:00 | USER | 132.30  | 13.46 | 5.50 |  |
| Event | 19 | Drop Top Plug               | Drop Top Plug               | 8/29/2017 | 13:35:00 | USER | 131.30  | 13.43 | 5.50 | DROPPED 9.625" TOP PLUG. PLUG DROPPED BY BRYCE MUIR.   |
| Event | 20 | Pump Displacement           | Pump Displacement           | 8/29/2017 | 13:38:57 | COM6 | -20.70  | 0.56  | 0.00 | PUMPED 117.5 BBLS OF FRESH WATER DISPLACEMENT. GOOD CIRCULATION DURING DISPLACEMENT.   |
| Event | 21 | Displ Reached Cement        | Displ Reached Cmnt          | 8/29/2017 | 13:49:12 | COM6 | 100.30  | 8.17  | 6.40 | TOP PLUG CAUGHT CEMENT AT 38 BBLS DISPLACEMENT PUMPED. WE GOT DYED SPACER TO SURFACE AFTER PUMPING 83 BBLS OF DISPLACEMENT. AT 93 BBLS OF DISPLACEMENT PUMPED WE GOT GOOD CEMENT TO SURFACE. WE GOT 24 BBLS OF GOOD CEMENT TO SURFACE. SLOWED RATE TO 3 BPM FOR THE LAST 20 BBLS TO LAND PLUG. |
| Event | 22 | Bump Plug                   | Bump Plug                   | 8/29/2017 | 14:05:32 | COM6 | 598.30  | 8.41  | 3.00 | LANDED PLUG AT 472 PSI AND PRESSURED UP 500 PSI OVER FINAL CIRCULATING PRESSURE TO 1098 PSI.   |
| Event | 23 | Other                       | Other                       | 8/29/2017 | 14:07:00 | USER | 1135.30 | 8.44  | 0.60 | PUMPED PRESSURE UP TO 1500 PSI AND HELD FOR 5 MINUTES TO PERFORM CASING TEST.  |
| Event | 24 | Check Floats                | Check Floats                | 8/29/2017 | 14:10:00 | USER | 1509.30 | 8.48  | 0.00 | FLOATS HELD. WE GOT 1 BBL BACK TO THE RED TIGER.   |
| Event | 25 | End Job                     | End Job                     | 8/29/2017 | 14:13:33 | COM6 | -16.70  | 8.43  | 0.00 |  |
| Event | 26 | Pre-Rig Down Safety Meeting | Pre-Rig Down Safety Meeting | 8/29/2017 | 14:20:00 | USER | -21.70  | 0.81  | 1.10 | DISCUSS HAZARDS ASSOCIATED WITH RIGGING DOWN AND PACKING IRON ON LOCATION.   |



|       |    |  |  |           |          |      |  |
|-------|----|--|--|-----------|----------|------|--|
| Event | 27 | Rig-Down Equipment                               | Rig-Down Equipment                               | 8/29/2017 | 14:35:00 | USER |  |
| Event | 28 | Pre-Convoy Safety Meeting                        | Pre-Convoy Safety Meeting                        | 8/29/2017 | 15:30:00 | USER | DISCUSS HAZARDS ASSOCIATED WITH DRIVING TRUCKS BACK TO THE SERVICE CENTER. DISCUSSED WHAT TO DO IF TOO TIRED TO DRIVE. |
| Event | 29 | Depart Location for Service Center or Other Site | Depart Location for Service Center or Other Site | 8/29/2017 | 15:45:00 | USER | JOB WAS SAFELY COMPLETED BY BRYCE MUIR AND CREW. THANK YOU AND STAY SAFE.  |

## 3.0 Attachments

### 3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

