

# HALLIBURTON

iCem<sup>®</sup> Service

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

Date: Thursday, October 03, 2019

## **INTERCHANGE A S22-30-5N SURFACE**

Job Date: Thursday, September 19, 2019

Sincerely,  
**Tyler Hill**

## 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 **Interchange A S22-30-5N** 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 19 bbls 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**

*The Road to Excellence Starts with Safety*

|  |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
|--|-------------------|-------------------------------|--------------------------|---|--------------------------|-----------------------------------|-------------------------------|-----------------------|----------------------|----------------------|----------------------------|
| <b>Sold To #:</b> 369404                                 |                   | <b>Ship To #:</b> 3901280     |                          | <b>Quote #:</b>                           |                          | <b>Sales Order #:</b> 0905986326  |                               |                       |                      |                      |                            |
| <b>Customer:</b> EXTRACTION OIL & GAS -                  |                   |                               |                          | <b>Customer Rep:</b> HANS/ JUSTIN         |                          |                                   |                               |                       |                      |                      |                            |
| <b>Well Name:</b> INTERCHANGE A                          |                   |                               | <b>Well #:</b> S22-30-5N |   |                          | <b>API/UWI #:</b> 05-014-20763-00 |                               |                       |                      |                      |                            |
| <b>Field:</b> WATTENBERG                                 |                   | <b>City (SAP):</b> BROOMFIELD |                          | <b>County/Parish:</b> BROOMFIELD          |                          |                                   | <b>State:</b> COLORADO        |                       |                      |                      |                            |
| <b>Legal Description:</b> SW NW-10-1S-68W-2125FNL-912FWL |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Contractor:</b> ENSIGN DRLG                           |                   |                               |                          | <b>Rig/Platform Name/Num:</b> ENSIGN 147  |                          |                                   |                               |                       |                      |                      |                            |
| <b>Job BOM:</b> 7521 7521                                |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Well Type:</b> HORIZONTAL OIL                         |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Sales Person:</b> HALAMERICA\HX38199                  |                   |                               |                          | <b>Srvc Supervisor:</b> Nikolaus Kornafel |                          |                                   |                               |                       |                      |                      |                            |
| <b>Job</b>   |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Formation Name</b>                                    |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Formation Depth (MD)</b>                              |                   | <b>Top</b>                    |                          |   | <b>Bottom</b>            |                                   |                               |                       |                      |                      |                            |
| <b>Form Type</b>   |                   |                               |                          |   | <b>BHST</b>              |                                   |                               |                       |                      |                      |                            |
| <b>Job depth MD</b>                                      |                   | 1628ft                        |                          |   | <b>Job Depth TVD</b>     |                                   | 1628                          |                       |                      |                      |                            |
| <b>Water Depth</b>                                       |                   |                               |                          |   | <b>Wk Ht Above Floor</b> |                                   |                               |                       |                      |                      |                            |
| <b>Perforation Depth (MD)</b>                            |                   | <b>From</b>                   |                          |   | <b>To</b>                |                                   |                               |                       |                      |                      |                            |
| <b>Well Data</b>   |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Description</b>                                       | <b>New / Used</b> | <b>Size in</b>                | <b>ID in</b>             | <b>Weight lbm/ft</b>                      | <b>Thread</b>            | <b>Grade</b>                      | <b>Top MD ft</b>              | <b>Bottom MD ft</b>   | <b>Top TVD ft</b>    | <b>Bottom TVD ft</b> |                            |
| Casing   | 0                 | 9.625                         | 8.921                    | 36  |                          |                                   | 0                             | 1628                  | 0                    | 1590                 |                            |
| OH   |                   | 13.5                          |                          |   |                          |                                   | 0                             | 1630                  | 0                    | 1600                 |                            |
| <b>Tools and Accessories</b>                             |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Type</b>  | <b>Size in</b>    | <b>Qty</b>                    | <b>Make</b>              | <b>Depth ft</b>                           |                          | <b>Type</b>                       | <b>Size in</b>                | <b>Qty</b>            | <b>Make</b>          |                      |                            |
| <b>Guide Shoe</b>  | 9.625             |                               |                          | 1628                                      |                          | <b>Top Plug</b>                   | 9.625                         | 1                     | HES                  |                      |                            |
| <b>Float Collar</b>                                      | 9.625             |                               |                          | 1589                                      |                          | <b>Plug Container</b>             | 9.625                         | 1                     | HES                  |                      |                            |
|  |                   |                               |                          |   |                          | <b>Centralizers</b>               | 9.625                         | N/A                   | HES                  |                      |                            |
| <b>Fluid Data</b>  |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Stage/Plug #: 1</b>                                   |                   |                               |                          |   |                          |                                   |                               |                       |                      |                      |                            |
| <b>Fluid #</b>   | <b>Stage Type</b> | <b>Fluid Name</b>             |                          |   | <b>Qty</b>               | <b>Qty UoM</b>                    | <b>Mixing Density lbm/gal</b> | <b>Yield ft3/sack</b> | <b>Mix Fluid Gal</b> | <b>Rate bbl/min</b>  | <b>Total Mix Fluid Gal</b> |
| 1  | Red Dye Spacer    | Red Dye Spacer                |                          |   | 10                       | bbl                               | 8.33                          |                       |                      | 5                    |                            |

| Fluid # | Stage Type | Fluid Name           | Qty | Qty UoM | Mixing Density<br>lbm/gal | Yield<br>ft <sup>3</sup> /sack | Mix Fluid<br>Gal | Rate<br>bbl/min | Total Mix<br>Fluid<br>Gal |
|---------|------------|----------------------|-----|---------|---------------------------|--------------------------------|------------------|-----------------|---------------------------|
| 2       | CEMENT     | SWIFTCEM (TM) SYSTEM | 550 | sack    | 13.5                      | 1.74                           | 9.17             | 5               | 5,043                     |

| Fluid # | Stage Type   | Fluid Name  | Qty | Qty UoM | Mixing Density<br>lbm/gal | Yield<br>ft <sup>3</sup> /sack | Mix Fluid<br>Gal | Rate<br>bbl/min | Total Mix<br>Fluid<br>Gal |
|---------|--------------|-------------|-----|---------|---------------------------|--------------------------------|------------------|-----------------|---------------------------|
| 3       | DISPLACEMENT | Fresh Water | 123 | bbl     | 8.33                      |                                |                  | 8               |                           |

|                            |               |                     |               |                        |       |
|----------------------------|---------------|---------------------|---------------|------------------------|-------|
| <b>Cement Left In Pipe</b> | <b>Amount</b> | 41 ft               | <b>Reason</b> | <b>Shoe Joint</b>      |       |
| Mix Water:                 | pH 7          | Mix Water Chloride: | 0 ppm         | Mix Water Temperature: | 62 °F |
| Cement Temperature:        | N/A           | Plug Displaced by:  | 8.33 lb/gal   | Disp. Temperature:     | 62 °F |
| Plug Bumped?               | Yes           | Bump Pressure:      | 492 psi       | Floats Held?           | Yes   |
| Cement Returns:            | 19 bbl        | Returns Density:    | N/A           | Returns Temperature:   | N/A   |

**Comment** – Once the rig was done circulating they handed it over to Halliburton. We pumped a 10 BBL water spacer with red dye in it. Followed by 170 BBL'S of our swiftcem cement at 13.5 Lb/Gal . We shut down after cement was pumped to drop the top plug, followed by 123 BBL'S of displacement. Bumped plug at calculated displacement. Checked floats .5 BBL back to the truck. Floats held.

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

| Type  | Seq. No. | Activity                               | Graph Label                            | Date      | Time     | Source | DS Pump Press<br><i>(psi)</i> | DH Density<br><i>(ppg)</i> | Comb Pump Rate<br><i>(bbl/min)</i> | Comments   |
|-------|----------|--|--|-----------|----------|--------|-------------------------------|----------------------------|------------------------------------|--|
| Event | 1        | Pre-Convoy Safety Meeting              | Pre-Convoy Safety Meeting              | 9/18/2019 | 11:45:00 | USER   |                               |                            |                                    | CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.   |
| Event | 2        | Crew Leave Yard                        | Crew Leave Yard                        | 9/19/2019 | 00:01:00 | USER   |                               |                            |                                    | CREW LEFT YARD AFTER GETTING BOTH 660'S RELOADED WITH A TOTAL OF 550 SACKS OF SWIFTCEM CEMENT.   |
| Event | 3        | Call Out                               | Call Out                               | 9/19/2019 | 06:00:00 | USER   |                               |                            |                                    | CREW CALLED OUT AT 06:00, REQUESTED ON LOCATION 07:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10025030, BULK 660 10867415, AND PUMP 11368474.  |
| Event | 4        | Arrive at Location from Service Center | Arrive at Location from Service Center | 9/19/2019 | 07:00:00 | USER   |                               |                            |                                    | MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,630', 13.5" OPEN HOLE 1,634', SHOE TRAC- 41', MUD WEIGHT 8.4 LB/GAL PUMP FRESH WATER DISPLACEMENT 123 BBLS. CASING LANDED @ 7:30 9/19/2019. RIG CIRCULATED BOTTOMS UP AT 406 GPM AT 106 PSI. |

|       |    |                           |                           |           |          |       |        |       |      |  |
|-------|----|---------------------------|---------------------------|-----------|----------|-------|--------|-------|------|--|
| Event | 5  | Pre-Rig Up Safety Meeting | Pre-Rig Up Safety Meeting | 9/19/2019 | 07:15:00 | USER  |        |       |      | HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.   |
| Event | 6  | Rig-Up Equipment          | Rig-Up Equipment          | 9/19/2019 | 07:30:00 | USER  |        |       |      | CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON AND WATER HOSES TO PERFORM JOB.   |
| Event | 7  | Pre-Job Safety Meeting    | Pre-Job Safety Meeting    | 9/19/2019 | 08:30:00 | USER  | 7.00   | 8.31  | 0.00 | SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS.   |
| Event | 8  | Start Job                 | Start Job                 | 9/19/2019 | 09:07:48 | COM11 | 9.00   | 8.30  | 0.00 | BEGIN RECORDING JOB DATA.  |
| Event | 9  | Pump Spacer 1             | Pump Spacer 1             | 9/19/2019 | 09:14:18 | COM11 | 8.00   | 8.31  | 0.00 | PUMP 10 BBLS OF RED DYE SPACER AT PUMP RATE 5 BBLS/MIN @ 130 PSI.  |
| Event | 10 | Check Weight              | Check Weight              | 9/19/2019 | 09:17:51 | COM11 | 48.00  | 8.30  | 2.60 | DENSITY VERIFIED WITH PRESSURIZED MUD SCALES.  |
| Event | 11 | Pump Cement               | Pump Cement               | 9/19/2019 | 09:22:27 | COM11 | 189.00 | 13.57 | 6.90 | PUMPED 550 SKS OF SWIFTCEM LEAD CEMENT @ 13.5 LB/GAL, 1.74 FT3/SK, 9.17 GAL/SK. 170 BBLS, TOP OF CEMENT @ SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 342 PSI. |
| Event | 12 | Check Weight              | Check Weight              | 9/19/2019 | 09:26:10 | COM11 | 318.00 | 13.58 | 8.00 | DENSITY VERIFIED WITH PRESSURIZED SCALES .   |
| Event | 13 | Check Weight              | Check Weight              | 9/19/2019 | 09:31:55 | COM11 | 316.00 | 13.45 | 8.00 | DENSITY VERIFIED WITH PRESSURIZED SCALES   |

|       |    |                                     |                                     |           |          |       |         |       |       |  |
|-------|----|-------------------------------------|-------------------------------------|-----------|----------|-------|---------|-------|-------|--|
| Event | 14 | Shutdown                            | Shutdown                            | 9/19/2019 | 09:43:30 | COM11 | 120.00  | 13.81 | 0.00  | SHUTDOWN PUMPS.  |
| Event | 15 | Drop Top Plug                       | Drop Top Plug                       | 9/19/2019 | 09:46:25 | COM11 | 14.00   | 14.06 | 0.00  | PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.  |
| Event | 16 | Pump Displacement                   | Pump Displacement                   | 9/19/2019 | 09:46:29 | COM11 | 14.00   | 14.07 | 0.00  | BEGIN CALCULATED DISPLACEMENT OF 123 BBLS WITH FRESH WATER. 10 BBLS OF RED DYE SPACER TO SURFACE AND 19 BBLS OF CEMENT TO SURFACE. |
| Event | 17 | Displ Reached Cement                | Displ Reached Cement                | 9/19/2019 | 09:52:47 | COM11 | 343.00  | 8.23  | 10.70 | CAUGHT CEMENT @ 35 BBLS INTO DISPLACEMENT.   |
| Event | 18 | Bump Plug                           | Bump Plug                           | 9/19/2019 | 10:04:18 | COM11 | 1090.00 | 8.27  | 0.00  | BUMPED THE PLUG AT CALCULATED DISPLACEMENT, AT 3 BPM WITH A PRESSURE OF 492 PSI.   |
| Event | 19 | Other                               | Other                               | 9/19/2019 | 10:04:32 | COM11 | 1097.00 | 8.27  | 0.00  | CHECKED FLOATS , .5 BBL RETURNED TO THE TRUCK. FLOATS HELD.  |
| Event | 20 | End Job                             | End Job                             | 9/19/2019 | 10:05:27 | COM11 | 15.00   | 8.25  | 0.00  | STOP RECORDING JOB DATA.   |
| Event | 21 | Pre-Rig Down Safety Meeting         | Pre-Rig Down Safety Meeting         | 9/19/2019 | 10:10:00 | USER  | 11.00   | 8.26  | 0.00  | DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.                                      |
| Event | 22 | Rig-Down Completed                  | Rig-Down Completed                  | 9/19/2019 | 10:45:00 | USER  |         |       |       | ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.  |
| Event | 23 | Safety Meeting - Departing Location | Safety Meeting - Departing Location | 9/19/2019 | 12:00:00 | USER  |         |       |       | CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.   |

|       |    |                     |                     |           |          |      |
|-------|----|---------------------|---------------------|-----------|----------|------|
| Event | 24 | Crew Leave Location | Crew Leave Location | 9/19/2019 | 12:05:00 | USER |
|-------|----|---------------------|---------------------|-----------|----------|------|

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THANK YOU FOR USING  
HALLIBURTON – JOSH  
WASHBURN AND CREW.

## 3.0 Attachments

### 3.1 INTERCHANGE A S22-30-5N SURFACE.png

