

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, CO

For: H&P 318

Date: Friday, March 13, 2020

SG 521-22 Production

API # 05-045-24005

Job Date: Friday, March 13, 2020

Sincerely,

Rock Springs Engineering

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services for this cementing services 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, Rock Springs

Job Times

| | Date | Time | Time Zone |
|-----------------|-----------|-------|-----------|
| Called Out | 3/12/2020 | 06:00 | MST |
| On Location | 3/12/2020 | 18:00 | MST |
| Job Started | 3/13/2020 | 02:27 | MST |
| Job Complete | 3/13/2020 | 4:30 | MST |
| Depart Location | 3/13/2020 | 5:00 | MST |

1.2 Job Overview

| | | Units | Description |
|----|--|---------|-------------|
| 1 | Surface temperature at time of job | °F | 45 |
| 2 | Mud type (OBM, WBM, SBM, Water, Brine) | lb/gal | WBM |
| 3 | Actual mud density | lb/gal | 9.7 |
| 4 | Time circulated before job | HH:MM | 1:30 |
| 5 | Mud volume circulated | Bbls | 900 |
| 6 | Rate at which well was circulated | Bpm | 10 |
| 7 | Pipe movement during hole circulation | Y/N | Y |
| 8 | Rig pressure while circulating | Psi | 800 |
| 9 | Time from end mud circulation to start of job | HH:MM | 00:10 |
| 10 | Pipe movement during cementing | Y/N | Y |
| 11 | Calculated displacement | Bbls | 98.3 |
| 12 | Job displaced by | Rig/HES | HES |
| 13 | Annular flow before job | Y/N | N |
| 14 | Annular flow after job | Y/N | N |
| 15 | Length of rat hole | Ft | 6 |
| 16 | Units of gas detected while circulating | Units | |
| 17 | Was lost circulation experienced at any time ? | Y/N | N |

1.3 Planned Pumping Schedule

| Description | Stage No. | Density (ppg) | Rate (bbl/min) | Yield (ft ³ /sack) | Water Req. (gal/sack) | Volume (bbl) | Bulk Cement (sacks) | Duration (min) |
|--|-----------|------------------|-------------------|----------------------------------|--------------------------|-----------------|------------------------|-------------------|
| 10 lb/gal Base Production Mud | 1 | 10.00 | 8.00 | | | 0.00 | | 0.00 |
| Water | 2 | 8.33 | 6.00 | | | 10.00 | | 1.67 |
| Mud Flush | 3 | 8.40 | 6.00 | | | 20.00 | | 3.33 |
| Water | 4 | 8.33 | 6.00 | | | 5.00 | | 0.83 |
| SuperFlush 101 2618245 | 5 | 10.00 | 6.00 | | | 40.00 | | 6.67 |
| Water | 6 | 8.33 | 6.00 | | | 20.00 | | 3.33 |
| Terra Scavenger | 7 | 11.00 | 8.00 | 2.5272 | 14.698 | 101.28 | 225.00 | 12.66 |
| NeoCem 2508016/1 | 8 | 12.30 | 8.00 | 2.2111 | 11.576 | 204.78 | 520.00 | 25.60 |
| Top Plug/Start Displacement | | | | | | | | |
| Water - 0.1 gal/bbl MMCR, 0.1 gal/bbl BE-6 | 9 | 8.40 | 10.00 | | | 10.00 | | 1.00 |
| Water - 0.1 gal/bbl BE-6 | 10 | 8.40 | 10.00 | | | 20.00 | | 2.00 |
| Water | 11-1 | 8.33 | 10.00 | | | 50.00 | | 5.00 |
| Water | 11-2 | 8.33 | 4.00 | | | 19.11 | | 4.78 |
| Total: | | | | | | 500.17 | | 66.87 |

1.4 Water Analysis Report

CEMENT MIX WATER REQUIREMENTS

| Item | Recorded Test Value | Units | Max. Acceptable Limit | Potential Problems in Exceeding Limit |
|-------------|---------------------|-------|-----------------------|---|
| pH | 7 | ---- | 6.0 - 8.0 | Chemicals in the water can cause severe retardation |
| Chlorides | 0 | ppm | 3000 ppm | Can shorten thickening time of cement |
| Temperature | 60 | °F | 50-80 °F | High temps will accelerate; Low temps may risk freezing in cold weather |

2.0 Real-Time Job Summary

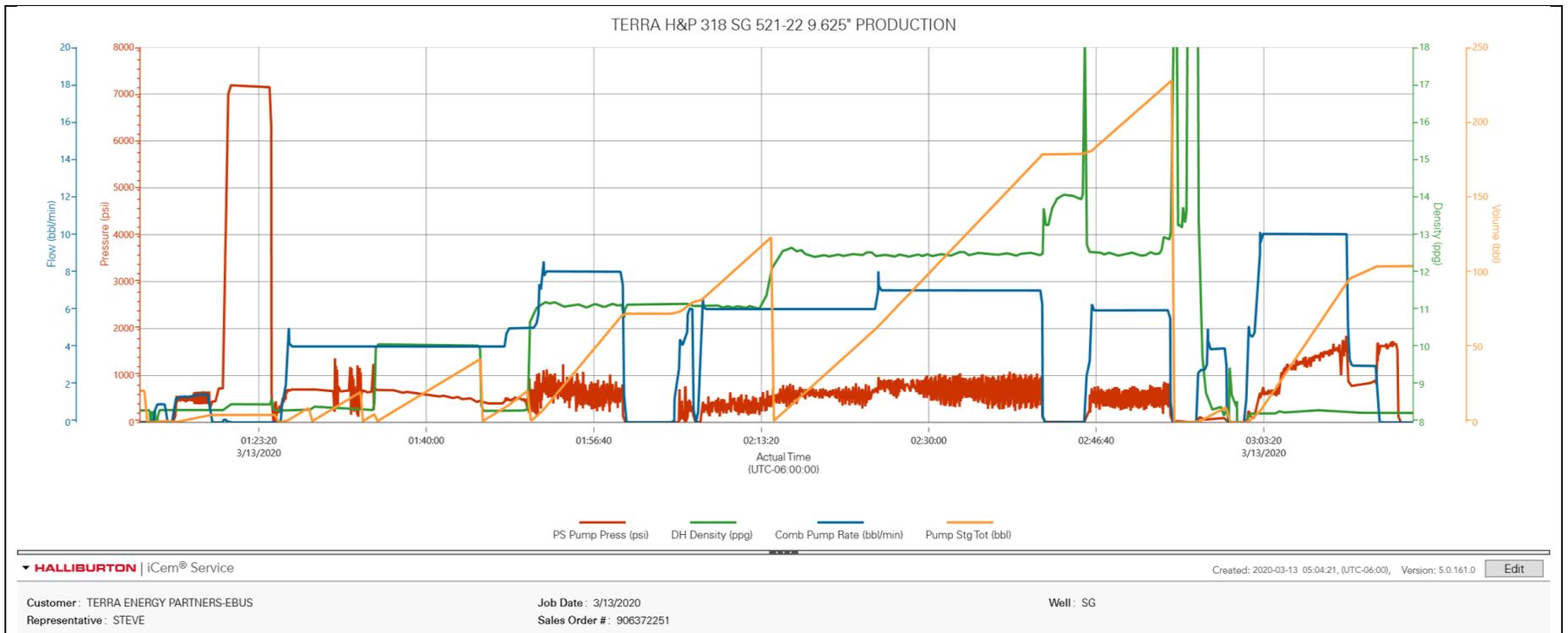
2.1 Job Event Log

| Type | Seq. No. | Graph Label | Date | Time | Source | PS Pump Press <i>(psi)</i> | DH Density <i>(ppg)</i> | Comb Pump Rate <i>(bbl/min)</i> | Pump Stg Tot <i>(bbl)</i> | Comments |
|-------|----------|---------------------------------------|-----------|----------|------------|-------------------------------|----------------------------|------------------------------------|------------------------------|---|
| Event | 1 | Call Out | 3/12/2020 | 06:00:00 | USER | | | | | CALLED OUT FOR TERRA PRODUCTION ON LOCATION AT 18:00 |
| Event | 2 | Pre-Convoy Safety Meeting | 3/12/2020 | 08:55:00 | USER | | | | | HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING AND THE DIRECTIONS TO LOCATION |
| Event | 3 | Crew Leave Yard | 3/12/2020 | 09:00:00 | USER | | | | | |
| Event | 6 | Arrive At Loc | 3/12/2020 | 18:00:00 | USER | | | | | STILL RUNNING CASING. TD= 6381, TP 6374.7' 11.6# P-110. HOLE= 8.75", MUD= 9.7#, SHOE= 35.3 |
| Event | 7 | Assessment Of Location Safety Meeting | 3/12/2020 | 18:10:00 | USER | | | | | HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF THE LOCATION. |
| Event | 8 | Pre-Rig Up Safety Meeting | 3/12/2020 | 18:20:00 | USER | | | | | HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING UP THE EQUIPMENT. |
| Event | 9 | Rig-Up Equipment | 3/12/2020 | 18:30:00 | USER | | | | | |
| Event | 22 | Pre-Job Safety Meeting | 3/13/2020 | 01:00:00 | USER | | | | | HALLIBURTON CEMENT CREW, RIG CREW AND COMPANY REP. DISCUSSED THE HAZARDS OF THE JOB AND THE JOB PROCEEDURE. |
| Event | 31 | Start Job | 3/13/2020 | 01:12:49 | RTD Import | -4.64 | 8.18 | 0.00 | 0.00 | Start Job |
| Event | 33 | Pump Water | 3/13/2020 | 01:14:51 | USER | 13.18 | 8.33 | 0.02 | 0.00 | PUMP 5 BBLS OF WATER TO FILL PUMPS AND LINES. |
| Event | 35 | Shutdown | 3/13/2020 | 01:18:26 | USER | 479.12 | 8.34 | 1.03 | 4.97 | |
| Event | 40 | Pressure Test | 3/13/2020 | 01:20:51 | USER | 7177.67 | 8.48 | 0.00 | 5.01 | PRESSURE TESTED HES LINES: 500 PSI LOW KICK OUT, 7000 PSI FOR HIGH PRESSURE. |
| Event | 43 | Pump Spacer | 3/13/2020 | 01:25:53 | USER | 626.31 | 8.34 | 1.59 | 0.38 | PUMPED 10 BBLS OF H2O AND 20 BBLS OF MUDFLUSH SPACER AT 8.4 PPG., |
| Event | 47 | Pump Spacer | 3/13/2020 | 01:35:28 | USER | 744.44 | 10.08 | 4.03 | 2.22 | PUMPED 5 BBLS OF H2O AND 40 BBLS OF SUPERFLUSH AND 20 BBLS OF H2O |

| | | | | | | | | | | |
|-------|-----|-----------------------------|-----------|----------|------------|---------|-------|------|--------|--|
| Event | 66 | Pump EXTENDACEM Cement | 3/13/2020 | 01:50:38 | USER | 358.18 | 10.86 | 5.01 | 2.14 | PUMPED 225 SACKS OF EXTENDACEM CEMENT AT 11 PPG., 2.51 YIELD., 14.6 GAL/ SACK AT 8 BPM |
| Event | 68 | Mud Cup Sample Pulled | 3/13/2020 | 01:52:53 | RTD Import | 604.75 | 11.19 | 8.04 | 18.36 | Mud Cup Sample Pulled |
| Event | 70 | SHUTDOWN | 3/13/2020 | 01:59:38 | USER | -2.76 | 11.07 | 3.63 | 72.28 | SHUTDOWN DUE TO LEAK IN STAND PIPE. |
| Event | 98 | Pump NEOCEM Cement | 3/13/2020 | 02:14:39 | USER | 515.68 | 12.20 | 6.03 | 1.46 | PUMPED 520 SACKS OF NEOCEM CEMENT AT 12.3 PPG., 2.22 YLD., 11.61 GAL/ SACK. AT 8 BPM. |
| Event | 99 | Mud Cup Sample Pulled | 3/13/2020 | 02:15:54 | RTD Import | 762.25 | 12.58 | 6.04 | 9.01 | Mud Cup Sample Pulled |
| Event | 103 | SHUTDOWN | 3/13/2020 | 02:41:14 | USER | 987.25 | 12.47 | 7.04 | 178.28 | SHUTDOWN DUE TO LEAK IN STAND PIPE. |
| Event | 123 | Shutdown | 3/13/2020 | 02:53:55 | USER | 526.93 | 12.88 | 5.97 | 226.96 | |
| Event | 135 | Clean Lines | 3/13/2020 | 02:57:18 | USER | 71.30 | 9.40 | 2.79 | 1.62 | |
| Event | 137 | Drop Top Plug | 3/13/2020 | 03:00:30 | USER | -2.76 | 8.46 | 0.00 | 0.00 | COMPANY REP. WITNESSED THE PLUG DROP |
| Event | 138 | Pump Displacement | 3/13/2020 | 03:02:03 | USER | 164.12 | 8.25 | 4.57 | 1.71 | PUMP 98.3 BBLS OF KCL DISPLACEMENT AT 10 BPM SLOWED RATE AT 88 BBLS AWAY TO 3 BPM. |
| Event | 140 | Slow Rate | 3/13/2020 | 03:12:07 | USER | 745.37 | 8.27 | 3.02 | 96.54 | SLOW RATE LAST 10 TO 3 BPM |
| Event | 141 | Bump Plug | 3/13/2020 | 03:14:32 | USER | 811.00 | 8.26 | 3.03 | 103.84 | BUMP PLUG WENT 500 PSI OVER FINAL CIRCULATING PRESSURE. |
| Event | 142 | Check Floats | 3/13/2020 | 03:16:35 | USER | 1674.45 | 8.28 | 0.00 | 104.15 | FLOATS HELD WITH .5 BBLS BACK TO HALLIBURTON PUMP. |
| Event | 145 | End Job | 3/13/2020 | 03:22:00 | USER | | | | | RETURNS THROUGHOUT JOB. STARTED TO SEE WATER TO SURFACE. |
| Event | 146 | Pre-Rig Down Safety Meeting | 3/13/2020 | 04:35:00 | USER | | | | | HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING DOWN THE EQUIPMENT |
| Event | 147 | Rig-Down Equipment | 3/13/2020 | 04:36:00 | USER | | | | | |
| Event | 148 | Pre-Convoy Safety Meeting | 3/13/2020 | 04:55:00 | USER | | | | | HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING |
| Event | 149 | Crew Leave Location | 3/13/2020 | 05:00:00 | USER | | | | | |
| Event | 150 | Job Complete | 3/13/2020 | 05:00:01 | USER | | | | | NO ACCIDENTS, NO INCIDENTS. THANKS FROM THE ROCK SPRINGS HALLIBURTON CEMENT CREW |

3.0 Attachments

3.1 CHART WITHOUT EVENTS.png



3.2 CHART WITH EVENTS.png

