

HALLIBURTON

iCem[®] Service

ENSIGN UNITED STATES DRILLING

For:

Date: Thursday, November 13, 2014

SRC Gies T-15-22NHZ Intermediate

Case 1

Sincerely,

Derek Trier

Table of Contents

| | | |
|------------|---------------------------------|----------|
| 1.1 | Executive Summary | 3 |
| 1.2 | Cementing Job Summary | 4 |
| 1.3 | Planned Pumping Schedule | 6 |
| 1.4 | Job Overview | 7 |
| 1.5 | Water Field Test | 8 |
| 1.6 | Job Event Log | 9 |

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **SRC Gies T-15-22NHZ** cement **Intermediate** 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 [Brighton]

Job Times

| | Date | Time | Time Zone |
|--------------------------|-------------|-------------|------------------|
| Called Out | 11/13/14 | 0900 | MTN |
| On Location | | 1524 | |
| Job Started | | 1713 | |
| Job Completed | | 1924 | |
| Departed Location | | 2100 | |

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

| Sold To #: 301256 | Ship To #: 3563531 | Quote #: | Sales Order #: 0901818718 | | | | | | | |
|---|--------------------|-----------------------------------|---------------------------|---------------|------------------------|-----------------------------|---------------|--------------|---------------------|---------------|
| Customer: ENSIGN UNITED STATES DRILLING | | Customer Rep: . | | | | | | | | |
| Well Name: SRC GIES | Well #: T-15-22NHZ | API/UWI #: 05-123-40014-00 | | | | | | | | |
| Field: WATTENBERG | City (SAP): EATON | County/Parish: WELD | State: COLORADO | | | | | | | |
| Legal Description: SE SE-15-7N-65W-272FSL-1127FEL | | | | | | | | | | |
| Contractor: | | Rig/Platform Name/Num: Ensign 134 | | | | | | | | |
| Job BOM: 7522 | | | | | | | | | | |
| Well Type: HORIZONTAL OIL | | | | | | | | | | |
| Sales Person: HALAMERICA\HB29087 | | Srcv Supervisor: BRANDON NIELSON | | | | | | | | |
| Job | | | | | | | | | | |
| Formation Name | | | | | | | | | | |
| Formation Depth (MD) | Top | Bottom | | | | | | | | |
| Form Type | BHST | | | | | | | | | |
| Job depth MD | 7442ft | Job Depth TVD | | | | | | | | |
| Water Depth | Wk Ht Above Floor | | | | | | | | | |
| Perforation Depth (MD) | From | To | | | | | | | | |
| 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 | 38 | | | 0 | 672 | 0 | |
| Casing | | 7 | 6.184 | 29 | 8 RD | | 0 | 7442 | 0 | 7211 |
| Open Hole Section | | | 8.75 | | | | 672 | 5250 | | |
| Open Hole Section | | | 8.75 | | | | 5250 | 7454 | | 7219 |
| Tools and Accessories | | | | | | | | | | |
| Type | Size in | Qty | Make | Depth ft | Type | Size in | Qty | Make | | |
| Guide Shoe | 7 | 1 | | 7442 | Top Plug | 7 | 1 | HES | | |
| Float Shoe | 7 | 1 | | | Bottom Plug | 7 | 1 | HES | | |
| Float Collar | 7 | 1 | | | SSR plug set | 7 | 1 | HES | | |
| Insert Float | 7 | 1 | | | Plug Container | 7 | 1 | HES | | |
| Stage Tool | 7 | 1 | | | Centralizers | 7 | 1 | HES | | |
| Miscellaneous Materials | | | | | | | | | | |
| Gelling Agt | Conc | Surfactant | Conc | Acid Type | Qty | Conc | | | | |
| Treatment Fld | Conc | Inhibitor | Conc | Sand Type | Size | Qty | | | | |
| Fluid Data | | | | | | | | | | |
| Stage/Plug #: 1 | | | | | | | | | | |
| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft ³ /sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal | |
| 1 | CLEANSRACE R III | CLEANSRACER III | 40 | bbl | 10.5 | 3.86 | 24.2 | 4 | | |
| 35.10 galbbl | | | FRESH WATER | | | | | | | |

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Cementing Job Summary

| Fluid # | Stage Type | Fluid Name | Qty | Qty UoM | Mixing Density lbm/gal | Yield ft ³ /sack | Mix Fluid Gal | Rate bbl/mi n | Total Mix Fluid Gal | |
|-----------------------------|--------------|--|-------|---------|---------------------------|--------------------------------|------------------|---------------------|---------------------------|--|
| 2 | EconoCem B2 | ECONOCEM (TM) SYSTEM | 461 | sack | 12.5 | 1.89 | | 6 | 10.23 | |
| 10.23 Gal | | FRESH WATER | | | | | | | | |
| 3 | FracCem | FRACCEM (TM) SYSTEM | 238 | sack | 13.5 | 1.74 | | 6 | 8.27 | |
| 8.27 Gal | | FRESH WATER | | | | | | | | |
| 3 lbm | | SILICALITE - COMPACTED, 50 LB SK (100012223) | | | | | | | | |
| 4 | Displacement | Displacement | 274.5 | bbl | 9 | | | | | |
| Cement Left In Pipe | | Amount | 42 ft | | Reason | | | Shoe Joint | | |
| Comment 7.5 BBL CEMENT BACK | | | | | | | | | | |

1.3 Planned Pumping Schedule

ENSIGN SRC GIES T-15-22NHZ

901818718

- 1) TEST LINES TO 4000 PSI
- 2) 40 BBL TUNE SPACER @ 10.5 PPG
- 3) DBP
- 4) 461 SKS OR 155 BBL ECONOCHEM @ 12.5 PPG
- 5) 238 SKS OR 73.7 BBL FRACCHEM @ 13.5 PPG
- 6) SD
- 7) DTP
- 8) DISPLACE 274.5 BBL MUD
- 9) SLOW TO 3BPM IN LAST 10 BBL AND LAND PLUG WITH 500 PSI OVER FINAL CIRCULATING PRESSURE
- 10) CHECK FLOATS
- 11) END JOB

1.4 Job Overview

| | | Units | Description |
|----|--|---------|-------------|
| 1 | Surface temperature at time of job | °F | 10 |
| 2 | Mud type (OBM, WBM, SBM, Water, Brine) | - | WBM |
| 3 | Actual mud density | lb/gal | 10.4 |
| 4 | Time circulated before job | HH:MM | 3 |
| 5 | Mud volume circulated | Bbls | |
| 6 | Rate at which well was circulated | Bpm | |
| 7 | Pipe movement during hole circulation | Y/N | N |
| 8 | Rig pressure while circulating | Psi | |
| 9 | Time from end mud circulation to start of job | HH:MM | :20 |
| 10 | Pipe movement during cementing | Y/N | N |
| 11 | Calculated displacement | Bbls | 274.5 |
| 12 | Job displaced by | Rig/HES | HES |
| 13 | Annular before job)? | Y/N | |
| 14 | Annular flow after job | Y/N | |
| 15 | Length of rat hole | Ft | 8 |
| 16 | Units of gas detected while circulating | Units | |
| 17 | Was lost circulation experienced at any time ? | Y/N | N |

1.5 Water Field Test

| 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 |
| Sulfates | <200 | ppm | 1500 ppm | Will greatly decrease the strength of cement |
| Total Hardness | | ppm | 500 mg/L | High concentrations will accelerate the set of the cement |
| Calcium | | ppm | 500 ppm | High concentrations will accelerate the set of the cement |
| Total Alkalinity | | ppm | 1000 ppm | Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3). |
| Bicarbonates | | ppm | 1000 ppm | Cement is greatly retarded to the point where it may not set up at all |
| Potassium | | ppm | 5000 ppm | High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides) |
| Iron | 0 | ppm | 300 ppm | High concentrations will accelerate the set of the cement |
| Temperature | 64 | °F | 50-80 °F | High temps will accelerate; Low temps may risk freezing in cold weather |

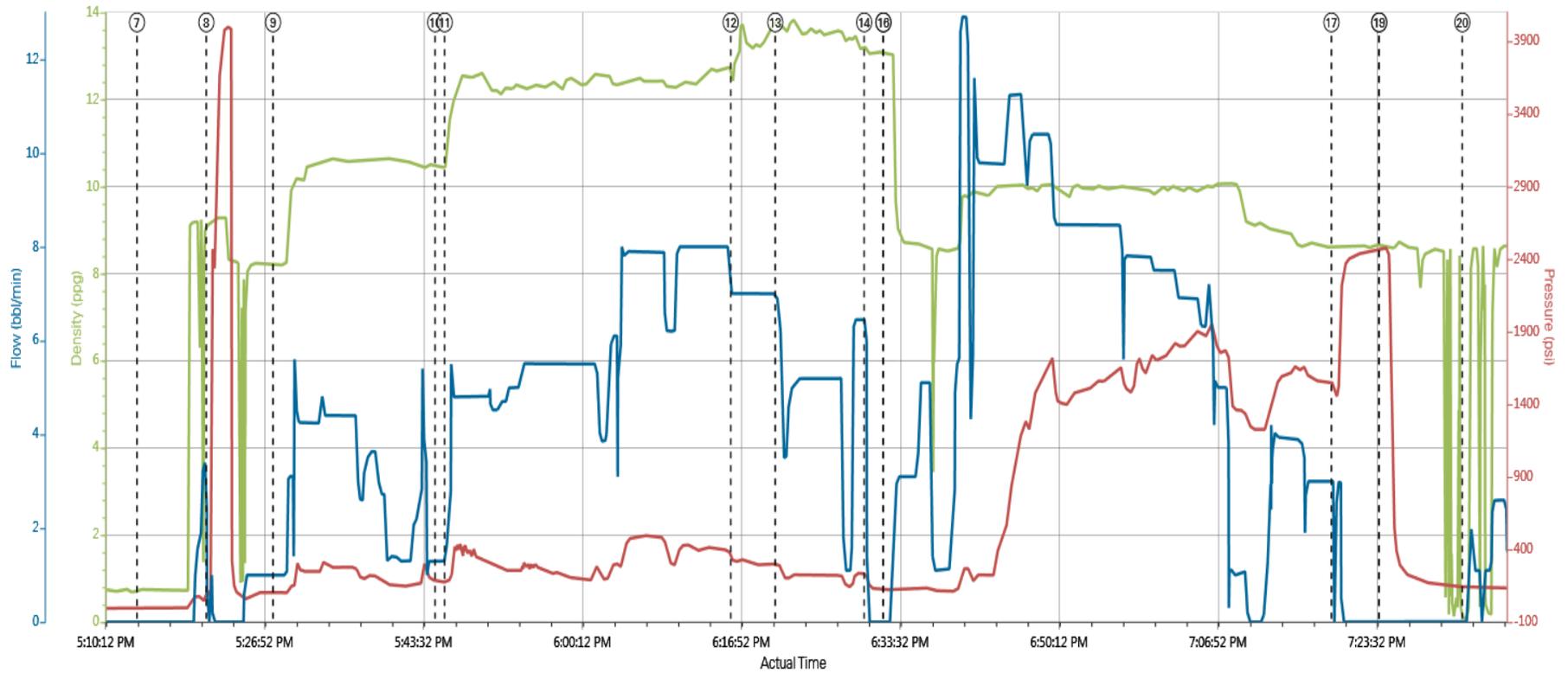
Submitted Respectfully by: _____

1.6 Job Event Log

| Type | Seq. No. | Activity | Graph Label | Date | Time | Source | Combined Pump Rate (bbl/min) | Downhole Density (ppg) | Pass-Side Pump Pressure (psi) | Comment |
|-------|----------|-------------------|-------------------|------------|----------|--------|---------------------------------|---------------------------|----------------------------------|---|
| Event | 1 | Call Out | Call Out | 11/13/2014 | 09:00:00 | USER | | | | REQUESTED ON LOCATION AT 1300. |
| Event | 2 | Crew Leave Yard | Crew Leave Yard | 11/13/2014 | 14:00:00 | USER | | | | WAITED FOR LAB TEST, HAD A SAFTEY STAND DOWN. |
| Event | 3 | Arrive At Loc | Arrive At Loc | 11/13/2014 | 15:24:00 | USER | | | | |
| Event | 4 | Rig-up Lines | Rig-up Lines | 11/13/2014 | 15:45:00 | USER | | | | |
| Event | 5 | Rig-Up Completed | Rig-Up Completed | 11/13/2014 | 16:40:00 | USER | | | | |
| Event | 6 | Safety Meeting | Safety Meeting | 11/13/2014 | 16:45:00 | USER | | | | |
| Event | 7 | STRJOB | STRJOB | 11/13/2014 | 17:13:43 | COM4 | | | | |
| Event | 8 | Pressure Test | Pressure Test | 11/13/2014 | 17:21:00 | USER | 0.00 | 4000.00 | 89.00 | TESTED LINES TO 4000 PSI NO VISIBLE LEAKS. |
| Event | 9 | Pump Spacer | Pump Spacer | 11/13/2014 | 17:28:00 | USER | 1.00 | 10.50 | 101.00 | 40 BBL TUNES SPACER MIXED AT 10.5 PPG WITH FRESH WATER. PUMPED AT 2.7 BPM AND 200 PSI |
| Event | 10 | Drop Bottom Plug | Drop Bottom Plug | 11/13/2014 | 17:45:00 | USER | | | | PLUG PRE LOADED WITNESSED BY TOOL PUSHER. |
| Event | 11 | Pump Lead Cement | Pump Lead Cement | 11/13/2014 | 17:46:00 | USER | 2.00 | 12.5 | 176.00 | 461 SKS OR OR 155 BBL ECONOCEM MIXED AT 12.5 PPG WITH FRESH WATER. PUMPED AT 8 BPM AND 434 PSI. |
| Event | 12 | Pump Tail Cement | Pump Tail Cement | 11/13/2014 | 18:16:00 | USER | 7.00 | 13.5 | 316.00 | 238 SKS OR 74 BBL FRACCCEM MIXED AT 13.5 PPG WITH FRESH WATER. PUMPED AT 5 BPM AND 221 PSI. |
| Event | 13 | CHKWGHT | CHKWGHT | 11/13/2014 | 18:20:40 | COM4 | 6.90 | 13.79 | 297.00 | |
| Event | 14 | Shutdown | Shutdown | 11/13/2014 | 18:30:00 | USER | | | | |
| Event | 15 | Drop Plug | Drop Plug | 11/13/2014 | 18:32:00 | USER | | | | PLUG PRE LOADED WITNESSED BY TOOL PUSHER |
| Event | 16 | Pump Displacement | Pump Displacement | 11/13/2014 | 18:32:01 | USER | | | | 274.5 BBL 10.4 PPG MUD. PUMPED AT 8.5 BPM AND 1559 PSI. CEMENT RETURNED TU SURFACE 267 BBL INTO LEAVING US WITH 7.5 BBL BACK TO |

| | | | | | | | | | | |
|-------|----|--------------|--------------|------------|----------|------|------|------|---------|--|
| | | | | | | | | | | THE SLOPE TANK. |
| Event | 17 | Bump Plug | Bump Plug | 11/13/2014 | 19:19:00 | USER | 0.00 | 8.60 | 1528.00 | PLUG LANDED AT 1605 PSI. |
| Event | 18 | Check Floats | Check Floats | 11/13/2014 | 19:24:00 | USER | 0.00 | 8.62 | 2473.00 | RELEASED PRESSURE AT 2476 PSI. FLOATS HELD. |
| Event | 19 | End Job | End Job | 11/13/2014 | 19:24:01 | USER | 0.00 | 8.62 | 2473.00 | |
| Event | 20 | ENDJOB | ENDJOB | 11/13/2014 | 19:32:44 | COM4 | 0.00 | 0.07 | 141.00 | |

Custom Results



DH Density (ppg) PS Pump Press (psi) Comb Pump Rate (bbl/min)

- ① Call Out n/a;n/a;n/a ④ Rig-up Lines n/a;n/a;n/a ⑦ STRJOB 0.76;-5;0 ⑩ Drop Bottom Plug 10.46;182;1.3 ⑬ CHKWGHT 13.79;297;6.9 ⑮ Pump Displacement 12.98;124;0 ⑰ End Job 8.62;2473;0
- ② Crew Leave Yard n/a;n/a;n/a ⑤ Rig-Up Completed 0.75;-3;0 ⑧ Pressure Test 9.13;89;0 ⑪ Pump Lead Cement 10.92;176;2 ⑭ Shutdown 13.09;217;1.4 ⑱ Bump Plug 8.6;1528;0 20 ENDJOB 0.07;141;0
- ③ Arrive At Loc n/a;n/a;n/a ⑥ Safety Meeting 0.73;-4;0 ⑨ Pump Spacer 8.19;101;1 ⑫ Pump Tail Cement 12.46;316;7 ⑯ Drop Plug 13;124;0 ⑲ Check Floats 8.62;2473;0

