

HALLIBURTON

iCem[®] Service

ENCANA OIL & GAS (USA) INC

For:

Date: Saturday, June 28, 2014

2F-5H-F267

ECANA VOGEL-MCCOY 2F-5H-F267 PROD

Sincerely,

Sebastian Estenssoro



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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Vogl McCoy 2F-5H-F267** 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.

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 | 5/5/2014 | 18:00 | MST |
| On Location | 5/5/2014 | 22:45 | MST |
| Job Started | 5/6/2014 | 7:06 | MST |
| Job Completed | 5/6/2014 | 9:17 | MST |
| Departed Location | 5/6/2014 | 9:45 | MST |

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

| | | | | | | | | | | |
|---|----------------------------|--------------------------------|---------------------------|---------------|------------------------|----------------|---------------|--------------|---------------------|---------------|
| Sold To #: 340078 | Ship To #: 3191320 | Quote #: | Sales Order #: 0901292406 | | | | | | | |
| Customer: ENCANA OIL & GAS (USA) INC. - EBUS | | Customer Rep: CHARLIE PARKER | | | | | | | | |
| Well Name: VOGL-MCCOY | Well #: 2F-5 H-F267 | API/UWI #: 05-123-37779-00 | | | | | | | | |
| Field: WATTENBERG | City (SAP): FIR | County/Parish: WELD | State: COLORADO | | | | | | | |
| Legal Description: SE NW-5-2N-67W-2597FNL-2363FWL | | | | | | | | | | |
| Contractor: | | Rig/Platform Name/Num: H&P 278 | | | | | | | | |
| Job BOM: 7523 | | | | | | | | | | |
| Well Type: HORIZONTAL OIL | | | | | | | | | | |
| Sales Person: HALAMERICA\HB50180 | | Srv Supervisor: Joseph Barras | | | | | | | | |
| Job | | | | | | | | | | |
| Formation Name | | | | | | | | | | |
| Formation Depth (MD) | Top | Bottom | | | | | | | | |
| Form Type | BHST | | | | | | | | | |
| Job depth MD | 15175ft | 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 | | 7 | 6.366 | 23 | | N-80 | 0 | 7609 | 0 | 0 |
| Casing | | 4.5 | 3.92 | 13.5 | | P-110 | 0 | 15175 | 0 | 0 |
| Open Hole Section | | | 6.125 | | | | 7609 | 15187 | 0 | 0 |
| Tools and Accessories | | | | | | | | | | |
| Type | Size in | Qty | Make | Depth ft | Type | Size in | Qty | Make | | |
| Guide Shoe | 4.5 | | | 15175 | Top Plug | 4.5 | | HES | | |
| Float Shoe | 4.5 | | | | Bottom Plug | 4.5 | | HES | | |
| Float Collar | 4.5 | | | | SSR plug set | 4.5 | | HES | | |
| Insert Float | 4.5 | | | | Plug Container | 4.5 | | HES | | |
| Stage Tool | 4.5 | | | | Centralizers | 4.5 | | 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 ft3/sack | Mix Fluid Gal | Rate bbl/min | Total Mix Fluid Gal | |
| 1 | 13 lb/gal Tuned Spacer III | Tuned Spacer III | 30 | bbl | 13 | 8.93 | | | | |
| 33.90 gal/bbl | | FRESH WATER | | | | | | | | |
| 235.92 lbm/bbl | | BARITE, 100 LB SK (100003680) | | | | | | | | |

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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/min | Total Mix Fluid Gal |
|---------------------|---------------|------------------------|-----|---------|---------------------------|--------------------------------|------------------|-----------------|---------------------------|
| 2 | ExpandaCem B2 | EXPANDACEM (TM) SYSTEM | 570 | sack | 13.8 | 1.67 | | | 7.72 |
| 7.72 Gal | | FRESH WATER | | | | | | | |
| | | | | | | | | | |
| 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 |
| 3 | Fresh Water | Fresh Water | 0 | bbl | 8.3 | | | | |
| | | | | | | | | | |
| Cement Left In Pipe | | Amount | ft | Reason | | | Shoe Joint | | |
| Comment | | | | | | | | | |

1.3 Planned Pumping Schedule

1. **Fill Lines with Water**
 - a. Density = 8.33 lb/gal
 - b. Volume = 2bbl
2. **Pressure Test Lines to Xpsi**
3. **Pump Tuned Spacer III**
 - a. Density = 13 lb/gal
 - b. Volume = 30 bbl
 - c. Rate = 2 bpm
4. **Pump ExpandaCem B2 (Primary)**
 - a. Density = 13.8
 - b. Yield = 1.67
 - c. Water Requirement = 7.72
 - d. Volume = 570 sks (169.5 bbls)
 - e. Rate = 5 bpm
5. **Drop Top Plug**
6. **Start Displacement**
7. **Pump Displacement Water**
 - a. Density = 9 lb/gal
 - b. Volume = 229.25 bbls
 - c. Rate = 5bpm
8. Land Plug – Anticipated Final Circulation Pressure 2280 psi

Calculated Total Displacement = 229.25 bbls

1.4 Job Overview

| | | Units | Description |
|---|--|--------|-------------|
| 1 | Surface temperature at time of job | °F | |
| 2 | Mud type (OBM, WBM, SBM, Water, Brine) | - | |
| 3 | Actual mud density | lb/gal | |
| 4 | Time circulated before job | HH:MM | |
| 5 | Mud volume circulated | Bbls | |
| 6 | Rate at which well was circulated | Bpm | |
| 7 | Pipe movement during hole circulation | Y/N | |

| | | | |
|----|--|---------|--|
| 8 | Rig pressure while circulating | Psi | |
| 9 | Time from end mud circulation to start of job | HH:MM | |
| 10 | Pipe movement during cementing | Y/N | |
| 11 | Calculated displacement | Bbls | |
| 12 | Job displaced by | Rig/HES | |
| 13 | Annular before job)? | Y/N | |
| 14 | Annular flow after job | Y/N | |
| 15 | Length of rat hole | Ft | |
| 16 | Units of gas detected while circulating | Units | |
| 17 | Was lost circulation experienced at any time ? | Y/N | |

1.5 Water Field Test

| Item | Recorded Test Value | Units | Max. Acceptable Limit | Potential Problems in Exceeding Limit |
|------------------|---------------------|-------|-----------------------|---|
| pH | | ---- | 6.0 - 8.0 | Chemicals in the water can cause severe retardation |
| Chlorides | | ppm | 3000 ppm | Can shorten thickening time of cement |
| Sulfates | | 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 | | ppm | 300 ppm | High concentrations will accelerate the set of the cement |
| Temperature | | °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 | DH Density (ppg) | Comb Pump Rate (bbl/min) | PS Pump Press (psi) | PS Pmp Stg Tot (bbl) | Comment |
|-------|----------|--|--|----------|----------|--------|------------------|--------------------------|---------------------|----------------------|--|
| Event | 1 | Arrive at Location from Service Center | Arrive at Location from Service Center | 5/5/2014 | 10:45:00 | USER | | | | | |
| Event | 2 | Rig-Up Equipment | Rig-Up Equipment | 5/5/2014 | 11:00:00 | USER | | | | | |
| Event | 3 | Rig-Up Completed | Rig-Up Completed | 5/6/2014 | 00:01:00 | USER | | | | | |
| Event | 4 | Safety Meeting - Pre Job | Safety Meeting - Pre Job | 5/6/2014 | 04:30:00 | USER | | | | | HES AND RIG CREW |
| Event | 5 | Start Job | Start Job | 5/6/2014 | 07:06:05 | COM4 | 8.33 | 0.00 | 1.00 | 18.6 | |
| Event | 6 | Test Lines | Test Lines | 5/6/2014 | 07:27:07 | COM4 | 8.26 | 0.00 | 20.00 | 20.2 | |
| Event | 7 | Pump Spacer 1 | Pump Spacer 1 | 5/6/2014 | 07:30:30 | COM4 | 8.26 | 0.00 | 4.00 | 20.2 | 30 BBLS TUNED SPACER III @ 13PPG/8.93 YIELD/42.30 |
| Event | 8 | Pump Cement | Pump Cement | 5/6/2014 | 07:44:01 | COM4 | 12.60 | 2.50 | 1279.00 | 0.0 | 169 BBLS OF EXPANDACEM @13.8 PPG/1.67 YIELD / 7.72 GALS./PER SKS |
| Event | 9 | Clean Lines | Clean Lines | 5/6/2014 | 08:18:00 | USER | 13.88 | 5.60 | 549.00 | 179.0 | |
| Event | 10 | Other | Other | 5/6/2014 | 08:20:19 | COM4 | 13.55 | 0.00 | 23.00 | 181.1 | 3 BBLS RETARDED WATER |
| Event | 11 | Drop Top Plug | Drop Top Plug | 5/6/2014 | 08:26:09 | COM4 | | | | | .25 BBLS OF RETARDED WATER/ DROP BALLS |
| Event | 12 | Pump Displacement | Pump Displacement | 5/6/2014 | 08:26:24 | COM4 | 8.24 | 1.10 | 22.00 | 0.0 | 226 BBLS OF BRINE WATER/1798 PSI |
| Event | 13 | Bump Plug | Bump Plug | 5/6/2014 | 09:12:24 | COM4 | 9.35 | 0.00 | 2261.00 | 229.8 | 2280 PSI |
| Event | 14 | Check Floats | Check Floats | 5/6/2014 | 09:16:00 | USER | 9.35 | 0.00 | 2414.00 | 229.8 | 2BBLS BACK TO TRUCK |
| Event | 15 | Other | Other | 5/6/2014 | 09:17:00 | COM4 | 9.48 | 0.00 | 2218.00 | 229.8 | CASING TEST @ 2500 PSI FOR 30 MINS |
| Event | 16 | End Job | End Job | 5/6/2014 | 09:51:40 | COM4 | 9.65 | 0.00 | 5.00 | 231.3 | |

2.0 Attachments

2.1 ECANA VOGEL-MCCOY 2F-5H-F267 PROD-Custom Results.png



