



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/14/2015  
Invoice # 45126  
API# 05-123-39271  
Foreman: JASON

Customer: EnCana Oil & Gas (USA) Inc.  
Well Name: SPRAGUE 3D-9H-N267

County: Weld  
State: Colorado  
Sec: 9  
Twp: 2N  
Range: 67W

Consultant: NORMAN  
Rig Name & Number: PATTERSON 272  
Distance To Location: 19  
Units On Location: 4031-3107/ 4020-3212  
Time Requested: 1100  
Time Arrived On Location: 1030  
Time Left Location: 1700

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft) : 832  
Total Depth (ft) : 880  
Open Hole Diameter (in.) : 12.25  
Conductor Length (ft) : 84  
Conductor ID : 15.25  
Shoe Joint Length (ft) : 44  
Landing Joint (ft) : 35

Max Rate: 6  
Max Pressure: 1500

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 50%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 23.0  
Fluid Ahead (bbls): 30.0  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup  
30 BBL W/ KCL, DYE IN 2ND 10

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

**cuft of Shoe** 19.14 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

**cuft of Conductor** 64.10 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)

**cuft of Casing** 351.39 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

**Total Slurry Volume** 434.63 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 77.41 bbls  
(Total Slurry Volume) X (.1781)

**Sacks Needed** 342 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 47.99 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 63.62 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

**Hydrostatic Pressure:** 656.95 PSI

## Pressure of the fluids inside casing

**Displacement:** 339.73 psi

**Shoe Joint:** 34.82 psi

**Total** 374.55 psi

**Differential Pressure:** 282.40 psi

**Collapse PSI:** 2020.00 psi

**Burst PSI:** 3520.00 psi

**Total Water Needed:** 161.61 bbls

X   
Authorization To Proceed

Customers hereby acknowledges and specifically agrees to the terms and condition on this work order, including, without limitation, the provisions on this work order.



**Bison Oil Well Cementing  
Single Cement Surface Pipe**

Customer  
Well Name

EnCana Oil & Gas (USA) Inc.  
SPRAGUE 3D-9H-N267

INVOICE #  
LOCATION  
FOREMAN  
Date

45126  
Weld  
JASON  
2/14/2015

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**DESCRIPTION OF JOB EVENTS**

| Safety Meeting |       | Displace 1 |      |     | Displace 2 |      |     | Displace 3 |      |     | Displace 4 |      |     | Displace 5 |      |     |
|----------------|-------|------------|------|-----|------------|------|-----|------------|------|-----|------------|------|-----|------------|------|-----|
| MIRU           |       | BBLS       | Time | PSI | BBLS       | Time | PSI | BBLS       | Time | PSI | BBLS       | Time | PSI | BBLS       | Time | PSI |
| CIRCULATE      | 140   | 0          | 1535 | 0   | 0          |      |     | 0          |      |     | 0          |      |     | 0          |      |     |
| Drop Plug      | 1315  | 10         | 1537 | 70  | 10         |      |     | 10         |      |     | 10         |      |     | 10         |      |     |
| 1535           | 1500  | 20         | 1539 | 70  | 20         |      |     | 20         |      |     | 20         |      |     | 20         |      |     |
|                |       | 30         | 1544 | 160 | 30         |      |     | 30         |      |     | 30         |      |     | 30         |      |     |
|                |       | 40         | 1548 | 260 | 40         |      |     | 40         |      |     | 40         |      |     | 40         |      |     |
| M & P          |       | 50         | 1552 | 350 | 50         |      |     | 50         |      |     | 50         |      |     | 50         |      |     |
| Time           | Sacks | 60         | 1556 | 360 | 60         |      |     | 60         |      |     | 60         |      |     | 60         |      |     |
| 1511-1533      | 342   | 70         | 1557 | 360 | 70         |      |     | 70         |      |     | 70         |      |     | 70         |      |     |
|                |       | 80         | BUMP | 900 | 80         |      |     | 80         |      |     | 80         |      |     | 80         |      |     |
|                |       | 90         |      |     | 90         |      |     | 90         |      |     | 90         |      |     | 90         |      |     |
|                |       | 100        |      |     | 100        |      |     | 100        |      |     | 100        |      |     | 100        |      |     |
|                |       | 110        |      |     | 110        |      |     | 110        |      |     | 110        |      |     | 110        |      |     |
| % Excess       | 50%   | 120        |      |     | 120        |      |     | 120        |      |     | 120        |      |     | 120        |      |     |
| Mixed bbls     | 47.9  | 130        |      |     | 130        |      |     | 130        |      |     | 130        |      |     | 130        |      |     |
| Total Sacks    | 342   | 140        |      |     | 140        |      |     | 140        |      |     | 140        |      |     | 140        |      |     |
| bbl Returns    | 23    | 150        |      |     | 150        |      |     | 150        |      |     | 150        |      |     | 150        |      |     |
| Water Temp     | 60    |            |      |     |            |      |     |            |      |     |            |      |     |            |      |     |

Notes:

PRESSURE TEST TO 1500 PSI AT 1458, PUMPED 30 BBL WATER WITH DYE IN THE 2ND 10 AT 1500, MIXED AND PUMPED 342 SKS AT 15.2, 77.4 BBL  
AT 1511, SHUT DOWN AT 1533, STARTED DISPLACEMENT AT 1535, PLUG LANDED AT 360 PSI AT 1557 AND PRESSURED UP TO 900 PSI, HELD FOR 2  
MINUTES, RELEASED PRESSURE AND GOT .5 BBL BACK AND FLOATS HELD

X

Signature

X

Title

X

Date