



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/11/2014
Invoice #: 12292
API#: 445564
Foreman: MONTE

Customer: encana
Well Name: billings 2d-18h

County: weld
State: colorado

Sec: 18
Twp: 3n
Range: 68w

Consultant: norman
Rig Name & Number: patterson 326
Distance To Location: 22.6
Units On Location: 3102-2311
Time Requested: 12:30pm
Time Arrived On Location: 12:40
Time Left Location:

WELL DATA

Casing Size OD (in): 9.6250
Casing Weight (lb): 40
Casing Depth (ft.): 827
Total Depth (ft): 829.9
Open Hole Diameter (in.): 12.25
Conductor Length (ft): 84
Conductor ID: 15.5
Shoe Joint Length (ft): 44
Landing Joint (ft): 35

Max Rate:
Max Pressure:

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:
BBL to Pit:
Fluid Ahead (bbls):
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup
10 fresch 10 dye 10 fresh

Casing ID

8.835

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.73 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 67.63 cuft
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 232.69 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 319.05 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 85.23 bbls
(Total Slurry Volume) X (.1781) X (% Excess Cement)

Sacks Needed 377 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 52.85 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 62.02 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 653.00 PSI

Pressure of the fluids inside casing

Displacement: #N/A psi

Shoe Joint: 34.74 psi

Total #N/A psi

Differential Pressure: #N/A psi

Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

Total Water Needed: 72.85 bbls

X *[Signature]*
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
billings 2d-18h

INVOICE #
LOCATION
FOREMAN
Date

12292
weld
MONTE
1/11/2014

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

| | | Displace 1 | | | Displace 2 | | | Displace 3 | | | Displace 4 | | | Displace 5 | | |
|----------------|--------|------------|------|-----|------------|------|-----|------------|------|-----|------------|------|-----|------------|------|-----|
| | | BBLS | Time | PSI | BBLS | Time | PSI | BBLS | Time | PSI | BBLS | Time | PSI | BBLS | Time | PSI |
| Safety Meeting | 1:30pm | | | | | | | | | | | | | | | |
| MIRU | 12:45 | | | | | | | 0 | | | 0 | | | 0 | | |
| CIRCULATE | 2:00 | 0 | 2:33 | 10 | 0 | | | 10 | | | 10 | | | 10 | | |
| Drop Plug | | 10 | 2:35 | 150 | 10 | | | 20 | | | 20 | | | 20 | | |
| 2:28 | | 20 | 2:38 | 190 | 20 | | | 30 | | | 30 | | | 30 | | |
| | | 30 | 2:42 | 270 | 30 | | | 40 | | | 40 | | | 40 | | |
| | | 40 | 2:45 | 300 | 40 | | | 50 | | | 50 | | | 50 | | |
| M & P | | 50 | 2:48 | 350 | 50 | | | 60 | | | 60 | | | 60 | | |
| Time | Sacks | 59.60 | 2:52 | 890 | 60 | | | 70 | | | 70 | | | 70 | | |
| 2:08-2:25 | 377 | 70 | | | 70 | | | 80 | | | 80 | | | 80 | | |
| | | 80 | | | 80 | | | 90 | | | 90 | | | 90 | | |
| | | 90 | | | 90 | | | 100 | | | 100 | | | 100 | | |
| | | 100 | | | 100 | | | 110 | | | 110 | | | 110 | | |
| | | 110 | | | 110 | | | 120 | | | 120 | | | 120 | | |
| % Excess | 50% | 120 | | | 120 | | | 130 | | | 130 | | | 130 | | |
| Mixed bbls | 52.85 | 130 | | | 130 | | | 140 | | | 140 | | | 140 | | |
| Total Sacks | 377 | 140 | | | 140 | | | 150 | | | 150 | | | 150 | | |
| | | 150 | | | 150 | | | | | | | | | | | |
| bbl Returns | 30 | | | | | | | | | | | | | | | |

Notes:

safty meeting, miru, pressure test per company man, circulate 30 bbls ahead with dye in 2nd 10. mix and pump 377 sks at 50% excess, drop plug and displace bbls 61
drop plug and displace 59.2 bbls h2o,
bump plug at 600 psi above lift pressure at 890 psi at 2:52 pm, hold 5 min release pressure

X

Work Performed

X

Title

X

Date