Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 9/11/2014
Invoice # 25050
API# 05-123-37632
Foreman: Calvin Reimers

Customer: EnCana Oil & Gas (USA) Inc.

Well Name: Drieth 4A-6H-I368

County: Weld
State: Colorado

Sec: 6
Twp: 3N
Range: 68W

Consultant: Roy
Rig Name & Number: H&P 522
Distance To Location: 27 Miles
Units On Location: 4034-3104/4020-3212
Time Requested: 200am
Time Arrived On Location: 1245am
Time Left Location: 5:30 am

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	40.00
Casing Depth (ft.) :	834
Total Depth (ft) :	880
Open Hole Diameter (in.) :	12.25
Conductor Length (ft) :	82
Conductor ID :	16
Shoe Joint Length (ft) :	44
Landing Joint (ft) :	39
Max Rate:	7
Max Pressure:	2500

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	15.2
Cement Yield (cuft) :	1.27
Gallons Per Sack:	5.89
% Excess:	20%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	9
Fluid Ahead (bbls):	30.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup

30bbls H2O+Dye in 2nd 10bbls

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

cuft of Casing 282.42 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 374.22 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 66.65 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 295 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 41.32 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 62.81 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 658.13 PSI

Pressure of the fluids inside casing

Displacement: 340.42 psi
Shoe Joint: 34.74 psi
Total 375.16 psi

Differential Pressure: 282.97 psi

Collapse PSI: 2570.00 psi
Burst PSI: 3950.00 psi

Total Water Needed: 154.13 bbls

x Roy Hu
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.