Bison Oil Well Cementing
Single Cement Surface Pipe

Date:	9/9/2014
Invoice #	45036
API#	05-123-37629
Foreman:	JASON KELEHER

Customer: EnCana Oil & Gas (USA) Inc.

Well Name: DRIETH 4C-6H-I368

County:	Weld	Consultant:	ROY
State:	Colorado	Rig Name & Number:	H&P 522
		Distance To Location:	27
Sec:	6	Units On Location:	4031-3106/ 4019-3213
Twp:	3N	Time Requested:	2100
Range:	68W	Time Arrived On Location:	1900
		Time Left Location:	2300

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) :	110
Conductor ID :	15.25
Shoe Joint Length (ft) :	45
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:	10.0
Fluid Ahead (bbls):	30.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup

30BBL H2O W/KCL, Dye in 2nd 10

Casing ID 8.835 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 83.94 cuft

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

cuft of Casing 272.15 cuft

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

Total Slurry Volume 375.23 cuft

(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 66.83 bbls

(Total Slurry Volume) X (.1781)

Sacks Needed 295 sk

(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 41.43 bbls

(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 62.79 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 658.65 PSI

Pressure of the fluids inside casing

Displacement:	340.29 psi
Shoe Joint:	35.49 psi
Total	375.78 psi
Differential Pressure:	282.87 psi
Collapse PSI:	2570.00 psi
Burst PSI:	3950.00 psi
Total Water Needed:	154.22 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.