



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/25/2014
 Invoice #: 65031
 API#: 05-123-39411
 Foreman: Lee Sharp

Customer: EnCana Oil & Gas (USA) Inc.
 Well Name: Minch 3E-4H-L368

County: Weld
 State: Colorado
 Consultant: Roy
 Rig Name & Number: H & P 522
 Distance To Location: 35
 Units On Location: 4031-3104; 4024-3203
 Sec: _____
 Twp: _____
 Range: _____
 Time Requested: 7:30
 Time Arrived On Location: 7:00 AM
 Time Left Location: 1045

WELL DATA	Cement Data
Casing Size OD (in) : 2.875	Cement Name: BFN III
Casing Weight (lb) : 40.00	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 671	Cement Yield (cuft) : 1.27
Total Depth (ft) : 878	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 12.25	% Excess: 30%
Conductor Length (ft) : 156	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit:
Shoe Joint Length (ft) : 48	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 0	H2O Wash Up (bbls): 20.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	10F+10D+10F=30bb

Calculated Results	Displacement: 62.37 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 20.39 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus
cuft of Conductor 119.05 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 687.36 PSI
cuft of Casing 290.90 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 430.35 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 354.70 psi
bbls of Slurry 76.64 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 37.82 psi
Sacks Needed 339 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 392.52 psi
Mix Water 47.52 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 294.84 psi
	Collapse PSI: 2570.00 psi
	Burst PSI: 3950.00 psi
	Total Water Needed: 159.90 bbls

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.

