



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/1/2014
 Invoice #: 25014
 API#: 05-123-37491
 Foreman: Calvin Reimers

Customer: EnCana Oil & Gas (USA) Inc.
 Well Name: Zisch 3D-6H-M368

County: Weld
 State: Colorado
 Sec: 22
 Twp: 2N
 Range: 68W

Consultant: Dave
 Rig Name & Number: Ensign 124
 Distance To Location: 29 Miles
 Units On Location: 4023-3104/4020-3212
 Time Requested: 200pm
 Time Arrived On Location: 100pm
 Time Left Location: 5:45pm

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 40.00	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 820	Cement Yield (cuft) : 1.27
Total Depth (ft) : 850	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 12.25	% Excess: 50%
Conductor Length (ft) : 82	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit: 30
Shoe Joint Length (ft) : 40	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 22	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	30bbls H2O+KCL+Dye in 2nd 10bbls

Calculated Results	Pressure of cement in annulus
cuft of Shoe 17.15 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 60.80 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 73.06 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 647.67 PSI
cuft of Casing 346.81 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing Displacement: 336.30 psi Shoe Joint: 31.81 psi Total: 368.12 psi
Total Slurry Volume 437.02 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Differential Pressure: 279.55 psi
bbls of Slurry 77.83 bbls (Total Slurry Volume) X (.1781)	Collapse PSI: 2570.00 psi Burst PSI: 3950.00 psi
Sacks Needed 344 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total Water Needed: 159.05 bbls
Mix Water 48.26 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	

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.

