



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/25/2015
 Invoice #: 80128
 API#: 05-123-40641
 Foreman: JASON KELEHER

Customer: Noble Energy Inc.
 Well Name: CHRISTINE LC 27-755

County: Weld
 State: Colorado
 Sec: 34
 Twp: 9N
 Range: 59W

Consultant: DEREK
 Rig Name & Number: H&P 326
 Distance To Location: 67
 Units On Location: 4031-3107/ 4020-3212
 Time Requested: 1530
 Time Arrived On Location: 1530
 Time Left Location: 1930

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft.) : 644	Cement Yield (cuft) : 1.49
Total Depth (ft) : 684	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 40%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 21.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 35	H2O Wash Up (bbls): 20.0
Max Rate: 6	Spacer Ahead Makeup
Max Pressure: 1000	40 BBL WATER/ DYE IN 2ND 10

Calculated Results	Pressure of cement in annulus
cuft of Shoe 19.68 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 49.01 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 76.31 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus Hydrostatic Pressure: 475.31 PSI
cuft of Casing 372.44 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing Displacement: 258.27 psi Shoe Joint: 33.45 psi Total: 291.72 psi
Total Slurry Volume 468.43 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Differential Pressure: 183.60 psi
bbls of Slurry 83.43 bbls (Total Slurry Volume) X (.1781)	Collapse PSI: 2020.00 psi Burst PSI: 3520.00 psi
Sacks Needed 314 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total Water Needed: 165.00 bbls
Mix Water 55.99 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	

Jason Keleher
 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.

