



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/21/2015

Invoice # 80127

API# 05-123-40683

Foreman: JASON KELEHER

Customer: Noble Energy Inc.

Well Name: NEAL LC 35-738

County: Weld

State: Colorado

Sec: 26

Twp: 9N

Range: 59W

Consultant: JIM

Rig Name & Number: H&P 321

Distance To Location: 69

Units On Location: 4031-3107/ 4034-3203

Time Requested: 1700

Time Arrived On Location: 1600

Time Left Location: 1900

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 40.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft.) : 644	Cement Yield (cuft) : 1.49
Total Depth (ft) : 683	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 50%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 19.0
Shoe Joint Length (ft) : 43	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 18.48 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 48.17 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)	Hydrostatic Pressure: 474.82 PSI
cuft of Casing 398.55 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 493.34 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 258.81 psi Shoe Joint: 32.02 psi Total: 290.84 psi
bbls of Slurry 87.86 bbls (Total Slurry Volume) X (.1781)	Differential Pressure: 183.98 psi
Sacks Needed 331 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: 2570.00 psi Burst PSI: 3950.00 psi
Mix Water 58.97 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: 167.13 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.

