



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/23/2014

Invoice # 45097

API# 05-123-39814

Foreman: JASON KELEHER

Customer: Noble Energy Inc.

Well Name: UPCHURCH STATE LD02-76-1AHN

County: Weld

State: Colorado

Sec: 2

Twp: 9N

Range: 58W

Consultant:

Rig Name & Number: H&P 326

Distance To Location: 79

Units On Location: 4031-3107/ 4018-3204

Time Requested: 2100

Time Arrived: 2030

Time Left Location: 200

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) : 1,187	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1227	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 25%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 36.0
Shoe Joint Length (ft) : 39	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 30	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	50 BBL WATER, DYE IN LAST 10

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results	Displacement: 91.08 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)		
cuft of Shoe 16.95 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus		
cuft of Conductor 76.31 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 875.77 PSI		
cuft of Casing 663.63 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing		
Total Slurry Volume 756.89 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 495.05 psi		
bbls of Slurry 134.80 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 28.80 psi		
Sacks Needed 508 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 523.85 psi		
Mix Water 90.47 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 351.92 psi		
	Collapse PSI: 2020.00 psi		
	Burst PSI: 3520.00 psi		
	Total Water Needed: 251.55 bbls		

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.

