



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/24/2016
 Invoice #: 666009
 API#: 05-123-43322
 Supervisor: Nick

Customer: Noble Energy Inc.
 Well Name: Ellie LD26-625

County: Weld
 State: Colorado
 Sec: 28
 Twp: 9N
 Range: 58W

Consultant: John
 Rig Name & Number: 517
 Distance To Location: 64
 Units On Location: 3106/4028/4034/3202
 Time Requested: 8:00
 Time Arrived On Location: 7:30
 Time Left Location: 14:00

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) : 1,931	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1941	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.5	BBL to Pit: 23.0
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 5	H2O Wash Up (bbls): 20.0
Max Rate: 8	Spacer Ahead Makeup
Max Pressure: 1500	DYE IN secondT 10 BBL

Calculated Results	Pressure of cement in annulus
cuft of Shoe 18.66 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 145.50 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 64.40 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 1424.50 PSI
cuft of Casing 1035.93 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 1118.99 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 814.07 psi Shoe Joint: 31.72 psi Total: 845.79 psi
bbls of Slurry 199.20 bbls (Total Slurry Volume) X (.1781)	Differential Pressure: 578.71 psi
Sacks Needed 751 sk	Collapse PSI: 2020.00 psi Burst PSI: 3520.00 psi
Mix Water 133.75 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: 349.25 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.

