



# Bison Oil Well Cementing Tail & Lead

Customer: Noble Energy Inc.  
Well Name: Wells Ranch BB11-650

Date: 8/24/2017  
Invoice #: 900160  
API#: 05-123-44961  
Foreman: Corey B.

County: Weld  
State: Colorado  
Sec: 8  
Twp: 5N  
Range: 62W

Consultant: Matt  
Rig Name & Number: H&P 517  
Distance To Location: 24  
Units On Location: 4027/3103-4032/3203  
Time Requested: 130  
Time Arrived On Location: 1210  
Time Left Location:

## WELL DATA

Casing Size (in) : 9.625  
Casing Weight (lb) : 36  
Casing Depth (ft.) : 1,921  
Total Depth (ft) : 1931  
Open Hole Diameter (in) : 13.50  
Conductor Length (ft) : 80  
Conductor ID : 15.25  
Shoe Joint Length (ft) : 48  
Landing Joint (ft) : 4

Sacks of Tail Requested 100  
HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 8  
Max Pressure: 2500

## Cement Data

### Lead

Cement Name: BFN III  
Cement Density (lb/gal) : 13.5  
Cement Yield (cuft) : 1.68  
Gallons Per Sack 8.90  
% Excess 15%

### Tail Type III

Cement Name:  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.80  
% Excess: 0%

Fluid Ahead (bbls) 50.0  
H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup  
50 BBL ahead with Die in 2nd 10

Casing ID

8.921

Casing Grade

J-55 only used

## Lead Calculated Results

HOC of Lead 1619.77 ft  
Casing Depth - HOC Tail  
Volume of Lead Cement 791.63 cuft  
HOC of Lead X Open Hole Ann  
Volume of Conductor 61.05 cuft  
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X  
(Conductor Length ft)  
Total Volume of Lead Cement 852.68 cuft  
(cuft of Lead Cement) + (Cuft of Conductor)  
bbls of Lead Cement 174.64 bbls  
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)  
Sacks of Lead Cement 583.68 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
bbls of Lead Mix Water 123.68 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42  
Displacement 145.09 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)  
Total Water Needed: 352.59 bbls

## Tail Calculated Results

Tail Cement Volume In Ann 127.00 cuft  
(HOC Tail) X (OH Ann)  
Total Volume of Tail Cement 106.17 Cuft  
(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)  
bbls of Tail Cement 22.62 bbls  
(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)  
HOC Tail 217.23 ft  
(Tail Cement Volume) ÷ (OH Ann)  
Sacks of Tail Cement 100.00 sk  
(Total Volume of Tail Cement) ÷ (Cement Yield)  
bbls of Tail Mix Water 13.81 bbls  
(Sacks of Tail Cement X Gallons Per Sack) ÷ 42  
Pressure of cement in annulus  
Hydrostatic Pressure 585.23 PSI  
Collapse PSI: 2020.00 psi  
Burst PSI: 3520.00 psi

X

Authorization To Proceed

X Aug 24, 2017  
Date