



# Bison Oil Well Cementing Tail & Lead

Date: 7/12/2017  
Invoice # 200120  
API#  
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.  
Well Name: freedom federal lc 21-630

County: Weld  
State: Colorado  
Sec: 20  
Twp: 9n  
Range: 58w  
Consultant: charles  
Rig Name & Number: H&P 524  
Distance To Location: 67  
Units On Location: 4028/4033/4039  
Time Requested: 1000 am  
Time Arrived On Location: 830 am  
Time Left Location: 6:00 pm

## WELL DATA

Casing Size (in) : 9.625  
Casing Weight (lb) : 36  
Casing Depth (ft) : 1,892  
Total Depth (ft) : 1937  
Open Hole Diameter (in) : 13.50  
Conductor Length (ft) : 80  
Conductor ID : 15.6  
Shoe Joint Length (ft) : 42  
Landing Joint (ft) : 35

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

One or the other, cannot have quantity in both

Max Rate:  
Max Pressure:

## Cement Data

### Lead

Cement Name: fn3 gel calcium  
Cement Density (lb/gal) : 13.5  
Cement Yield (cuft) : 1.7  
Gallons Per Sack 9.00  
% Excess 15%

### Tail

Cement Name: bfn 3  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 0%

Fluid Ahead (bbls) 145.7  
H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup

Casing ID

8.921

Casing Grade

J-55 only used

## Lead Calculated Results

HOC of Lead 1554.44 ft  
Casing Depth - HOC Tail  
Volume of Lead Cement 759.70 cuft  
HOC of Lead X Open Hole Ann  
Volume of Conductor 65.76 cuft  
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X  
(Conductor Length ft)  
Total Volume of Lead Cement 825.46 cuft  
(cuft of Lead Cement) + (Cuft of Conductor)  
bbls of Lead Cement 169.07 bbls  
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)  
Sacks of Lead Cement 558.40 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
bbls of Lead Mix Water 119.66 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42  
Displacement 145.71 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)  
Total Water Needed: 445.10 bbls

## Tail Calculated Results

Tail Cement Volume In Ann 127.00 cuft  
(HOC Tail) X (OH Ann)  
Total Volume of Tail Cement 108.77 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 222.56 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 14.02 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

Date \_\_\_\_\_