



# Bison Oil Well Cementing Tail & Lead

Date: 5/24/2018  
Invoice #: 200290  
API#  
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.  
Well Name: Ilarson a23-662

County: Weld  
State: Colorado  
Sec: 27  
Twp: 3n  
Range: 65w  
Consultant: jim  
Rig Name & Number: H&P 321  
Distance To Location: 15  
Units On Location: 1  
Time Requested: 400 am  
Time Arrived On Location: 200 am  
Time Left Location: 12:30 pm

## WELL DATA

Casing Size (in): 9.625  
Casing Weight (lb): 36  
Casing Depth (ft): 1,928  
Total Depth (ft): 1973  
Open Hole Diameter (in): 13.50  
Conductor Length (ft): 110  
Conductor ID: 16  
Shoe Joint Length (ft): 35  
Landing Joint (ft): 35

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

One or the other, cannot have quantity in both

Max Rate: 8  
Max Pressure: 1500

## Cement Data

### Lead

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

### Tail

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

Fluid Ahead (bbls): 30.0  
H2O Wash Up (bbls): 20.0

### Spacer Ahead Makeup

50 BBL WATER DYE IN 2ND 10

Casing ID

8.921

Casing Grade

J-55 only used

## Lead Calculated Results

HOC of Lead: 1554.23 ft  
Casing Depth - HOC Tail  
Volume of Lead Cement: 759.60 cuft  
HOC of Lead X Open Hole Ann  
Volume of Conductor: 98.01 cuft  
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X  
(Conductor Length ft)  
Total Volume of Lead Cement: 857.60 cuft  
(cuft of Lead Cement) + (Cuft of Conductor)  
bbls of Lead Cement: 175.65 bbls  
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)  
Sacks of Lead Cement: 580.14 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
bbls of Lead Mix Water: 124.32 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42  
Displacement: 149.03 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)  
Total Water Needed: 337.37 bbls

## Tail Calculated Results

Tail Cement Volume In Ann: 127.00 cuft  
(HOC Tail) X (OH Ann)  
Total Volume of Tail Cement: 111.81 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: 228.77 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 *[Signature]* 5-24-18  
Authorization To Proceed

Date \_\_\_\_\_

# SERIES 2000

