



Bison Oil Well Cementing Tail & Lead

Date: 3/24/2018

Invoice # 606474

API# 05-123-48163

Supervisor: Nick Vigil

Customer: Noble Energy Inc.

Well Name: Wells Ranch State AA36-683

County: Weld

State: Colorado

Sec: 19

Twp: 6N

Range: 63W

Consultant: Chris

Rig Name & Number: H&P 517

Distance To Location: 24 miles

Units On Location: 4045/4032

Time Requested: 22:00

Time Arrived On Location: 21:00

Time Left Location:

WELL DATA

Casing Size (in) : 9.625

Casing Weight (lb) : 36

Casing Depth (ft.) : 1,901

Total Depth (ft) : 1941

Open Hole Diameter (in) : 13.50

Conductor Length (ft) : 80

Conductor ID : 15.25

Shoe Joint Length (ft) : 49

Landing Joint (ft) :

Sacks of Tail Requested 100

HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 8

Max Pressure: 2000

Cement Data

Lead

Cement Name:

Cement Density (lb/gal) : 13.5

Cement Yield (cuft) : 1.7

Gallons Per Sack 9.00

% Excess 10%

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

Dye in second 10 bbl

Casing ID

8.921

Casing Grade

J-55 only used

Lead Calculated Results

HOC of Lead 1601.66 ft

Casing Depth - HOC Tail

Volume of Lead Cement 782.78 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 843.83 cuft

(cuft of Lead Cement) + (Cuft of Conductor)

bbls of Lead Cement 165.31 bbls

(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)

Sacks of Lead Cement 546.01 sk

(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

bbls of Lead Mix Water 117.00 bbls

(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement 143.39 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe
Length)

Total Water Needed: 324.42 bbls

Tail Calculated Results

Tail Cement Volume In Ann 127.00 cuft

(HOC Tail) X (OH Ann)

Total Volume of Tail Cement 105.73 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 216.34 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

Wells Ranch State AA36-683

