



Bison Oil Well Cementing Tail & Lead

Date: 7/21/2017
Invoice #: 200128
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
Well Name: freedom federal lc 21-640

County: Weld
State: Colorado
Sec: 20
Twp: 9n
Range: 58w
Consultant: jim t
Rig Name & Number: H&P 524
Distance To Location: 67
Units On Location: 4028/4032
Time Requested: 1100 pm
Time Arrived On Location: 1000 pm
Time Left Location: 5:00 pm

WELL DATA

Casing Size (in) : 9.625
Casing Weight (lb) : 36
Casing Depth (ft.) : 1,896
Total Depth (ft) : 1941
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) 146.0
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 1558.44 ft
Casing Depth - HOC Tail
Volume of Lead Cement 761.66 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 827.42 cuft
(cuft of Lead Cement) + (Cuft of Conductor)
bbls of Lead Cement 169.47 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)
Sacks of Lead Cement 559.72 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
bbls of Lead Mix Water 119.94 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42
Displacement 146.02 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)
Total Water Needed: 446.00 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

Authorization To Proceed

Date _____