



# Bison Oil Well Cementing Tail & Lead

Date: 11/8/2017

Invoice #: 666254

API#: 05-123-48621

Supervisor: Nick Vigil

Customer: Noble Energy Inc.

Well Name: Shufly State Y34-714

County: Weld  
State: Colorado

Sec: 10  
Twp: 2N  
Range: 64W

Consultant: John  
Rig Name & Number: H&P 517  
Distance To Location: 38 miles  
Units On Location: 4023/4030  
Time Requested: 13:00  
Time Arrived On Location: 13:00  
Time Left Location:

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625 Casing Weight (lb) : 36 Casing Depth (ft.) : 2,143 Total Depth (ft) : 2153 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 80 Conductor ID : 15.25 Shoe Joint Length (ft) : 45 Landing Joint (ft) :</p> <p>Sacks of Tail Requested : 100 HOC Tail (ft) : 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8 Max Pressure: 2000</p>	<p><b>Lead</b> Cement Name: Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.7 Gallons Per Sack : 9.00 % Excess : 15%</p> <p><b>Tail</b> Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack : 5.89 % Excess: 0%</p> <p>Fluid Ahead (bbls) : 30.0 H2O Wash Up (bbls) : 20.0</p> <p>Spacer Ahead Makeup Dye in second 10 bbl</p>

Casing ID: 8.921 Casing Grade: J-55 only used

Lead Calculated Results	Tail Calculated Results
<b>HOC of Lead</b> : 1841.11 ft Casing Depth - HOC Tail	<b>Tail Cement Volume In Ann</b> : 127.00 cuft (HOC Tail) X (OH Ann)
<b>Volume of Lead Cement</b> : 899.80 cuft HOC of Lead X Open Hole Ann	<b>Total Volume of Tail Cement</b> : 107.47 Cuft (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
<b>Volume of Conductor</b> : 61.05 cuft (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>bbls of Tail Cement</b> : 22.62 bbls (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
<b>Total Volume of Lead Cement</b> : 960.85 cuft (cuft of Lead Cement) + (Cuft of Conductor)	<b>HOC Tail</b> : 219.89 ft (Tail Cement Volume) ÷ (OH Ann)
<b>bbls of Lead Cement</b> : 196.80 bbls (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	<b>Sacks of Tail Cement</b> : 100.00 sk (Total Volume of Tail Cement) ÷ (Cement Yield)
<b>Sacks of Lead Cement</b> : 649.99 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>bbls of Tail Mix Water</b> : 14.02 bbls (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
<b>bbls of Lead Mix Water</b> : 139.28 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Pressure of cement in annulus</b>
<b>Displacement</b> : 162.33 bbls (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	<b>Hydrostatic Pressure</b> : 585.23 PSI
<b>Total Water Needed:</b> 365.64 bbls	<b>Collapse PSI:</b> 2020.00 psi <b>Burst PSI:</b> 3520.00 psi

X  
Authorization To Proceed

