



Bison Oil Well Cementing Tail & Lead

Date: 3/21/2020

Invoice # 200591

API# _____

Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: guttersen d35-760

County: Weld

State: Colorado

Sec: 23

Twp: 3N

Range: 64W

Consultant: red

Rig Name & Number: H&P 517

Distance To Location: 24

Units On Location: 4047/4033

Time Requested: 1200 am

Time Arrived On Location: 1130 pm

Time Left Location: 5:00 am

WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u></p> <p>Casing Weight (lb) : <u>36</u></p> <p>Casing Depth (ft.) : <u>1,899</u></p> <p>Total Depth (ft) : <u>1944</u></p> <p>Open Hole Diameter (in) : <u>13.50</u></p> <p>Conductor Length (ft) : <u>110</u></p> <p>Conductor ID : <u>15.5</u></p> <p>Shoe Joint Length (ft) : <u>43</u></p> <p>Landing Joint (ft) : <u>2</u></p> <p>Sacks of Tail Requested <u>100</u></p> <p>HOC Tail (ft): <u>0</u></p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: <u>8</u></p> <p>Max Pressure: <u>2500</u></p>	<p>Lead</p> <p>Cement Name: <u>BFN III</u></p> <p>Cement Density (lb/gal) : <u>13.5</u></p> <p>Cement Yield (cuft) : <u>1.68</u></p> <p>Gallons Per Sack <u>8.90</u></p> <p>% Excess <u>10%</u></p> <p>Tail Type III</p> <p>Cement Name: _____</p> <p>Cement Density (lb/gal) : <u>15.2</u></p> <p>Cement Yield (cuft) : <u>1.27</u></p> <p>Gallons Per Sack: <u>5.89</u></p> <p>% Excess: <u>0%</u></p> <p>Fluid Ahead (bbls) <u>30.0</u></p> <p>H2O Wash Up (bbls) <u>20.0</u></p> <p>Spacer Ahead Makeup</p> <p><u>30 BBL ahead with Die in 2nd 10</u></p>

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	
HOC of Lead	<u>1565.33 ft</u>
Casing Depth - HOC Tail	
Volume of Lead Cement	<u>765.02 cuft</u>
HOC of Lead X Open Hole Ann	
Volume of Conductor	<u>88.56 cuft</u>
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	<u>853.58 cuft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	<u>167.22 bbls</u>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	<u>558.89 sk</u>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	<u>118.43 bbls</u>
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	<u>143.62 bbls</u>
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	<u>326.08 bbls</u>

Tail Calculated Results	
Tail Cement Volume In Ann	<u>127.00 cuft</u>
(HOC Tail) X (OH Ann)	
Total Volume of Tail Cement	<u>108.34 Cuft</u>
(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
bbls of Tail Cement	<u>22.62 bbls</u>
(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	
HOC Tail	<u>221.67 ft</u>
(Tail Cement Volume) ÷ (OH Ann)	
Sacks of Tail Cement	<u>100.00 sk</u>
(Total Volume of Tail Cement) ÷ (Cement Yield)	
bbls of Tail Mix Water	<u>14.02 bbls</u>
(Sacks of Tail Cement X Gallons Per Sack) ÷ 42	
Pressure of cement in annulus	
Hydrostatic Pressure	<u>585.23 PSI</u>
Collapse PSI:	<u>2020.00 psi</u>
Burst PSI:	<u>3520.00 psi</u>

X
 Authorization To Proceed

Customers hereby acknowledges and specifically agrees to the terms and condition on this work order, including, without limitation, the provisions on this work order.

SERIES 2000

— PSI — Barrels / Minute — Barrels — Lbs / Gallon — Stage Volume

