

**Bison Oil Well Cementing  
Tail & Lead**

Date: 8/8/2019

Invoice # 200 43

API# \_\_\_\_\_

Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: slw ranch state bb 07-621

County: Weld

State: Colorado

Sec: 7

Twp: 5N

Range: 63W

Consultant: john

Rig Name & Number: H&P 517

Distance To Location: 20

Units On Location: 4047/4032

Time Requested: 430 pm

Time Arrived On Location: 200 pm

Time Left Location: 9:30pm

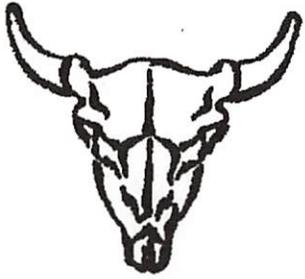
WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u></p> <p>Casing Weight (lb) : <u>36</u></p> <p>Casing Depth (ft.) : <u>1,892</u></p> <p>Total Depth (ft) : <u>1937</u></p> <p>Open Hole Diameter (in) : <u>13.50</u></p> <p>Conductor Length (ft) : <u>110</u></p> <p>Conductor ID : <u>15.5</u></p> <p>Shoe Joint Length (ft) : <u>39</u></p> <p>Landing Joint (ft) : <u>3</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><b>Lead</b></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><b>Tail Type III</b></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><b>Spacer Ahead Makeup</b></p> <p>30 BBL ahead with Die in 2nd 10</p>

Casing ID 8921 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
<b>HOC of Lead</b> <u>1553.78 ft</u>	<b>Tail Cement Volume In Ann</b> <u>127.00 cuft</u>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
<b>Volume of Lead Cement</b> <u>759.38 cuft</u>	<b>Total Volume of Tail Cement</b> <u>110.07 Cuft</u>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
<b>Volume of Conductor</b> <u>88.56 cuft</u>	<b>bbls of Tail Cement</b> <u>22.62 bbls</u>
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
<b>Total Volume of Lead Cement</b> <u>847.93 cuft</u>	<b>HOC Tail</b> <u>225.22 ft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
<b>bbls of Lead Cement</b> <u>166.12 bbls</u>	<b>Sacks of Tail Cement</b> <u>100.00 sk</u>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
<b>Sacks of Lead Cement</b> <u>555.20 sk</u>	<b>bbls of Tail Mix Water</b> <u>14.02 bbls</u>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
<b>bbls of Lead Mix Water</b> <u>117.65 bbls</u>	<b>Pressure of cement in annulus</b>
(Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Hydrostatic Pressure</b> <u>585.23 PSI</u>
<b>Displacement</b> <u>143.47 bbls</u>	
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	<b>Collapse PSI:</b> <u>2020.00 psi</u>
<b>Total Water Needed:</b> <u>325.14 bbls</u>	<b>Burst PSI:</b> <u>3520.00 psi</u>

X

Authorization To Proceed



**Bison Oil Well Cementing  
Two Cement Surface Pipe**

Customer  
Well Name

Noble Energy Inc.  
slw ranch state bb 07-621

Date  
INVOICE #  
LOCATION  
FOREMAN

8/8/2019  
200493  
Weld  
Kirk Kallhoff

Treatment Report Page 2

Amount Pumped	Time	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	117.6	200 pm	ARRIVE ON LOCATION			
Lead % Excess	10%	620 pm	JSA			
Lead Sacks	555	650 pm	JSA			
		720 pm	PRESSURE TEST			800
		721 pm	SPACER AHEAD	6	30	180
Tail mixed bbls	14	726 pm	LEAD CEMENT	5	166.1	190
Tail % Excess	0%	759 pm	TAIL CEMENT	6	22.6	310
Tail Sacks	100	805 pm	SHUT DOWN			
		810 pm	DROP PLUG			
Total Sacks	655	810 pm	DISPLACEMENT	6	143.4	300
Water Temp	60	838 pm	Bump Plug		143.4	850
bbl Returns	21	839 pm	Casing TEST			1010
		854 pm	Check Floats			
Notes:		915 pm	RIG DOWN			
Montered well for		930 pm	Leave Location			
20 Min. No top out						
Needed						

X

X 8/8/19  
Title

X 8-8-19  
Date

### SERIES 2000

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

