

**Bison Oil Well Cementing
Tail & Lead**

Date: 5/21/2019
 Invoice # 200461
 API# _____
 Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
 Well Name: gutterson state d23-771

County: Weld Consultant: tommy
 State: Colorado Rig Name & Number: H&P 517
 Distance To Location: 25
 Units On Location: 4047/4033/4030
 Time Requested: 330 am
 Time Arrived On Location: 200 am
 Time Left Location: 10:30 am

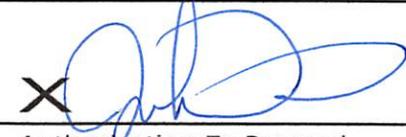
WELL DATA	
Casing Size (in) :	<u>9.625</u>
Casing Weight (lb) :	<u>36</u>
Casing Depth (ft.) :	<u>1,909</u>
Total Depth (ft) :	<u>1955</u>
Open Hole Diameter (in) :	<u>13.50</u>
Conductor Length (ft) :	<u>110</u>
Conductor ID :	<u>15.6</u>
Shoe Joint Length (ft) :	<u>44</u>
Landing Joint (ft) :	<u>3</u>
Sacks of Tail Requested	<u>100</u>
HOC Tail (ft):	<u>0</u>
One or the other, cannot have quantity in both	
Max Rate:	<u>8</u>
Max Pressure:	<u>2500</u>

Cement Data	
Lead	
Cement Name:	<u>BFN III</u>
Cement Density (lb/gal) :	<u>13.5</u>
Cement Yield (cuft) :	<u>1.68</u>
Gallons Per Sack	<u>8.90</u>
% Excess	<u>10%</u>
Tail Type III	
Cement Name:	
Cement Density (lb/gal) :	<u>15.2</u>
Cement Yield (cuft) :	<u>1.27</u>
Gallons Per Sack:	<u>5.89</u>
% Excess:	<u>0%</u>
Fluid Ahead (bbls)	<u>30.0</u>
H2O Wash Up (bbls)	<u>20.0</u>
Spacer Ahead Makeup	
<u>30 BBL ahead with Die in 2nd 10</u>	

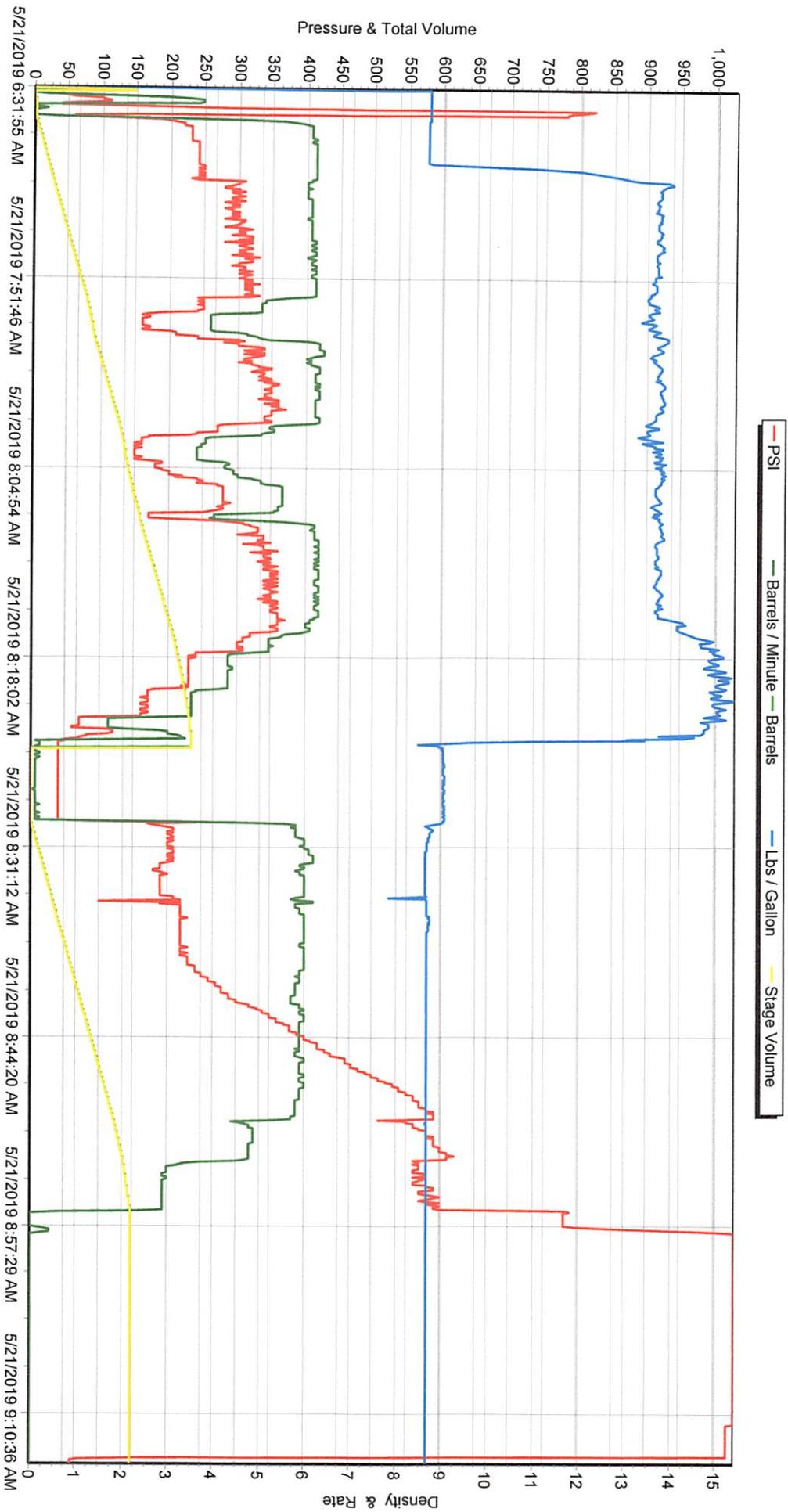
Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	
HOC of Lead	<u>1575.22 ft</u>
Casing Depth - HOC Tail	
Volume of Lead Cement	<u>769.86 cuft</u>
HOC of Lead X Open Hole Ann	
Volume of Conductor	<u>90.42 cuft</u>
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	<u>860.28 cuft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	<u>168.54 bbls</u>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	<u>563.28 sk</u>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	<u>119.36 bbls</u>
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	<u>144.40 bbls</u>
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	<u>327.78 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>107.90 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>220.78 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>


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 Authorization To Proceed

SERIES 2000



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