



# Bison Oil Well Cementing Tail & Lead

Date: 3/6/2020  
Invoice #: 200583  
API#  
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.  
Well Name: guttersen d34-749

County: Weld  
State: Colorado

Sec: 22  
Twp: 3N  
Range: 64W

Consultant: jim  
Rig Name & Number: H&P 321  
Distance To Location: 21  
Units On Location: 4028/4034/4044  
Time Requested: 800 am  
Time Arrived On Location: 700 am  
Time Left Location: 1:15 pm

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625</p> <p>Casing Weight (lb) : 36</p> <p>Casing Depth (ft.) : 1,919</p> <p>Total Depth (ft) : 1964</p> <p>Open Hole Diameter (in) : 13.50</p> <p>Conductor Length (ft) : 110</p> <p>Conductor ID : 15.15</p> <p>Shoe Joint Length (ft) : 40</p> <p>Landing Joint (ft) : 3</p> <p>Sacks of Tail Requested : 100</p> <p>HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8</p> <p>Max Pressure: 2500</p>	<p><b>Lead</b></p> <p>Cement Name: BFN III</p> <p>Cement Density (lb/gal) : 13.5</p> <p>Cement Yield (cuft) : 1.68</p> <p>Gallons Per Sack : 8.90</p> <p>% Excess : 10%</p> <p><b>Tail Type III</b></p> <p>Cement Name:</p> <p>Cement Density (lb/gal) : 15.2</p> <p>Cement Yield (cuft) : 1.27</p> <p>Gallons Per Sack: 5.80</p> <p>% Excess: 0%</p> <p>Fluid Ahead (bbls) : 30.0</p> <p>H2O Wash Up (bbls) : 20.0</p> <p><b>Spacer Ahead Makeup</b></p> <p>30 BBL ahead with Die in 2nd 10</p>

Lead Calculated Results	Tail Calculated Results
HOC of Lead : 1581.67 ft	Tail Cement Volume In Ann : 127.00 cuft
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement : 773.01 cuft	Total Volume of Tail Cement : 109.64 Cuft
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor : 82.12 cuft	bbls of Tail Cement : 22.62 bbls
(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)
Total Volume of Lead Cement : 855.13 cuft	HOC Tail : 224.33 ft
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement : 167.53 bbls	Sacks of Tail Cement : 100.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement : 559.91 sk	bbls of Tail Mix Water : 13.81 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water : 118.65 bbls	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure : 585.23 PSI
Displacement : 145.48 bbls	
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed: 327.93 bbls	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi

X

Authorization To Proceed

Jim Turner





## SERIES 2000

