



**Bison Oil Well Cementing
Tail & Lead**

Date: 10/7/2017

Invoice # 900187

API# 05-123-45240

Foreman: Corey B.

Customer: Noble Energy Inc.

Well Name: Hullabaloo State Y21-756

County: Weld
State: Colorado

Sec: 16
Twp: 2N
Range: 64W

Consultant: Matt
Rig Name & Number: H&P 517
Distance To Location: 31
Units On Location: 4027/3103-4040/3201-4032/3203
Time Requested: 1930
Time Arrived On Location: 1900
Time Left Location:

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625 Casing Weight (lb) : 36 Casing Depth (ft) : 2,050 Total Depth (ft) : 2060 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 80 Conductor ID : 15.25 Shoe Joint Length (ft) : 44 Landing Joint (ft) : 4</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: 2500</p>	<p>Lead</p> <p>Cement Name: BFN III Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.68 Gallons Per Sack 8.90 % Excess 15%</p> <p>Tail Type III</p> <p>Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.80 % Excess: 0%</p> <p>Fluid Ahead (bbls) 50.0 H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup 50 BBL ahead with Die in 2nd 10</p>

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead 1745.22 ft	Tail Cement Volume In Ann 127.00 cuft (HOC Tail) X (OH Ann)
Casing Depth - HOC Tail	Total Volume of Tail Cement 107.90 Cuft (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Lead Cement 852.94 cuft	bbls of Tail Cement 22.62 bbls (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
HOC of Lead X Open Hole Ann	HOC Tail 220.78 ft (Tail Cement Volume) ÷ (OH Ann)
Volume of Conductor 61.05 cuft (Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Sacks of Tail Cement 100.00 sk (Total Volume of Tail Cement) ÷ (Cement Yield)
Total Volume of Lead Cement 913.99 cuft (cuft of Lead Cement) + (Cuft of Conductor)	bbls of Tail Mix Water 13.81 bbls (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Cement 187.20 bbls (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	Pressure of cement in annulus
Sacks of Lead Cement 625.00 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Hydrostatic Pressure 585.23 PSI
bbls of Lead Mix Water 132.44 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Collapse PSI: 2020.00 psi
Displacement 155.37 bbls (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Burst PSI: 3520.00 psi
Total Water Needed: 371.62 bbls	

X *Gary Stapleton*
Authorization To Proceed

