



**Bison Oil Well Cementing
Tail & Lead**

Date: 6/1/2017

Invoice # 666141

API# 05-123-44577

Supervisor: Nick Vigil

Customer: Noble Energy Inc.

Well Name: Kona A19-636

County: Weld
State: Colorado
Sec: 21
Twp: 6N
Range: 64W

Consultant: John
Rig Name & Number: H&P 517
Distance To Location: 11 miles
Units On Location: 4023/4032
Time Requested: 15:00
Time Arrived On Location: 14:00
Time Left Location:

WELL DATA	
Casing Size (in) :	9.625
Casing Weight (lb) :	36
Casing Depth (ft.) :	1,930
Total Depth (ft) :	1940
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	45
Landing Joint (ft) :	
Sacks of Tail Requested	100
HOC Tail (ft):	0
One or the other, cannot have quantity in both	
Max Rate:	8
Max Pressure:	2000

Cement Data	
Lead	
Cement Name:	
Cement Density (lb/gal) :	13.5
Cement Yield (cuft) :	1.7
Gallons Per Sack	9.00
% Excess	15%
Tail	
Cement Name:	
Cement Density (lb/gal) :	15.2
Cement Yield (cuft) :	1.27
Gallons Per Sack:	5.89
% Excess:	0%
Fluid Ahead (bbls)	50.0
H2O Wash Up (bbls)	20.0
Spacer Ahead Makeup	
Dye in second 10 bbl	

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	
HOC of Lead	1626.11 ft
Casing Depth - HOC Tail	
Volume of Lead Cement	794.73 cuft
HOC of Lead X Open Hole Ann	
Volume of Conductor	61.05 cuft
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	855.78 cuft
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	175.28 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	578.91 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	124.05 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	146.02 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	354.10 bbls

Tail Calculated Results	
Tail Cement Volume In Ann	127.00 cuft
(HOC Tail) X (OH Ann)	
Total Volume of Tail Cement	107.47 Cuft
(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
bbls of Tail Cement	22.62 bbls
(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	
HOC Tail	219.89 ft
(Tail Cement Volume) ÷ (OH Ann)	
Sacks of Tail Cement	100.00 sk
(Total Volume of Tail Cement) ÷ (Cement Yield)	
bbls of Tail Mix Water	14.02 bbls
(Sacks of Tail Cement X Gallons Per Sack) ÷ 42	
Pressure of cement in annulus	
Hydrostatic Pressure	585.23 PSI
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi

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.

