



# Bison Oil Well Cementing Tail & Lead

Customer: Noble Energy Inc.  
Well Name: Wells Ranch State AA33-744

Date: 3/20/2017  
Invoice #: 666095  
API#: 05-123-43878  
Foreman: Nick Vigil

County: Weld  
State: Colorado  
Sec: 21  
Twp: 6N  
Range: 63W

Consultant: John  
Rig Name & Number: H&P 517  
Distance To Location: 19 Miles  
Units On Location: 4023/4034/4032  
Time Requested: 14:30  
Time Arrived On Location: 14:10  
Time Left Location:

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625 Casing Weight (lb) : 36 Casing Depth (ft.) : 1,926 Total Depth (ft) : 1936 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 80 Conductor ID : 15.25 Shoe Joint Length (ft) : 49 Landing Joint (ft) :</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: 2000</p>	<p><b>Lead</b> Cement Name: Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.7 Gallons Per Sack : 9.00 % Excess : 15%</p> <p><b>Tail</b> Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.89 % Excess: 0%</p> <p>Fluid Ahead (bbls) : 50.0 H2O Wash Up (bbls) : 20.0</p> <p>Spacer Ahead Makeup Dye in 2nd 10 bbl</p>

Casing ID	8.921	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead	1624.66 ft	Tail Cement Volume In Ann	127.00 cuft
Casing Depth - HOC Tail		(HOC Tail) X (OH Ann)	
Volume of Lead Cement	794.02 cuft	Total Volume of Tail Cement	105.73 Cuft
HOC of Lead X Open Hole Ann		(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
Volume of Conductor	61.05 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	855.07 cuft	HOC Tail	216.34 ft
(cuft of Lead Cement) + (Cuft of Conductor)		(Tail Cement Volume) ÷ (OH Ann)	
bbls of Lead Cement	175.13 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	578.43 sk	bbls of Tail Mix Water	14.02 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		(Sacks of Tail Cement X Gallons Per Sack) ÷ 42	
bbls of Lead Mix Water	123.95 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)		Collapse PSI:	2020.00 psi
Total Water Needed:	353.45 bbls	Burst PSI:	3520.00 psi

X   
Authorization To Proceed



## Bison Oil Well Cementing Two Cement Surface Pipe

Customer  
Well Name

Noble Energy Inc.  
Wells Ranch State AA33-744

Date \_\_\_\_\_

3/20/2017

INVOICE #

666095

LOCATION

Weld

FOREMAN

Nick Vigil

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## DESCRIPTION OF JOB EVENTS

[illegible]

~~X~~

Signature

X

Title

>

Date \_\_\_\_\_