



**Bison Oil Well Cementing
Surface Pipe Tail & Lead**

Invoice # 12763
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy
Well Name: timbro state Id 16-67-1hn

County: Weld
State: Colorado
Sec: 16
Twp: 9n
Range: 58w

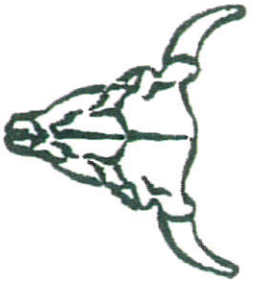
Consultant: tawn
Rig Name & Number: h&p 326
Distance To Location:
Units On Location: 3103-3210
Time Requested: 330 am
Time Arrived On Location: 300am
Time Left Location: 9:15am

WELL DATA	Cement Data
<p>Casing Size (in) 9.625 Casing Weight (lb) 36 Casing Depth (ft) 1,171 Total Depth (ft) 1211 Open Hole Diameter (in) 13.75 Conductor Length (ft) 100 Conductor ID 15.5 Shoe Joint Length (ft) 43 Landing Joint (ft) 30</p> <p>Sacks of Tail Requested 100 HOC Tail (ft): 0 <small>One or the other, cannot have quantity in both</small></p> <p>Max Rate: Max Pressure:</p>	<p>Lead</p> <p>Cement Name: Cement Density (lb/gal) : 13.1 Cement Yield (cuft) : 1.69 Gallons Per Sack 8.64 % Excess 30%</p> <p>Tail</p> <p>Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.89 % Excess.</p> <p>Fluid Ahead (bbls) 89.5 H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup</p>

Lead Calculated Results	Tail Calculated Results
HOC of Lead 834.81 ft	Tail Cement Volume In Ann 127.00 cuft (HOC Tail) X (OH Ann)
Casing Depth - HOC Tail	Total Volume of Tail Cement 108.43 Cuft (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Lead Cement 439.01 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 206.19 ft (Tail Cement Volume) ÷ (OH Ann)
Volume of Conductor 80.51 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 519.52 cuft (cuft of Lead Cement) + (Cuft of Conductor)	bbls of Tail Mix Water 14.02 bbls (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Cement 120.28 bbls (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	Pressure of cement in annulus
Sacks of Lead Cement 399.63 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Hydrostatic Pressure 796.87 PSI
bbls of Lead Mix Water 82.21 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Collapse PSI: 2020.00 psi Burst PSI: 3520.00 psi
Displacement 89.53 bbls (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed: 191.74 bbls	

X.
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



**Bison Oil Well Cementing
Two Cement Surface Pipe**

INVOICE #
LOCATION
FOREMAN

12763
Weld
Kirk Kallhoff

Customer
Well Name

Noble Energy
timbro state Id 16-67-1hn

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	652 am	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI
Safety Meeting	620	0	808	20	0		0		0		0		0			
MIRU	732	10	810	70	10		10		10		10		10			
CIRCULATE		20	812	70	20		20		20		20		20			
Drop Plug		30	813	70	30		30		30		30		30			
		40	815	120	40		40		40		40		40			
		50	817	180	50		50		50		50		50			
M & P		60	819	240	60		60		60		60		60			
Time	Sacks	70	821	300	70		70		70		70		70			
738 am	499	80	823	330	80		80		80		80		80			
805 am stop		90			90		90		90		90		90			
		100			100		100		100		100		100			
		110			110		110		110		110		110			
		120			120		120		120		120		120			
Lead mixed bbils	82	130			130		130		130		130		130			
Lead % Excess	30%	140			140		140		140		140		140			
Lead Sacks	399	150			150		150		150		150		150			
Notes:																
Tail mixed bbils		14	bumped plug at 826 am 480 psi													
Tail % Excess		0%														
Tail Sacks		100														
Total Sacks		498														
bbl Returns		20														

X *[Signature]*

X *W.S.S.*

X *11-12-13*

Work Performed

Title

Date