



Bison Oil Well Cementing Surface Pipe Tail & Lead

Invoice # 12701

API# 05-123-37543

Foreman: Calvin Reimers

Customer: Noble Energy

Well Name: Rohn State LD 09-63-HN

County: Weld
State: Colorado
Sec: 9
Twp: 9N
Range: 58W

Consultant: Dave / Justin
Rig Name & Number: H&P 273
Distance To Location: 80 Miles
Units On Location: 3106/3203
Time Requested: 200am
Time Arrived On Location: 130am
Time Left Location:

WELL DATA

Casing Size (in) : 9.625
Casing Weight (lb) : 36
Casing Depth (ft) : 1,223
Total Depth (ft) : 1256
Open Hole Diameter (in) : 13.75
Conductor Length (ft) : 100
Conductor ID : 16
Shoe Joint Length (ft) : 45
Landing Joint (ft) : 29

Sacks of Tail Requested 100
HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 7
Max Pressure: 2500

Cement Data

Lead

Cement Name:
Cement Density (lb/gal) : 13.1
Cement Yield (cuft) : 1.69
Gallons Per Sack 8.64
% Excess 25%

Tail

Cement Name:
Cement Density (lb/gal) : 15.2
Cement Yield (cuft) : 1.27
Gallons Per Sack: 5.89
% Excess: 0%

Fluid Ahead (bbls) 93.3
H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup

40bbls H2O with KCL+dye in 2nd 10bbls

Casing ID	8.921	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead 889.57 ft		Tail Cement Volume In Ann 127.00 cuft	
Casing Depth - HOC Tail		(HOC Tail) X (OH Ann)	
Volume of Lead Cement 467.81 cuft		Total Volume of Tail Cement 107.44 Cuft	
HOC of Lead X Open Hole Ann		(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	
Volume of Conductor 89.10 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 556.91 cuft		HOC Tail 204.31 ft	
(cuft of Lead Cement) + (Cuft of Conductor)		(Tail Cement Volume) ÷ (OH Ann)	
bbls of Lead Cement 123.98 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 411.92 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 84.74 bbls		Pressure of cement in annulus	
(Sacks Needed) X (Gallons Per Sack) ÷ 42		Hydrostatic Pressure 832.17 PSI	
Displacement 93.29 bbls		Collapse PSI: 2020.00 psi	
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)		Burst PSI: 3520.00 psi	
Total Water Needed: 198.02 bbls			
<div> Authorization To Proceed</div>			
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

12701
Weld
Calvin Reimers

Customer
Well Name

Noble Energy
Rohn State LD 09-63-HN

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DESCRIPTION OF JOB EVENTS

	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
MIRU	0	747am	70	0			0			0			0		
CIRCULATE	10	750am	100	10			10			10			10		
Drop Plug	20	751am	130	20			20			20			20		
746am	30	753am	130	30			30			30			30		
	40	755am	170	40			40			40			40		
	50	756am	240	50			50			50			50		
M & P	60	758am	310	60			60			60			60		
Time	70	800am	390	70			70			70			70		
709am	80	802am	470	80			80			80			80		
740am	90	804am	450	90			90			90			90		
	100	806am	410	100			100			100			100		
	110	Bump	580	110			110			110			110		
	120			120			120			120			120		
	130			130			130			130			130		
	140			140			140			140			140		
	150			150			150			150			150		

Notes:

Used 512 sks 146.62 bbls slurry
20 bbls slurry to surface

Tail mixed bbls 14.02
Tail % Excess 0%
Tail Sacks 100

Total Sacks 512

bbl Returns 20

X *[Signature]*
Work Performed

X *WSS*
Title

X *11/8/13*
Date