



# BISON

Bison Oil Well Cementing Inc.  
1547 Gaylord Street  
Denver, CO 80206  
303-296-3010

## Invoice

Date	Invoice #
9/18/2014	12100a

Bill To
Noble Energy Inc. Attn: Accounting 1625 Broadway Ste 2000 Denver, CO 80202

Location	Well Name & No.	Terms	Job Type		
Weld CO	Rohn State LD10-67HN	Net 30	Surface Pipe		
Item	Description	Qty	U/M	Rate	Amount
Pump surface	PUMP Charge-surface pipe	1			
Discount 15%	Discount 15%				
MILEAGE	Mileage charge	468			
Discount 15%	Discount 15%				
Data Acquisition ...	Data Acquisition Charge	1			
Discount 15%	Discount 15%				
	Subtotal of Services				
BFN III Summer ...	BFN III Blend	476	Sack		
Discount 15%	Discount 15%				
KCL Mud Flush	(BHS 117)	4	qt		
Discount 15%	Discount 15%				
Dye - 4880	Dye (Hot Pink 4880)	16	oz		
Discount 15%	Discount 15%				
	Subtotal of Materials				

Please Remit Payment To:

Bison Oil Well Cementing, Inc.  
P.O. Box 29671  
Thornton, CO 80229

Subtotal
Sales Tax
Total
Balance



**Bison Oil Well Cementing  
Tail & Lead**

**Customer:** Noble Energy  
**Well Name:** Rohn State LD 10-67HN

**Date:** 9/18/2014  
**Invoice #** 12100  
**API#** 05-123-37618  
**Foreman:** Calvin Reimers

**County:** Weld  
**State:** Colorado  
**Sec:** 28  
**Twp:** 9N  
**Range:** 59W

**Consultant:** Shane  
**Rig Name & Number:** H&P 326  
**Distance To Location:** 78 Miles  
**Units On Location:** 4023-3104/4018-3204  
**Time Requested:** 530am  
**Time Arrived On Location:** 430am  
**Time Left Location:** 9:30am

**WELL DATA**

Casing Size (in) : 9.625  
Casing Weight (lb) : 36  
Casing Depth (ft) : 1,170  
Total Depth (ft) : 1210  
Open Hole Diameter (in) : 13.50  
Conductor Length (ft) : 100  
Conductor ID : 16  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 34

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: BFN III  
Cement Density (lb/gal) : 13.1  
Cement Yield (cuft) : 1.69  
Gallons Per Sack : 8.64  
% Excess : 30%

**Tail**

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

Fluid Ahead (bbls) : 89.6  
H2O Wash Up (bbls) : 20.0

**Spacer Ahead Makeup**

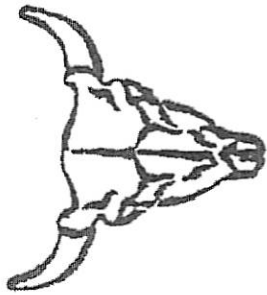
40bbls H2O+Dye in 2nd 10bbls

Casing ID	8.921	Casing Grade	J-55 only used
<b>Lead Calculated Results</b>		<b>Tail Calculated Results</b>	
HOC of Lead	816.06 ft	Tail Cement Volume in Ann	127.00 cuft
Casing Depth - HOC Tail		(HOC Tail) X (OH Ann)	
Volume of Lead Cement	398.83 cuft	Total Volume of Tail Cement	107.62 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	487.93 cuft	HOC Tail	220.19 ft
(cuft of Lead Cement) + (Cuft of Conductor)		(Tail Cement Volume) ÷ (OH Ann)	
bbls of Lead Cement	113.17 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	376.00 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	77.35 bbls	Pressure of cement in annulus	
(Sacks Needed) X (Gallons Per Sack) ÷ 42		Hydrostatic Pressure	796.19 PSI
Displacement	89.60 bbls		
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)		Collapse PSI:	2020.00 psi
Total Water Needed:	490.57 bbls	Burst PSI:	3520.00 psi

X

Authorization To Proceed

Customer hereby acknowledges and specifically agrees to the terms and conditions on this work order, including, without limitation, the provisions on this work order.



Bison Oil Well Cementing  
Two Cement Surface Pipe

Date 9/18/2014  
INVOICE # 12100  
LOCATION Weld  
FOREMAN Calvin Reimers

Customer Noble Energy  
Well Name Rohn State LD 10-67HN

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	720am 650am 800am	Displace 1		Displace 2		Displace 3		Displace 4		Displace 5	
		BBS	Time	PSI	BBS	Time	PSI	BBS	Time	BBS	Time
Safety Meeting	720am	0	832am	90	0			0		0	
MIRU	650am	10	834am	70	10			10		10	
CIRCULATE	800am	20	836am	80	20			20		20	
Drop Plug		30	837am	80	30			30		30	
831am		40	839am	130	40			40		40	
		50	840am	190	50			50		50	
M & P		60	842am	260	60			60		60	
Time	Sacks	70	843am	310	70			70		70	
809am	476	80	845am	310	80			80		80	
828am		90	849am	300	90			90		90	
		100	Bump	430	100			100		100	
		110			110			110		110	
		120			120			120		120	
Lead mixed bbls	77.35	130			130			130		130	
Lead % Excess	30%	140			140			140		140	
Lead Sacks	376	150			150			150		150	

Notes:

Tail mixed bbls 14.02 1/2 bbl back on bleed off

Tail % Excess 0%

Tail Sacks 100

Total Sacks 476

Water Temp 61.7

bbl Returns 25

*[Signature]*

X WSS

Title

X 9/18/14

Date

X

Work Performed