



# BISON

## Invoice

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

Date	Invoice #
1/21/2014	12813

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

Location	Well Name & No.	Terms	Job Type		
Weld CO	Five Rivers K18-69HN	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	360			
Discount 15%	Discount 15%				
Data Acquisition...	Data Acquisition Charge	1			
Discount 15%	Discount 15%				
HOURS	Wait Time	3.25			
Service Charge	Casing PSI Test	1			
	Subtotal of Services				
BFN III Winter ...	BFN III Blend	375	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

<b>Subtotal</b>	
<b>Sales Tax</b>	
<b>Total</b>	
<b>Balance Due</b>	



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/21/2014  
 Invoice #: 12813  
 API#: 05-123-38069  
 Foreman: Calvin Reimers

Customer: Noble  
 Well Name: Five Rivers K 18-69HN

County: Weld  
 State: Colorado  
 Sec: 8  
 Twp: 4N  
 Range: 66W

Consultant: Tawn  
 Rig Name & Number: PD 828  
 Distance To Location: 6 Miles  
 Units On Location: 3106/3212  
 Time Requested: 130pm  
 Time Arrived On Location: 100pm  
 Time Left Location: 845pm

WELL DATA	Cement Data
Casing Size OD (in) : 9.6250	Cement Name: BFN III
Casing Weight (lb) : 36	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 591	Cement Yield (cuft) : 1.27
Total Depth (ft) : 616	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 13.75	% Excess: 30%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit: 11.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbbls):
Landing Joint (ft) : 21	H2O Wash Up (bbbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	10bbbls H2O+KCL+Dye in 2nd 10bbbls

Calculated Results	Pressure of cement in annulus
<b>Displacement: 43.81 bbbls</b> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	<b>Hydrostatic Pressure: 466.47 PSI</b>
<b>cuft of Shoe 19.39 cuft</b> (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Pressure of the fluids inside casing</b>
<b>cuft of Conductor 89.10 cuft</b> (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Displacement: 235.47 psi</b>
<b>cuft of Casing 258.09 cuft</b> (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	<b>Shoe Joint: 35.27 psi</b>
<b>Total Slurry Volume 366.57 cuft</b> (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Total 270.74 psi</b>
<b>bbbls of Slurry 84.87 bbbls</b> (Total Slurry Volume) X (.1781) X (% Excess Cement)	<b>Differential Pressure: 195.73 psi</b>
<b>Sacks Needed 375 sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Collapse PSI: 2020.00 psi</b>
<b>Mix Water 52.62 bbbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Burst PSI: 3520.00 psi</b>
	<b>Total Water Needed: 72.62 bbbls</b>

X *John Mulder*  
 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  
Single Cement Surface Pipe**

INVOICE # 12813  
 LOCATION Weld  
 FOREMAN Calvin Reimers  
 Date 1/21/2014

Customer Noble  
 Well Name Five Rivers K 18-69HN

Treatment Report Page 2

**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
Safety Meeting	642pm														
MIRU	600pm														
CIRCULATE	705pm														
Drop Plug															
	733pm														
M & P															
Time															
	712pm														
	730pm														
% Excess	30%														
Mixed bbls	52.62														
Total Sacks	375														
bbl Returns															

Notes:

The day

Float Held

1/2 bbl back on bleed off

Casing PSI Test 746pm 1010 psi to 801pm 980 psi

X WSS Title  
 X 1/21/14 Date

X [Signature] Title  
 Work Performed