



# BISON

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

## Invoice

Date	Invoice #
2/4/2014	12825

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

Location	Well Name & No.	Terms	Job Type		
Weld CO	Wells Ranch AA21-674N	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	12.75			
	Subtotal of Services				
BFN III Winter ...	BFN III Blend	513	Sack		
Discount 15%	Discount 15%				
KCL Mud Flush	(BHS 117)	7	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 Due



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/4/2014  
Invoice #: 12825  
API#: 05-123-37741  
Foreman: Calvin Reimers

Customer: Noble

Well Name: Wells Ranch AA 21-67HN

County: Weld  
State: Colorado

Sec: 21  
Twp: 6N  
Range: 63W

Consultant: Cliff / Robert  
Rig Name & Number: H&P 277  
Distance To Location: 30 Miles  
Units On Location: 3106/3210  
Time Requested: 930pm  
Time Arrived On Location: 815pm  
Time Left Location: 900am

## WELL DATA

Casing Size OD (in) : 9.6250  
Casing Weight (lb) : 36  
Casing Depth (ft) : 927  
Total Depth (ft) : 961  
Open Hole Diameter (in) : 13.75  
Conductor Length (ft) : 108  
Conductor ID : 16  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 28

Max Rate: 7  
Max Pressure: 2500

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 20%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 20.0  
Fluid Ahead (bbls):  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup  
70bbls H2O+Dye in 2nd 10bbls

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 19.44 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 89.10 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 434.79 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 543.32 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 116.12 bbls  
(Total Slurry Volume) X (.1781) X (% Excess Cement)  
Sacks Needed 513 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 72.00 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 70.35 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 731.79 PSI

## Pressure of the fluids inside casing

Displacement: 380.30 psi

Shoe Joint: 35.36 psi

Total 415.66 psi

Differential Pressure: 316.13 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed 92.00 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.





INVOICE #	12825
LOCATION	Weld
FOREMAN	Calvin Reimers
Date	2/4/2014

Treatment Report Page 2

Noble
Wells Ranch AA 21-67HN

Customer  
Well Name

## DESCRIPTION OF JOB EVENTS

[illegible]

Notes:

## The day

Float Held

1/2 hbl back on bleed off

X *Robert H. ...*

X 455

X 2-5-14