



# BISON

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

## Invoice

Date	Invoice #
2/24/2014	12091

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 AA35-69-1BHNC	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	420			
Discount 15%	Discount 15%				
Data Acquisition ...	Data Acquisition Charge	1			
Discount 15%	Discount 15%				
Service Charge	Casing Test	1			
	Subtotal of Services				
BFN III Winter ...	BFN III Blend	331	Sack		
Discount 15%	Discount 15%				
KCL Mud Flush	(BHS 117)	4	qt		
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: 2/24/2014  
Invoice #: 12345  
API#: 445564  
Foreman: monte

Customer: noble  
Well Name: wells ranch aa35-69-1bhnc

County: weld  
State: Colorado  
Sec: 36  
Twp: 6n  
Range: 63w  
Consultant: josh  
Rig Name & Number: h & p 321  
Distance To Location: 31.9  
Units On Location: 4022-3101 4011-3204  
Time Requested: 2:30  
Time Arrived On Location: 1:30  
Time Left Location:

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 15.2
Casing Depth (ft) : 590	Cement Yield (cuft) : 1.27
Total Depth (ft) : 635	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 13.75	% Excess: 15%
Conductor Length (ft) : 130	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.5	BBL to Pit:
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 34	H2O Wash Up (bbls): 20.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	10 fresh 10 dye 10 fresh

Casing ID	8.921	Casing Grade	1-55 only used
<b>Calculated Results</b>		Displacement: 44.78 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe	19.40 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Pressure of cement in annulus</b>	
cuft of Conductor	104.66 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 465.86 PSI	
cuft of Casing	241.91 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Pressure of the fluids inside casing</b>	
Total Slurry Volume	365.97 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 235.12 psi	
bbls of Slurry	74.96 bbls (Total Slurry Volume) X (.1781) X (% Excess Cement)	Shoe Joint: 35.30 psi	
Sacks Needed	331 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 270.42 psi	
Mix Water	46.47 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 195.45 psi	
		Collapse PSI: #N/A psi	
		Burst PSI: #N/A psi	
		Total Water Needed: 151.26 bbls	
<div>X  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.			



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Rig Name & Number: h & p 321  
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Units On Location: 4022-3101 4011-3204  
Time Requested: 2:30  
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## WELL DATA

Casing Size OD (in.) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft.) : 590  
Total Depth (ft) : 635  
Open Hole Diameter (in.) : 13.75  
Conductor Length (ft) : 130  
Conductor ID : 15.5  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 34

Max Rate:  
Max Pressure:

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 30%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit:  
Fluid Ahead (bbls): 40.0  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup  
10 fresh 10 dye 20 fresh

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 19.40 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 104.66 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 241.91 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 365.97 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 84.73 bbls  
(Total Slurry Volume) X (.1781) X (% Excess Cement)  
Sacks Needed 375 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 52.53 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 44.78 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 465.86 PSI

## Pressure of the fluids inside casing

Displacement: 235.12 psi

Shoe Joint: 35.30 psi

Total 270.42 psi

Differential Pressure: 195.45 psi

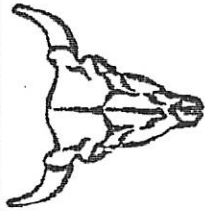
Collapse PSI: #N/A psi

Burst PSI: #N/A psi

Total Water Needed: 157.32 bbls

X   
Authorization To Proceed

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Bison Oil Well Cementing  
Single Cement Surface Pipe

INVOICE # 12345  
LOCATION weld  
FOREMAN monte  
Date 2/24/2014

Customer  
Well Name wells ranch aa35-69-1bhnc

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	4:10 2:30 6:25	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		0	7:07	10	0			0			0			0		
MIRU		10	7:10	190	10			10			10			10		
CIRCULATE		20	7:12	200	20			20			20			20		
Drop Plug		30	7:14	250	30			30			30			30		
		40	7:17	250	40			40			40			40		
M & P		50	7:19	560	50			50			50			50		
Time	Sacks	60			60			60			60			60		
6:35-7:05		70			70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	15%	120			120			120			120			120		
Mixed bbls	46.37	130			130			130			130			130		
Total Sacks	331	140			140			140			140			140		
bbl Returns	11	150			150			150			150			150		
Water Temp	65															

Notes:

circulate 40 bbls ahead with dye in 2nd 10. mix and pump 331 sks cement, displace 44.78 bbls h2o, bump plug at 7:19am at 560 psi, 15% excess 1.1 bbls back

Work Performed

X Title

X 2-24-14 Date