



# BISON

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

## Invoice

Date	Invoice #
2/18/2014	12289

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

Location	Well Name & No.	Terms	Job Type		
Weld CO	Sandau K25-66-111N	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%				
	Subtotal of Services				
BFN III Winter ...	BFN III Blend	376	Sack		
Discount 15%	Discount 15%				
KCl Mud Flush	(BHS 117)	5	qt		
Discount 15%	Discount 15%				
Dye - 4880	Dye (Hot Pink 4880)	10	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: 2/18/2014  
Invoice #: 12289  
API#:   
Foreman: kirk

Customer: noble  
Well Name: sandau k25-66-1hn

County: weld  
State: Colorado  
  
Sec: 25  
Twp: 4n  
Range: 66w

Consultant: jw  
Rig Name & Number: pd 829  
Distance To Location:   
Units On Location: 3103-3212  
Time Requested: 1200 pm  
Time Arrived On Location: 1115 am  
Time Left Location:

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 38.00  
Casing Depth (ft) : 639  
Total Depth (ft) : 670  
Open Hole Diameter (in.) : 13.75  
Conductor Length (ft) : 100  
Conductor ID : 15.5  
Shoe Joint Length (ft) : 40  
Landing Joint (ft) : 21

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):  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

Casing ID

8.971

Casing Grade

1-55 only used

## Calculated Results

cuft of Shoe 17.51 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
  
cuft of Conductor 80.51 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
  
cuft of Casing 283.45 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
  
Total Slurry Volume 381.46 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
  
bbls of Slurry 88.32 bbls  
(Total Slurry Volume) X (.1781) X (% Excess Cement)  
  
Sacks Needed 390 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
  
Mix Water 54.76 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 47.88 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 504.55 PSI

## Pressure of the fluids inside casing

Displacement: 258.14 psi

Shoe Joint: 31.84 psi

Total 289.98 psi

Differential Pressure: 214.57 psi

Collapse PSI: #N/A psi

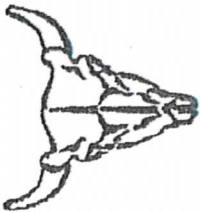
Burst PSI: #N/A psi

Total Water Needed: 122.64 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.





Bison Oil Well Cementing  
Single Cement Surface Pipe

INVOICE #  
LOCATION  
FOREMAN  
Date

12289  
weld  
kirk  
2/18/2014

Customer  
Well Name

noble  
sandau k25-66-1hn

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	0	1:25	10	0			0			0			0		
MIRU	10	1:27	50	10			10			10			10		
CIRCULATE	20	1:29	130	20			20			20			20		
Drop Plug	30	1:31	190	30			30			30			30		
1:25 PM	40	1:33	230	40			40			40			40		
M & P	50			50			50			50			50		
Time	60			60			60			60			60		
Sacks	70			70			70			70			70		
1:22 pm stop	80			80			80			80			80		
	90			90			90			90			90		
	100			100			100			100			100		
	110			110			110			110			110		
	120			120			120			120			120		
% Excess	130			130			130			130			130		
Mixed bbls	140			140			140			140			140		
Total Sacks	150			150			150			150			150		
bbl Returns															
Water Temp															

Notes:

Bump plug at 1:37 @ 390 psi, 85 bbl of slurry

X Justin S. Smith  
Work Performed

X WSS  
Title

X 2-18-14  
Date