



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/8/2014  
 Invoice #: 45014  
 API#: 05-123-39561  
 Foreman: JASON

Customer: Noble Energy Inc.  
 Well Name: SHABLE K08-69-1HN

County: Weld  
 State: Colorado  
 Sec: 7  
 Twp: 4N  
 Range: 66W  
 Consultant: JIM  
 Rig Name & Number: H&P 321  
 Distance To Location: 10  
 Units On Location: 4031-3106/ 4018-3203  
 Time Requested: 630  
 Time Arrived On Location: 500  
 Time Left Location: 1000

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.) : 602	Cement Yield (cuft) : 1.27
Total Depth (ft) : 641	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 15.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 34	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	H2O WITH KCL, 2ND 10 WITH DYE

Calculated Results	Pressure of cement in annulus
<b>cuft of Shoe</b> 19.43 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Displacement:</b> 45.66 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
<b>cuft of Conductor</b> 76.31 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Hydrostatic Pressure:</b> 475.13 PSI
<b>cuft of Casing</b> 282.00 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	<b>Pressure of the fluids inside casing</b>
<b>Total Slurry Volume</b> 377.74 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Displacement:</b> 240.16 psi
<b>bbls of Slurry</b> 67.28 bbls (Total Slurry Volume) X (.1781)	<b>Shoe Joint:</b> 35.34 psi
<b>Sacks Needed</b> 297 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Total</b> 275.50 psi
<b>Mix Water</b> 41.71 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Differential Pressure:</b> 199.63 psi
	<b>Collapse PSI:</b> 2020.00 psi
	<b>Burst PSI:</b> 3520.00 psi
	<b>Total Water Needed:</b> 147.38 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**

Customer  
Well Name

Noble Energy Inc.  
SHABLE K08-69-1HN

INVOICE #  
LOCATION  
FOREMAN  
Date

45014  
Weld  
JASON  
8/8/2014

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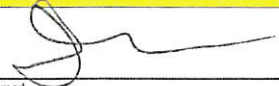
**DESCRIPTION OF JOB EVENTS**

		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	730															
MIRU	640															
CIRCULATE	751	0	830	0	0			0			0			0		
Drop Plug		10	833	20	10			10			10			10		
829		20	838	130	20			20			20			20		
		30	840	240	30			30			30			30		
		40	843	270	40			40			40			40		
M & P		50	846	240	50			50			50			50		
Time	Sacks	60	BUMP	840	60			60			60			60		
759-825	297	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	41.6	130			130			130			130			130		
Total Sacks	297	140			140			140			140			140		
bbl Returns	15	150			150			150			150			150		
Water Temp	73															

Notes:

The day

PRESSURE TESTED TO 1000 PSI @ 0748, PUMPED 40 BBL WATER WITH DYE IN 2ND 10 @ 0751, MIX AND PUMPED 297 SKS AT 15.2, 67.1 BBLs AT 0759, STARTED DISPLACEMENT AT 0830, PLUG LANDED AT 0846 PSI AT 240 AND PRESSURED UP TO 840 PSI AND HELD FOR 2 MINUTES, RELEASED PRESSURE AND GOT .5 BBL BACK

X   
Work Performed

X \_\_\_\_\_  
Title

X \_\_\_\_\_  
Date