



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/6/2014  
Invoice #: 35013  
API#:   
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.  
Well Name: five rivers k09-66-1hn

County: Weld  
State: Colorado  
Sec: 9  
Twp: 4n  
Range: 66w  
Consultant: derrick  
Rig Name & Number: h&p 330  
Distance To Location: 10  
Units On Location: 4030-3103/4033-3210  
Time Requested: 1230 pm  
Time Arrived On Location: 1145 am  
Time Left Location: 3:45 pm

## WELL DATA

Casing Size OD (in): 9.625  
Casing Weight (lb): 36.00  
Casing Depth (ft): 600  
Total Depth (ft): 640  
Open Hole Diameter (in.): 13.50  
Conductor Length (ft): 100  
Conductor ID: 16  
Shoe Joint Length (ft): 42  
Landing Joint (ft): 30

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

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

**cuft of Shoe** 18.23 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** 317.67 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

**Total Slurry Volume** 425.00 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 75.69 bbls  
(Total Slurry Volume) X (.1781)

**Sacks Needed** 335 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 46.93 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 45.46 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

**Hydrostatic Pressure:** 473.76 PSI

## Pressure of the fluids inside casing

**Displacement:** 240.60 psi

**Shoe Joint:** 33.16 psi

**Total** 273.76 psi

**Differential Pressure:** 200.00 psi

**Collapse PSI:** 2020.00 psi

**Burst PSI:** 3520.00 psi

**Total Water Needed:** 152.39 bbls

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.  
five rivers k09-66-1hn

INVOICE #  
LOCATION  
FOREMAN  
Date

35013  
Weld  
Kirk Kallhoff  
8/6/2014

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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	139pm															
MIRU	120pm															
CIRCULATE	200pm	0	236pm	10	0			0			0			0		
Drop Plug		10	241pm	100	10			10			10			10		
236 pm		20	244pm	190	20			20			20			20		
		30	246pm	250	30			30			30			30		
		40	246pm	300	40			40			40			40		
M & P		50			50			50			50			50		
Time	Sacks	60			60			60			60			60		
209 pm	335	70			70			70			70			70		
233 pm stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	30%	120			120			120			120			120		
Mixed bbls	47	130			130			130			130			130		
Total Sacks	335	140			140			140			140			140		
bbl Returns	16	150			150			150			150			150		
Water Temp																

Notes:

bumped plug at 250pm 460 psi 76.5 bbls slurry

casing test 1000 psi for 15 min

Work Performed *[Signature]*

X  
Title

X 8-6-14  
Date