



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/16/2015  
Invoice #: 65057  
API#: AFE 200189 200 213  
Foreman: Lee Sharp

Customer: Noble Energy Inc.  
Well Name: Moses State LD11-78HN

County: Weld  
State: Colorado

Sec: 2  
Twp: 9N  
Range: 58W

Consultant: Jeff  
Rig Name & Number: H&P 273  
Distance To Location: 80  
Units On Location: 4027-3106/ 4022-3512  
Time Requested: 5:00pm  
Time Arrived On Location: 4:00pm  
Time Left Location:

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft.) : 1,226  
Total Depth (ft) : 12234  
Open Hole Diameter (in.) : 13.50  
Conductor Length (ft) : 100  
Conductor ID : 15.325  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 0

Max Rate:  
Max Pressure:

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 14.2  
Cement Yield (cuft) : 1.49  
Gallons Per Sack: 7.48  
% Excess: 20%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 0.0  
Fluid Ahead (bbls): 40.0  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup  
10F 10D 10F 10F

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 19.69 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 77.56 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 660.31 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 757.57 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 134.92 bbls  
(Total Slurry Volume) X (.1781)  
Sacks Needed 508 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 90.55 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 91.26 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 904.35 PSI

## Pressure of the fluids inside casing

Displacement: 509.02 psi

Shoe Joint: 33.47 psi

Total 542.49 psi

Differential Pressure: 361.85 psi

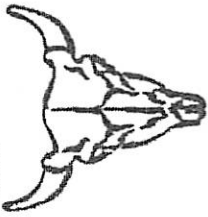
Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 241.81 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.  
Moses State LD11-78HN

INVOICE #  
LOCATION  
FOREMAN  
Date

65057  
Weld  
Lee Sharp  
1/16/2015

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	7:50 7:00 8:16	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	8:52		0			0			0			0		
MIRU		10	8:54	20	10			10			10			10		
CIRCULATE		20	8:56	0	20			20			20			20		
Drop Plug		30	8:59	60	30			30			30			30		
8:53		40	9:01	190	40			40			40			40		
M & P		50	9:03	240	50			50			50			50		
Time		60	9:04	280	60			60			60			60		
8:23-8:51	Sacks	70	9:08	250	70			70			70			70		
	508	80	9:12	220	80			80			80			80		
		90	9:18	290	90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
% Excess	20%	130			130			130			130			130		
Mixed bbls	90.5	140			140			140			140			140		
Total Sacks	508	150			150			150			150			150		
bbl Returns	24															
Water Temp	40															

Notes:

The day

X  
Work Preformed

X Co Han  
Title

X  
Date