



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/19/2015  
Invoice # 90060  
API# 05-123-40734  
Supervisor Nick

Customer: Noble Energy Inc.  
Well Name: Moser State H22-785

County: Weld  
State: Colorado  
Sec: 22  
Twp: 3N  
Range: 65W

Consultant: Charles/J.W.  
Rig Name & Number: H&P 273  
Distance To Location: 20  
Units On Location: 3106/4028/4022/3215  
Time Requested: 16:00  
Time Arrived On Location: 14:21  
Time Left Location: 19:00

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft) : 848	Cement Yield (cuft) : 1.49
Total Depth (ft) : 854	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 10%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 16.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 60.0
Landing Joint (ft) : 5	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 1500	DYE IN SECOND 10 BBL

Casing ID	8.921	Casing Grade	J-55 only used
<b>Calculated Results</b>	<b>Displacement: 62.00 bbls</b> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)		
<b>cuft of Shoe</b> 19.53 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Pressure of cement in annulus</b>		
<b>cuft of Conductor</b> 76.31 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Hydrostatic Pressure: 625.57 PSI</b>		
<b>cuft of Casing</b> 354.14 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> 449.98 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Displacement: 346.24 psi</b>		
<b>bbls of Slurry</b> 80.10 bbls (Total Slurry Volume) X (.1781)	<b>Shoe Joint: 33.20 psi</b>		
<b>Sacks Needed</b> 302 sk	<b>Total 379.43 psi</b>		
<b>Mix Water</b> 53.78 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Differential Pressure: 246.13 psi</b>		
	<b>Collapse PSI: 2020.00 psi</b>		
	<b>Burst PSI: 3520.00 psi</b>		
	<b>Total Water Needed: 195.78 bbls</b>		

X Jw Irwin  
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.



Customer  
Well Name

Noble Energy Inc.  
Moser State H22-785

INVOICE #  
LOCATION  
Supervisor  
Date

90060
Weld
Nick
11/19/2015

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### DESCRIPTION OF JOB EVENTS

X Joe I. 24  
Work Performed

X W S S

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Title

X 4/19/15  
Date