



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/23/2015  
 Invoice # 80033  
 API# 05-123-40601  
 Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Haley LC 27-745

County: Weld  
 State: Colorado  
 Sec: 34  
 Twp: 9N  
 Range: 59W

Consultant: Jim B.  
 Rig Name & Number: H&P 343  
 Distance To Location: 66 Miles  
 Units On Location: 4023-3104/4024-3204  
 Time Requested: 1200am  
 Time Arrived On Location: 1000pm  
 Time Left Location: 415am

WELL DATA		Cement Data	
Casing Size OD (in) :	<u>9.625</u>	Cement Name:	<u>BFN III</u>
Casing Weight (lb) :	<u>36.00</u>	Cement Density (lb/gal) :	<u>14.2</u>
Casing Depth (ft.) :	<u>596</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>626</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>25%</u>
Conductor Length (ft) :	<u>100</u>	Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :	<u>16</u>	BBL to Pit:	<u>12.0</u>
Shoe Joint Length (ft) :	<u>45</u>	Fluid Ahead (bbls):	<u>40.0</u>
Landing Joint (ft) :	<u>29</u>	H2O Wash Up (bbls):	<u>20.0</u>
Max Rate:	<u>7</u>	<b>Spacer Ahead Makeup</b>	
Max Pressure:	<u>2500</u>	<b>40bbls With Dye in 2nd 10bbls</b>	

Casing ID	8.921	Casing Grade	J-55 only used
<b>Calculated Results</b>		<b>Displacement: 44.79 bbls</b>	
<b>cuft of Shoe 19.42 cuft</b> (Casing ID Squared) X (.005454) X (Shoe Joint ft)		(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
<b>cuft of Conductor 89.10 cuft</b> (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		<b>Pressure of cement in annulus</b>	
<b>cuft of Casing 302.80 cuft</b> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )		<b>Hydrostatic Pressure: 439.41 PSI</b>	
<b>Total Slurry Volume 411.31 cuft</b> (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		<b>Pressure of the fluids inside casing</b>	
<b>bbls of Slurry 73.26 bbls</b> (Total Slurry Volume) X (.1781)		<b>Displacement: 237.54 psi</b>	
<b>Sacks Needed 276 sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		<b>Shoe Joint: 33.00 psi</b>	
<b>Mix Water 49.16 bbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42		<b>Total 270.55 psi</b>	
		<b>Differential Pressure: 168.86 psi</b>	
		<b>Collapse PSI: 2020.00 psi</b>	
		<b>Burst PSI: 3520.00 psi</b>	
		<b>Total Water Needed: 153.96 bbls</b>	

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.

