



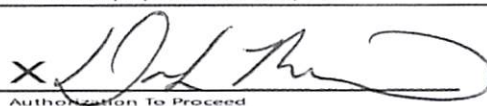
# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/9/2015  
Invoice #: 80650  
API#: 05-123-40732  
Foreman: JASON KELEHER

Customer: Noble Energy Inc.  
Well Name: MOSER H34-778

County: Weld  
State: Colorado  
Sec: 22  
Twp: 3W  
Range: 65W  
Consultant: DAVE  
Rig Name & Number: H&P 273  
Distance To Location: 26  
Units On Location: 4023-3104/ 4032-3215  
Time Requested: 1030  
Time Arrived On Location: 830  
Time Left Location: 330

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) :	813	Cement Yield (cuft) :	1.49
Total Depth (ft) :	842	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	10%
Conductor Length (ft) :	80	Displacement Fluid lb/gal:	8.3
Conductor ID :	15.25	BBL to Pit:	21.0
Shoe Joint Length (ft) :	43	Fluid Ahead (bbls):	50.0
Landing Joint (ft) :	24	H2O Wash Up (bbls):	20.0
Max Rate:	6	Spacer Ahead Makeup	
Max Pressure:	1000	50 BBL WATER DYE IN 2ND 10	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 61.38 bbls	
cuft of Shoe	18.73 cuft	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		Pressure of cement in annulus	
cuft of Conductor	61.05 cuft	Hydrostatic Pressure:	599.84 PSI
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Pressure of the fluids inside casing	
cuft of Casing	394.13 cuft	Displacement:	331.99 psi
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Shoe Joint:	31.84 psi
Total Slurry Volume	473.91 cuft	Total	363.83 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure:	236.01 psi
bbls of Slurry	84.40 bbls	Collapse PSI:	2020.00 psi
(Total Slurry Volume) X (.1781)		Burst PSI:	3520.00 psi
Sacks Needed	318 sk	Total Water Needed:	188.02 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)			
Mix Water	56.65 bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42			
 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.			

Date \_\_\_\_\_