



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/1/2016  
Invoice #: 80479  
API#: 05-12223-424  
Foreman: Matthew

Customer: Noble Energy Inc.  
Well Name: Wells Ranch AA22- 650

County: Weld  
State: Colorado  
Sec: 22  
Twp: 6N  
Range: 63W

Consultant:  
Rig Name & Number: H&P 343  
Distance To Location: 18  
Units On Location: 3  
Time Requested: 1600  
Time Arrived On Location: 1430  
Time Left Location: 2100

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.) :	1,923	Cement Yield (cuft) :	1.49
Total Depth (ft) :	1933	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	15%
Conductor Length (ft) :	80	Displacement Fluid lb/gal:	8.7
Conductor ID :	15.25	BBL to Pit:	25.0
Shoe Joint Length (ft) :	44	Fluid Ahead (bbls):	50.0
Landing Joint (ft) :	5	H2O Wash Up (bbls):	20.0
Max Rate:	7	Spacer Ahead Makeup	
Max Pressure:	1500	40Water , 10 Dye	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement:	145.77 bbls
cuft of Shoe	19.10 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:	1397.00 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Pressure of the fluids inside casing	
cuft of Casing	1019.70 cuft	Displacement:	849.12 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )		Shoe Joint:	32.46 psi
Total Slurry Volume	1099.70 cuft	Total	881.58 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure:	515.42 psi
bbls of Slurry	196.00 bbls	Collapse PSI:	
(Total Slurry Volume) X (.1781)		2020.00 psi	
Sacks Needed	738 sk	Burst PSI:	3520.00 psi
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		Total Water Needed:	347.20 bbls
Mix Water	131.43 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 set forth in this work order.



INVOICE #	LOCATION	FOREMAN	Date
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80479	Weld	Matthew	1/31/201
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Noble Energy Inc.
Wells Ranch AA22-650

Customer  
Well Name

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### DESCRIPTION OF JOB EVENTS

[illegible]