



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/9/2015  
Invoice #: 55054  
API#:   
Foreman: Monte Bedeaux

Customer: Noble Energy Inc.  
Well Name: Wells Ranch AA19-644

County: Weld  
State: Colorado  
Sec: 20  
Twp: 6n  
Range: 62w  
Consultant: Lane  
Rig Name & Number: H&P 330  
Distance To Location: 32.3  
Units On Location: 4028-3102 4022-3213  
Time Requested: 1:00  
Time Arrived On Location: 12:15  
Time Left Location: 8:30

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.) :	666	Cement Yield (cuft) :	1.48
Total Depth (ft) :	719	Gallons Per Sack:	7.48
Open Hole Diameter (in.) :	13.50	% Excess:	30%
Conductor Length (ft) :	130	Displacement Fluid lb/gal:	8.3
Conductor ID :	15.6	BBL to Pit:	
Shoe Joint Length (ft) :	45	Fluid Ahead (bbls):	60.0
Landing Joint (ft) :	32	H2O Wash Up (bbls):	20.0
Max Rate:	5	Spacer Ahead Makeup	
Max Pressure:	1000	10 fresh 10 dye 40 fresh	

Casing ID	8.921	Casing Grade	J-55 only used
<b>Calculated Results</b>		Displacement:	50.48 bbls
cuft of Shoe	19.53 cuft	$((\text{Casing ID Squared}) \times (.0009714) \times (\text{Casing Depth} + \text{Landing Joint} - \text{Shoe Joint}))$	
$((\text{Casing ID Squared}) \times (.005454) \times (\text{Shoe Joint ft}))$		<b>Pressure of cement in annulus</b>	
cuft of Conductor	106.86 cuft	Hydrostatic Pressure:	491.31 PSI
$((\text{Conductor Width Squared}) - (\text{Casing Size OD Squared}) \times (.005454) \times (\text{Conductor Length ft}))$		<b>Pressure of the fluids inside casing</b>	
cuft of Casing	340.55 cuft	Displacement:	267.76 psi
$((\text{Open Hole Squared}) - (\text{Casing Size Squared}) \times (.005454) \times (\text{Casing Depth} - \text{Conductor Length}))$		Shoe Joint:	33.20 psi
Total Slurry Volume	466.94 cuft	Total	300.96 psi
$((\text{cuft of Shoe}) + (\text{cuft of Conductor}) + (\text{cuft of Casing}))$		Differential Pressure:	190.35 psi
bbls of Slurry	83.16 bbls		
$((\text{Total Slurry Volume}) \times (.1781))$		Collapse PSI:	2020.00 psi
Sacks Needed	316 sk	Burst PSI:	3520.00 psi
$((\text{Total Slurry Volume}) \div (\text{Cement Yield}) \times (\% \text{ Excess Cement}))$		Total Water Needed:	186.67 bbls
Mix Water	56.19 bbls		
$((\text{Sacks Needed}) \times (\text{Gallons Per Sack}) \div 42)$			

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.



**Displacement Cementing  
Single Cement Surface Pipe**

Customer  
Well Name

Noble Energy Inc.  
Wells Ranch AA19-644

INVOICE #  
LOCATION  
FOREMAN  
Date

33034  
Weld  
Monte Bedeaux  
1/9/2015

Treatment Report Page 2

**DESCRIPTION OF JOB EVENTS**

		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	6:10															
MIRU	5:30															
CIRCULATE	6:50	0	7:17	0	0			0			0			0		
Drop Plug		10	7:19	70	10			10			10			10		
7:17		20	7:21	90	20			20			20			20		
		30	7:24	170	30			30			30			30		
		40	7:26	230	40			40			40			40		
M & P		50	7:28	240	50			50			50			50		
Time	Sacks	60	7:29	720	60			60			60			60		
6:55-7:14	316	70			70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	30%	120			120			120			120			120		
Mixed bbls	56.19	130			130			130			130			130		
Total Sacks	316	140			140			140			140			140		
bbl Returns	26	150			150			150			150			150		
Water Temp	66															

Notes:

safty meeting, miru, pressure test per company man, circulate 50 bbls ahead with dye in 2nd 10,mix and pump 316 sks

drop plug and displace 51.48 bbls h2o, bump plug at 7:29 pm at 720 psi, raise to 1000 psi hold 15 min, wash up rig down

rasise to 1000 psl hold 15 min

X  
Work Performed

X  
Title

X  
Date