



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/1/2015  
Invoice #: 25117  
API#: 05-123-40160  
Foreman: Calvin Reimers

Customer: Noble Energy Inc.  
Well Name: Crow Creek AA 01-785

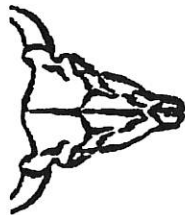
County: Weld  
State: Colorado  
Sec: 1  
Twp: 6N  
Range: 63W  
Consultant: Mike  
Rig Name & Number: H&P 315  
Distance To Location: 31 Miles  
Units On Location: 4023-3104/4020-3212  
Time Requested: 130am  
Time Arrived On Location: 115am  
Time Left Location: 600am

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) : 653	Cement Yield (cuft) : 1.49
Total Depth (ft) : 683	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 20%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit: 10.0
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 30	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	50bbls H2O+Dye in 2nd 10bbls

Casing ID	8.921	Casing Grade	J-55 only used
<b>Calculated Results</b>		Displacement:	49.48 bbls
cuft of Shoe	18.78 cuft	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		<b>Pressure of cement in annulus</b>	
cuft of Conductor	89.10 cuft	Hydrostatic Pressure:	481.84 PSI
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		<b>Pressure of the fluids inside casing</b>	
cuft of Casing	324.41 cuft	Displacement:	262.98 psi
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Shoe Joint:	31.91 psi
Total Slurry Volume	432.29 cuft	Total	294.89 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure:	186.95 psi
bbls of Slurry	76.99 bbls	Collapse PSI:	2020.00 psi
(Total Slurry Volume) X (.1781)		Burst PSI:	3520.00 psi
Sacks Needed	290 sk	Total Water Needed:	171.15 bbls
(Total Slurry Volume) + (Cement Yield) X (% Excess Cement)			
Mix Water	51.67 bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42			

*[Signature]*  
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.



Single Cement Surface Pipe

Customer

Well Name

Noble Energy Inc.  
Crow Creek AA 01-785

LOCATION  
FOREMAN  
Date

Weld  
Calvin Reimers  
1/1/2015

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### DESCRIPTION OF JOB EVENTS

	241am 115am 423am	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		0	450am	100	0			0			0			0		
MIRU		10	453am	60	10			10			10			10		
CIRCULATE		20	455am	190	20			20			20			20		
Drop Plug		30	457am	260	30			30			30			30		
449am		40	459am	240	40			40			40			40		
		50	503am	200	50			50			50			50		
M & P		60	Bump	450	60			60			60			60		
Time	Sacks	70			70			70			70			70		
434am	290	80			80			80			80			80		
447am		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	20%	120			120			120			120			120		
Mixed bbls	51.67	130			130			130			130			130		
Total Sacks	290	140			140			140			140			140		
bbl Returns	10	150			150			150			150			150		
Water Temp	41.1															

Notes:

The day

1/2 bbl Back on Bleed Off

*Handwritten signature*

X WSS

1/1/15

Work Performed

Title

Date