



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/5/2014  
Invoice #: 65035  
API#:   
Foreman: Lee Sharp

Customer: Noble Energy Inc.

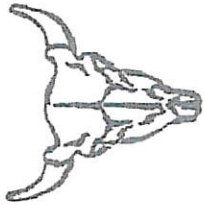
Well Name: Tally(Crow Creek AE06-790)

County: Weld  
State: Colorado  
Sec:   
Twp:   
Range:

Consultant: John Finck  
Rig Name & Number: Precision 829  
Distance To Location: 37  
Units On Location: 4031-3106;  
Time Requested: 7:00  
Time Arrived On Location: 7:00  
Time Left Location:

WELL DATA	Cement Data
Casing Size OD (in.) : 9.875	Cement Name: BFM III
Casing Weight (lb) : 26.00	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 575	Cement Yield (cuft) : 1.27
Total Depth (ft) : 668	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 13.75	% Excess: 30%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.375	BBL to Pit:
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 5	H2O Wash Up (bbls): 20.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	30bbl + 10bbl + 10bbl = 50 bbl

Casing ID: 8.921	Casing Grade: J-55 only used
<b>Calculated Results</b>	Displacement: 41.16 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Slurty: 19.78 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Pressure of cement in annulus</b>
cuft of Conductor: 62.05 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 456.39 PSI
cuft of Casing: 140.16 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	<b>Pressure of the fluids inside casing</b>
Total Slurry Volume: 132.29 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 229.57 psi
bbls of Slurry: 75.21 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 35.98 psi
Sacks Needed: 734 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total: 265.56 psi
Mix Water: 16.62 gal (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 190.83 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
 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.	



**Bison Oil Well Cementing**  
**Single Cement Surface Pipe**

INVOICE # 65035  
LOCATION Weld  
FOREMAN Lee Sharp  
Date 12/5/2014

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Well Name Tally(Crow Creek AE06-790)

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**DESCRIPTION OF JOB EVENTS**

	9:50 9:15 10:13	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			0			0			0			0		
MIRU		10			10			10			10			10		
CIRCULATE		20			20			20			20			20		
Drop Plug		30			30			30			30			30		
11:25		40			40			40			40			40		
		50			50			50			50			50		
M & P		60			60			60			60			60		
Time		70			70			70			70			70		
11:05-11:23	Sacks	80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
% Excess		130			130			130			130			130		
Mixed bbls	46	140			140			140			140			140		
Total Sacks	328	150			150			150			150			150		
bbl Returns	9															
Water Temp	85															

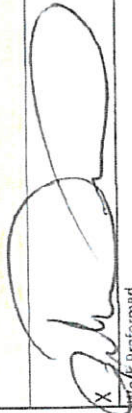
Notes:

The day

Job had multiple issues:

Laptop would not hook up to totco issue corrected durin bbls of head 10:16-10:32

During displacement take on pumped lost prime 112 bbl into displacement. Slowed to idle in attempt to correct @ 15 bbl company made call to have rig complete displacement.

X  Title

X Date