



**Bison Oil Well Cementing  
Tail & Lead**

Date: 10/27/2014  
 Invoice # 13038  
 API# 05-123-37367  
 Foreman: Calvin Reimers

Customer: Noble Energy  
 Well Name: Fiscus Federal LD 15-77HN

County: Weld  
 State: Colorado  
 Sec: 9  
 Twp: 9N  
 Range: 58W

Consultant: Tawn  
 Rig Name & Number: PD 282  
 Distance To Location: 78 Miles  
 Units On Location: 4023-3104/4024-3203  
 Time Requested: 1200pm  
 Time Arrived On Location: 1140am  
 Time Left Location: 4:15pm

WELL DATA	Cement Data
Casing Size (in) <u>9.625</u> Casing Weight (lb) <u>36</u> Casing Depth (ft) : <u>1,194</u> Total Depth (ft) : <u>1220</u> Open Hole Diameter (in) : <u>13.50</u> Conductor Length (ft) <u>100</u> Conductor ID <u>16</u> Shoe Joint Length (ft) <u>43</u> Landing Joint (ft) <u>21</u>  Sacks of Tail Requested <u>100</u> HOC Tail (ft): <u>0</u> One or the other, cannot have quantity in both  Max Rate: <u>7</u> Max Pressure: <u>2500</u>	<b>Lead</b> Cement Name: <u>BFN III</u> Cement Density (lb/gal) : <u>13.1</u> Cement Yield (cuft) : <u>1.69</u> Gallons Per Sack <u>8.64</u> % Excess <u>30%</u>  <b>Tail</b> Cement Name: <u>BFN III</u> Cement Density (lb/gal) : <u>15.2</u> Cement Yield (cuft) : <u>1.27</u> Gallons Per Sack: <u>5.89</u> % Excess: <u>0%</u>  Fluid Ahead (bbls) <u>90.5</u> H2O Wash Up (bbls) <u>20.0</u>  <b>Spacer Ahead Makeup</b> <u>40bbls H2O+Dye in 2nd 10bbls</u>

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead <u>852.15 ft</u>	Tail Cement Volume In Ann <u>127.00 cuft</u>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement <u>416.47 cuft</u>	Total Volume of Tail Cement <u>108.15 Cuft</u>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <u>89.10 cuft</u>	bbbls of Tail Cement <u>22.62 bbls</u>
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement <u>505.57 cuft</u>	HOC Tail <u>221.29 ft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbbls of Lead Cement <u>117.08 bbls</u>	Sacks of Tail Cement <u>100.00 sk</u>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement <u>389.00 sk</u>	bbbls of Tail Mix Water <u>14.02 bbls</u>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbbls of Lead Mix Water <u>80.02 bbls</u>	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure <u>812.54 PSI</u>
Displacement <u>90.53 bbls</u>	Collapse PSI: <u>2020.00 psi</u>
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Burst PSI: <u>3520.00 psi</u>
Total Water Needed: <u>295.12 bbls</u>	

Authorization To Proceed

Customers hereby acknowledges and specifically agrees to the terms and condition of this work order, including, without limitation, the provisions on this work order.



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

Customer: Noble Energy  
Well Name: Fiscus Federal LD 15-77HN

Date: 10/27/2014  
INVOICE #: 13038  
LOCATION: Weld  
FOREMAN: Calvin Reimers

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**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	158pm															
MIRU	135pm															
CIRCULATE	219pm	0	300pm	60	0			0			0			0		
Drop Plug		10	303pm	100	10			10			10			10		
259pm		20	304pm	100	20			20			20			20		
		30	306pm	100	30			30			30			30		
		40	307pm	140	40			40			40			40		
M & P		50	309pm	190	50			50			50			50		
Time	Sacks	60	311pm	250	60			60			60			60		
239pm	489	70	313pm	310	70			70			70			70		
256pm		80	315pm	360	80			80			80			80		
		90	320pm	300	90			90			90			90		
		100	Bump	480	100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
Lead mixed bbls	80.02	130			130			130			130			130		
Lead % Excess	30%	140			140			140			140			140		
Lead Sacks	389	150			150			150			150			150		
<b>Notes:</b>																
Tail mixed bbls	14.02	1/2 bbl back on bleed off														
Tail % Excess	0%	Casing PSI Test 321pm 1010psi to 336pm 1040psi														
Tail Sacks	100															
Total Sacks	489															
Water Temp	52.4															
bbl Returns	27															

X Calvin Reimers  
Work Performed

X WSS  
Title

X 10/27/14  
Date