



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/5/2015  
Invoice #: 80425  
API#: 05-123-41587  
Foreman: Calvin Reimers

Customer: Noble Energy Inc.  
Well Name: Greyson LD 28-760

County: Weld  
State: Colorado  
Sec: 28  
Twp: 9N  
Range: 58W  
Consultant: JW  
Rig Name & Number: H&P 343  
Distance To Location: 75 Miles  
Units On Location: 4028-3102/4016-3211  
Time Requested: 800am  
Time Arrived On Location: 620am  
Time Left Location: 12:30 pm

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.) :	1,112	Cement Yield (cuft) :	1.49
Total Depth (ft) :	1146	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:	24
Shoe Joint Length (ft) :	45	Fluid Ahead (bbls):	40.0
Landing Joint (ft) :	29	H2O Wash Up (bbls):	10.0
Max Rate:	7	Spacer Ahead Makeup	
Max Pressure:	2500	40bbls H2O+dye in 2nd 10bbls	

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 84.71 bbls	
cuft of Shoe	19.43 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	89.10 cuft	Hydrostatic Pressure: 820.32 PSI	
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Pressure of the fluids inside casing	
cuft of Casing	593.51 cuft	Displacement: 460.17 psi	
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Shoe Joint: 33.03 psi	
Total Slurry Volume	702.04 cuft	Total 493.20 psi	
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure: 327.13 psi	
bbls of Slurry	125.03 bbls	(Total Slurry Volume) X (.1781)	
(Total Slurry Volume) X (.1781)		Collapse PSI: 2020.00 psi	
Sacks Needed	471 sk	Burst PSI: 3520.00 psi	
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)		Total Water Needed: 218.62 bbls	
Mix Water	83.91 bbls	(Sacks Needed) X (Gallons Per Sack) ÷ 42	

XJW Irwin  
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.



INVOICE #  
LOCATION  
FOREMAN  
Date

80425	Weld	win Rein	3/5/201
-------	------	----------	---------

Customer  
Well Name

**Noble Energy Inc.**  
**Greyson LD 28-760**

Treatment Report Page 2

## DESCRIPTION OF JOB EVENTS

[illegible]

x J3 I Twin

X W. S. S.

X 8-5-15  
Date