



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

Date: 8/17/2015
Invoice #: 80519
API#: _____
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
Well Name: gracie Id 22-730

County: Weld
State: Colorado
Sec: 17
Twp: 5n
Range: 63w

Consultant: jeremy
Rig Name & Number: H&P 321
Distance To Location: _____
Units On Location: 4029-3106/4027-3212
Time Requested: 1030 am
Time Arrived On Location: 915 am
Time Left Location: 1:15pm

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) : 766	Cement Yield (cuft) : 1.49
Total Depth (ft) : 776	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 30%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit:
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 60.0
Landing Joint (ft) : 35	H2O Wash Up (bbls): 10.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	

Casing ID 8.921	Casing Grade J-55 only used
Calculated Results	Displacement: 58.60 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 18.66 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus
cuft of Conductor 89.10 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 565.08 PSI
cuft of Casing 423.14 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 530.90 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 311.74 psi
bbls of Slurry 94.55 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 31.72 psi
Sacks Needed 356 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 343.47 psi
Mix Water 63.46 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 221.61 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 192.06 bbls
 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
1000	1000	1000	1000

Customer
Well Name

Noble Energy Inc.
gracie Id 22-730

80519
Weld
Kirk Kallhoff
8/17/2015

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DESCRIPTION OF JOB EVENTS

[illegible]

X WSS

X 517-15
Date

~~Work Performed~~