



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/12/2015  
Invoice #: 90024  
API#: 05-123-41563  
Supervisor: Nick

Customer: Noble Energy Inc.

Well Name: Gracie LD 22-740

County: Weld  
State: Colorado  
Sec: 28  
Twp: 9N  
Range: S8W

Consultant: Jim Turner  
Rig Name & Number: H&P 321  
Distance To Location: 60  
Units On Location: 3102/4028/4022/3211  
Time Requested: 2:00  
Time Arrived On Location: 12:34  
Time Left Location: 17:15

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft) : 765  
Total Depth (ft) : 775  
Open Hole Diameter (in.) : 13.50  
Conductor Length (ft) : 100  
Conductor ID : 15.25  
Shoe Joint Length (ft) : 43  
Landing Joint (ft) : 4  
Max Rate: 7  
Max Pressure: 1500

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 14.2  
Cement Yield (cuft) : 1.49  
Gallons Per Sack: 7.48  
% Excess: 15%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 20.0  
Fluid Ahead (bbls): 50.0  
H2O Wash Up (bbls): 20.0  
Spacer Ahead Makeup  
DYE IN SECOND 10 BBL

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 18.66 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 76.31 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 488.53 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 466.00 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 83.00 bbls  
(Total Slurry Volume) X (.1781)  
Sacks Needed 313 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 55.74 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 55.70 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 564.34 PSI

## Pressure of the fluids inside casing

Displacement: 311.31 psi

Shoe Joint: 31.72 psi

Total 343.03 psi

Differential Pressure: 221.31 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 181.44 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.



## Bison Oil Well Cementing Single Cement Surface Pipe

Customer  
Well Name

Noble Energy Inc.  
Gracie LD 22-740

INVOICE #	LOCATION	Supervisor	Date
-----------	----------	------------	------

90024
Weld
Nick
8/12/201

Treatment Report Page 2

### DESCRIPTION OF JOB EVENTS

[illegible]