



# BISON

Bison Oil Well Cementing Inc.  
1547 Gaylord Street  
Denver, CO 80206  
303-296-3010

## Invoice

| Date      | Invoice # |
|-----------|-----------|
| 5/18/2014 | 12198     |

| Bill To   |
|---|
| Noble Energy Inc.<br>Attn: Accounting<br>1625 Broadway Ste 2000<br>Denver, CO 80202 |

| Location             | Well Name & No.            | Terms  | Job Type     |      |        |
|----------------------|----------------------------|--------|--------------|------|--------|
| Weld CO              | Wells Ranch AE30-63-1A11NA | Net 30 | Surface Pipe |      |        |
| Item                 | Description                | Qty    | U/M          | Rate | Amount |
| Pump surface         | PUMP Charge-surface pipe   | 1      |              |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
| MILEAGE              | Mileage charge             | 360    |              |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
| Data Acquisition ... | Data Acquisition Charge    | 1      |              |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
| Service Charge       | Casing Psi Test            | 1      |              |      |        |
|                      | Subtotal of Services       |        |              |      |        |
| BFN III Summer ...   | BFN III Blend              | 330    | Sack         |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
| KCL Mud Flush        | (BHS 117)                  | 4      | qt           |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
| Dye - 4880           | Dye (Hot Pink 4880)        | 10     | oz           |      |        |
| Discount 15%         | Discount 15%               |        |              |      |        |
|                      | Subtotal of Materials      |        |              |      |        |

Please Remit Payment To:

Bison Oil Well Cementing, Inc.  
P.O. Box 29671  
Thornton, CO 80229

|           |  |
|-----------|--|
| Subtotal  |  |
| Sales Tax |  |
| Total     |  |
| Balance   |  |



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 5/18/2014  
Invoice #: 12198  
API#:   
Foreman: Kirk Kallhoff

Customer: Noble  
Well Name: wells ranch ae30-63-1 ahna

County: weld  
State: Colorado  
Sec: 29  
Twp: 6n  
Range: 62w  
Consultant: kevin  
Rig Name & Number: h&p277  
Distance To Location: 30  
Units On Location: 3103-3210  
Time Requested: 1000 am  
Time Arrived On Location: 900 am  
Time Left Location: 1:00 pm

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 36.00  
Casing Depth (ft) : 592  
Total Depth (ft) : 632  
Open Hole Diameter (in.) : 13.75  
Conductor Length (ft) : 100  
Conductor ID : 16  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 30

Max Rate:  
Max Pressure:

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 30%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit:  
Fluid Ahead (bbls): 60.0  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

Casing ID

8.921

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 19.53 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 89.10 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 336.36 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 444.98 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 79.25 bbls  
(Total Slurry Volume) X (.1781)  
Sacks Needed 350 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 49.14 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 44.61 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 467.44 PSI

## Pressure of the fluids inside casing

Displacement: 235.86 psi

Shoe Joint: 35.53 psi

Total 271.39 psi

Differential Pressure: 196.06 psi

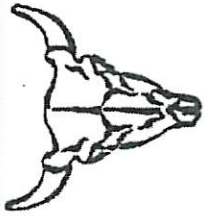
Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 173.74 bbls

X *[Signature]*  
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 #  
LOCATION  
FOREMAN  
Date

12198  
weld  
Kirk Kallhoff  
5/18/2014

Customer  
Well Name

Noble  
wells ranch ae30-63-1 ahna

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

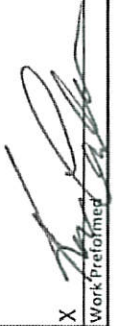
|             | Safety Meeting<br>MIRU<br>CIRCULATE<br>Drop Plug<br>1147 am | 1058am<br>1035am<br>1118am | Displace 1 |        |     | Displace 2 |      |     | Displace 3 |      |     | Displace 4 |      |     | Displace 5 |      |     |
|-------------|---|----------------------------|------------|--------|-----|------------|------|-----|------------|------|-----|------------|------|-----|------------|------|-----|
|             |   |                            | BBLs       | Time   | PSI | BBLs       | Time | PSI | BBLs       | Time | PSI | BBLs       | Time | PSI | BBLs       | Time | PSI |
|             |   |                            | 0          | 1147am | 10  | 0          |      |     | 0          |      |     | 0          |      |     | 0          |      |     |
|             |   |                            | 10         | 1150am | 90  | 10         |      |     | 10         |      |     | 10         |      |     | 10         |      |     |
|             |   |                            | 20         | 1152am | 180 | 20         |      |     | 20         |      |     | 20         |      |     | 20         |      |     |
|             |   |                            | 30         | 1154am | 240 | 30         |      |     | 30         |      |     | 30         |      |     | 30         |      |     |
|             |   |                            | 40         | 1157am | 250 | 40         |      |     | 40         |      |     | 40         |      |     | 40         |      |     |
|             |   |                            | 50         |        |     | 50         |      |     | 50         |      |     | 50         |      |     | 50         |      |     |
|             |   |                            | 60         |        |     | 60         |      |     | 60         |      |     | 60         |      |     | 60         |      |     |
|             |   |                            | 70         |        |     | 70         |      |     | 70         |      |     | 70         |      |     | 70         |      |     |
|             |   |                            | 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        |      |     |
|             |   |                            | 130        |        |     | 130        |      |     | 130        |      |     | 130        |      |     | 130        |      |     |
|             |   |                            | 140        |        |     | 140        |      |     | 140        |      |     | 140        |      |     | 140        |      |     |
|             |   |                            | 150        |        |     | 150        |      |     | 150        |      |     | 150        |      |     | 150        |      |     |
| % Excess    |   | -6%                        |            |        |     |            |      |     |            |      |     |            |      |     |            |      |     |
| Mixed bbls  |   | 46.3                       |            |        |     |            |      |     |            |      |     |            |      |     |            |      |     |
| Total Sacks |   | 330                        |            |        |     |            |      |     |            |      |     |            |      |     |            |      |     |
| bbl Returns |   | 10                         |            |        |     |            |      |     |            |      |     |            |      |     |            |      |     |
| Water Temp  |   |                            |            |        |     |            |      |     |            |      |     |            |      |     |            |      |     |

Notes:

bumped plug at 1200 pm 420 psi

casing test 1000 psi for 15 min

74.6 bbls slurry

X 

X Title

X 5-18-14  
Date