# BISON

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

# Invoice

| Date | Invoice # |
|---|---|
| 12/2/2013 | 12531 |

| 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 | [redacted] | 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 | Cassing Test | 1 | | | |
| HOURS | Wait Time | 1 | | | |
| | Subtotal of Services | | | | |
| BFN III Winter ... | BFN III Blend | [redacted] | Sack | | |
| Discount 15% | Discount 15% | | | | |
| KCL Mud Flush | (BHS 117) | 5 | qt | | |
| Discount 15% | Discount 15% | | | | |
| Dye - 4880 | Dye (Hot Pink 4880) | 16 | oz | | |
| Discount 15% | Discount 15% | | | | |
| | Subtotal of Materials | | | | |

Please Remit Payment To:

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

| | |
|---|---|
| Subtota | |
| Sales Ta | |
| **Total** | |
| Balance | |

# Bison Oil Well Cementing
## Single Cement Surface Pipe

Date: 12/2/2013
Invoice # 12431
API# 445564
Foreman: MONTE

**Customer:** noble
**Well Name:** nclp aa04-671hn

County: WELD
State: Colorado

Sec: 4
Twp: 6n
Range: 63w

Consultant: tawn
Rig Name & Number: patterson 828
Distance To Location: 31
Units On Location: 3106-3204
Time Requested: 9:00am
Time Arrived On Location: 8:40am
Time Left Location: 1:45

### WELL DATA

| | |
|---|---|
| Casing Size OD (in) : | 9.6250 |
| Casing Weight (lb) : | 36 |
| Casing Depth (ft.) : | 705 |
| Total Depth (ft) : | 715 |
| Open Hole Diameter (in.) : | 13.75 |
| Conductor Length (ft) : | 101 |
| Conductor ID : | 15.5 |
| Shoe Joint Length (ft) : | 44 |
| Landing Joint (ft) : | 16 |
| 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: | 20% |
| Displacement Fluid lb/gal: | 8.3 |
| BBL to Pit: | |
| Fluid Ahead (bbls): | |
| H20 Wash Up (bbls): | 20.0 |

Spacer Ahead Makeup
10 fresh 10 dye 40 fresh

Casing ID 8.921 Casing Grade J-55 only used

### Calculated Results

**cuft of Shoe** 18.93 cuft
(Casing ID Squared) X ( .005454) X (Shoe Joint ft)

**cuft of Conductor** 81.31 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

**cuft of Casing** 317.63 cuft
(Open Hole Squared)-(Casing Size Squared) X ( .005454) X (Casing Depth - Conductor Length )

**Total Slurry Volume** 417.88 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 89.31 bbls
(Total Slurry Volume) X (.1781) X (% Excess Cement)

**Sacks Needed** 395 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 55.37 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 52.37 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

**Pressure of cement in annulus**
Hydrostatic Pressure: 556.67 PSI

**Pressure of the fluids inside casing**
Displacement: 285.17 psi
Shoe Joint: 34.44 psi
Total 319.62 psi

Differential Pressure: 237.05 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 75.37 bbls

X
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 | noble |
| Well Name | nclp aa04-671hn |

| | |
|---|---|
| INVOICE # | 12431 |
| LOCATION | WELD |
| FOREMAN | MONTE |
| Date | 12/2/2013 |

**Treatment Report Page 2**

## DESCRIPTION OF JOB EVENTS

| | |
|---|---|
| Safety Meeting | 11:00am |
| MIRU | 8:45 |
| CIRCULATE | 11:25 |
| Drop Plug | |
| 12:06 | |
| | |
| | |
| M & P | |

| Time | Sacks |
|---|---|
| 11:37-12:03 | 395 |
| | |
| | |
| | |
| | |
| % Excess | 20% |
| Mixed bbls | 55.5 |
| Total Sacks | 396 |
| | |
| bbl Returns | 21 |

| 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 | 12:08 | 90 | 0 | | | 0 | | | 0 | | | 0 | | |
| 10 | 12:10 | 90 | 10 | | | 10 | | | 10 | | | 10 | | |
| 20 | 12:12 | 160 | 20 | | | 20 | | | 20 | | | 20 | | |
| 30 | 12:14 | 230 | 30 | | | 30 | | | 30 | | | 30 | | |
| 40 | 12:16 | 270 | 40 | | | 40 | | | 40 | | | 40 | | |
| 50 | 12:18 | 250 | 50 | | | 50 | | | 50 | | | 50 | | |
| 60 | 12:20 | 450 | 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 | | |

Notes:

safty meeting, miru, pressure test per company man, circulate 50 bbls ahead with dye in 2nd 10. mix and pump 396 sks at 20% excess, drop plug and displace 58.37 b

52.3 bbls h2o, bump plug at 12:20pm at 450 psi, raise to 1000 and hold 15 min

21 bbls back to pit, 20 % excess

X _____ Work Preformed

X WSS Title

X 12/2/13 Date