



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

Date: 1/1/2015

Invoice # 45101

API# 05-123-39809

Foreman: JASON KELEHER

**Customer:** Noble Energy Inc.

**Well Name:** GRADISHAR STATE LD11-73-1AHN

County: Weld

State: Colorado

Sec: 2

Twp: 9N

Range: 58W

Consultant: JIM

Rig Name & Number: H&P 343

Distance To Location: 82

Units On Location: 4031-3107/ 4024-3203

Time Requested: 1100

Time Arrived On Location: 1100

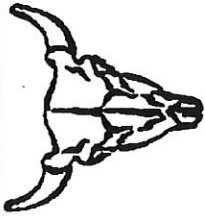
Time Left Location: 2000

| <b>WELL DATA</b>                        | <b>Cement Data</b>                    |
|-----------------------------------------|---------------------------------------|
| Casing Size OD (in) : <u>9.625</u>      | Cement Name: <u>BFN III</u>           |
| Casing Weight (lb) : <u>36.00</u>       | Cement Density (lb/gal) : <u>14.2</u> |
| Casing Depth (ft.) : <u>1,221</u>       | Cement Yield (cuft) : <u>1.49</u>     |
| Total Depth (ft) : <u>1231</u>          | Gallons Per Sack: <u>7.48</u>         |
| Open Hole Diameter (in.) : <u>13.50</u> | % Excess: <u>25%</u>                  |
| Conductor Length (ft) : <u>100</u>      | Displacement Fluid lb/gal: <u>8.3</u> |
| Conductor ID : <u>15.25</u>             | BBL to Pit: <u>29.0</u>               |
| Shoe Joint Length (ft) : <u>44</u>      | Fluid Ahead (bbls): <u>40.0</u>       |
| Landing Joint (ft) : <u>29</u>          | H2O Wash Up (bbls): <u>20.0</u>       |
| Max Rate: <u>6</u>                      | Spacer Ahead Makeup                   |
| Max Pressure: <u>1000</u>               | <b>40 BBL WATER W/ DYE IN 2ND 10</b>  |

| Casing ID                                                                                  | 8.921  | Casing Grade                                                                                                      | J-55 only used                              |
|--------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| <b>Calculated Results</b>                                                                  |        | <b>Displacement: 93.23 bbls</b><br>(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint) |                                             |
| cuft of Shoe                                                                               | 19.10  | cuft                                                                                                              | <b>Pressure of cement in annulus</b>        |
| (Casing ID Squared) X (.005454) X (Shoe Joint ft)                                          |        |                                                                                                                   |                                             |
| cuft of Conductor                                                                          | 76.31  | cuft                                                                                                              | Hydrostatic Pressure: <u>900.73 PSI</u>     |
| (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)    |        |                                                                                                                   | <b>Pressure of the fluids inside casing</b> |
| cuft of Casing                                                                             | 685.38 | cuft                                                                                                              |                                             |
| (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length ) |        |                                                                                                                   | Shoe Joint: <u>32.46 psi</u>                |
| Total Slurry Volume                                                                        | 780.79 | cuft                                                                                                              | Total <u>539.96 psi</u>                     |
| (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)                                    |        |                                                                                                                   | Differential Pressure: <u>360.77 psi</u>    |
| bbls of Slurry                                                                             | 139.06 | bbls                                                                                                              | Collapse PSI: <u>2020.00 psi</u>            |
| (Total Slurry Volume) X (.1781)                                                            |        |                                                                                                                   |                                             |
| Sacks Needed                                                                               | 524    | sk                                                                                                                | Burst PSI: <u>3520.00 psi</u>               |
| (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)                                 |        |                                                                                                                   | Total Water Needed: <u>246.56 bbls</u>      |
| Mix Water                                                                                  | 93.33  | bbls                                                                                                              |                                             |
| (Sacks Needed) X (Gallons Per Sack) ÷ 42                                                   |        |                                                                                                                   |                                             |

X Jason Keleher  
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.  
GRADISHAR STATE LD11-73-1AHN

INVOICE #  
LOCATION  
FOREMAN  
Date

45101  
Weld  
JASON KELEHER  
1/1/2015

Treatment Report Page 2

**DESCRIPTION OF JOB EVENTS**

|                | 1700<br>1600<br>1739 | Displace 1 |      | Displace 2 |      | Displace 3 |      | Displace 4 |      | Displace 5 |      |
|----------------|----------------------|------------|------|------------|------|------------|------|------------|------|------------|------|
|                |                      | BbLS       | Time | BbLS       | Time | BbLS       | Time | BbLS       | Time | BbLS       | Time |
| Safety Meeting |                      | 0          | 1832 | 0          |      | 0          |      | 0          |      | 0          |      |
| MIRU           |                      | 10         | 1834 | 50         |      | 10         |      | 10         |      | 10         |      |
| CIRCULATE      |                      | 20         | 1836 | 50         |      | 20         |      | 20         |      | 20         |      |
| Drop Plug      |                      | 30         | 1838 | 50         |      | 30         |      | 30         |      | 30         |      |
| 1832           |                      | 40         | 1840 | 110        |      | 40         |      | 40         |      | 40         |      |
| M & P          |                      | 50         | 1842 | 220        |      | 50         |      | 50         |      | 50         |      |
| Time           | Sacks                | 60         | 1844 | 300        |      | 60         |      | 60         |      | 60         |      |
| 1749-1829      | 524                  | 70         | 1846 | 330        |      | 70         |      | 70         |      | 70         |      |
|                |                      | 80         | 1848 | 380        |      | 80         |      | 80         |      | 80         |      |
|                |                      | 90         | 1850 | 390        |      | 90         |      | 90         |      | 90         |      |
|                |                      | 100        | 1852 | 390        |      | 100        |      | 100        |      | 100        |      |
|                |                      | 110        | BUMP | 930        |      | 110        |      | 110        |      | 110        |      |
| % Excess       | 25%                  | 120        |      |            |      | 120        |      | 120        |      | 120        |      |
| Mixed bbls     | 93.3                 | 130        |      |            |      | 130        |      | 130        |      | 130        |      |
| Total Sacks    | 524                  | 140        |      |            |      | 140        |      | 140        |      | 140        |      |
| bbl Returns    | 29                   | 150        |      |            |      | 150        |      | 150        |      | 150        |      |
| Water Temp     | 40                   |            |      |            |      |            |      |            |      |            |      |

Notes:

PERFORMED PRESSURE TEST TO 1500 PSI AT 1737, PUMPED 40 BBL WATER W/ DYE IN 2ND 10 AT 1739, MIXED AND PUMPED 524 SKS AT 14.2, 139 BBL AT 1749, SHUT DOWN AT 1829, STARTED DISPLACEMENT AT 1832, PLUG LANDED AT 390 PSI AT 1852 AND PRESSURED UP TO 930 PSI, HELD FOR 1 MINUTES AND PRESSURED UP TO 1000 PSI TO PERFORM CASING TEST, HELD FOR 10 MINUTES AND THEN RELEASED AND GOT .5 BBL BACK AND

FLOATS HELD

*[Signature]*

X *Company Name*  
Title

X 1-1-15  
Date

X Work Performed