# Bison Oil Well Cementing
## Tail & Lead

| | |
|---|---|
| **Date:** | 4/21/2020 |
| **Invoice #** | 200594 |
| **API#** | 05-123-48575 |
| **Foreman:** | Matthew Rosales |

**Customer:** Noble Energy Inc.
**Well Name:** Guttersen D34-729

**Consultant:** Gery

| | |
|---|---|
| **County:** Weld | **Rig Name & Number:** H&P 517 |
| **State:** Colorado | **Distance To Location:** 24 |
| | **Units On Location:** 4047/4024/4034 |
| **Sec:** 22 | **Time Requested:** 1000pm |
| **Twp:** 3N | **Time Arrived On Location:** 900pm |
| **Range:** 64W | **Time Left Location:** |

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## WELL DATA

| | |
|---|---|
| Casing Size (in) : | 9.625 |
| Casing Weight (lb) : | 36 |
| Casing Depth (ft.) : | 1,879 |
| Total Depth (ft) : | 1924 |
| Open Hole Diameter (in) : | 13.50 |
| Conductor Length (ft) : | 110 |
| Conductor ID : | 15.15 |
| Shoe Joint Length (ft) : | 36 |
| Landing Joint (ft) : | 3 |

| | |
|---|---|
| Sacks of Tail Requested | 100 |
| HOC Tail (ft): | 0 |

One or the other, cannot have quantity in both

| | |
|---|---|
| **Max Rate:** | 8 |
| **Max Pressure:** | 2500 |

## Cement Data

### Lead

| | |
|---|---|
| Cement Name: | BFN III |
| Cement Density (lb/gal) : | 13.5 |
| Cement Yield (cuft) : | 1.68 |
| Gallons Per Sack | 8.90 |
| % Excess | 10% |

### Tail     Type III

| | |
|---|---|
| Cement Name: | |
| Cement Density (lb/gal) : | 15.2 |
| Cement Yield (cuft) : | 1.27 |
| Gallons Per Sack: | 5.80 |
| % Excess: | 0% |

| | |
|---|---|
| **Fluid Ahead (bbls)** | 30.0 |
| **H20 Wash Up (bbls)** | 20.0 |

### Spacer Ahead Makeup
30 BBL ahed with Die in 2nd 10

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**Casing ID**    8.921       **Casing Grade**    J-55 only used

## Lead Calculated Results

| | |
|---|---|
| **HOC of Lead** | **1538.52 ft** |
| Casing Depth - HOC Tail | |
| **Volume of Lead Cement** | **751.92 cuft** |
| HOC of Lead X Open Hole Ann | |
| **Volume of Conductor** | **82.12 cuft** |
| (Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft) | |
| **Total Volume of Lead Cement** | **834.04 cuft** |
| (cuft of Lead Cement) + (Cuft of Conductor) | |
| **bbls of Lead Cement** | **163.40 bbls** |
| (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess) | |
| **Sacks of Lead Cement** | **546.10 sk** |
| (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement) | |
| **bbls of Lead Mix Water** | **115.72 bbls** |
| (Sacks Needed) X (Gallons Per Sack) ÷ 42 | |
| **Displacement** | **142.73 bbls** |
| (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length) | |
| **Total Water Needed:** | **322.26 bbls** |

## Tail Calculated Results

| | |
|---|---|
| **Tail Cement Volume In Ann** | **127.00 cuft** |
| (HOC Tail) X (OH Ann) | |
| **Total Volume of Tail Cement** | **111.37 Cuft** |
| (HOC Tail X OH Ann) - ( Shoe Length X Shoe Joint Ann) | |
| **bbls of Tail Cement** | **22.62 bbls** |
| (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess) | |
| **HOC Tail** | **227.88 ft** |
| (Tail Cement Volume) ÷ (OH Ann) | |
| **Sacks of Tail Cement** | **100.00 sk** |
| (Total Volume of Tail Cement) ÷ (Cement Yield) | |
| **bbls of Tail Mix Water** | **13.81 bbls** |
| (Sacks of Tail Cement X Gallons Per Sack) ÷ 42 | |
| **Pressure of cement in annulus** | |
| **Hydrostatic Pressure** | **585.23 PSI** |
| **Collapse PSI:** | **2020.00 psi** |
| **Burst PSI:** | **3520.00 psi** |

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Authorization To Proceed

# Bison Oil Well Cementing
## Two Cement Surface Pipe

| | |
|---|---|
| Date | 4/21/2020 |
| INVOICE # | 200594 |
| LOCATION | Weld |
| FOREMAN | Matthew Rosales |

| | |
|---|---|
| Customer | Noble Energy Inc. |
| Well Name | Guttersen D34-729 |

**Treatment Report Page 2**

| Amount Pumped | | Time | Event | Description | Rate | BBLs | Pressure |
|---|---|---|---|---|---|---|---|
| Lead mixed bbls | 163.4 | 900 pm | ARRIVE ON LOCATION | ASSESS LOCATION | | | |
| Lead % Excess | 10% | 1030pm | JSA | Bison/SPOT EQUIPMENT IN | | | |
| Lead Sacks | 547 | 1035 pm | JSA | Bison and Rig Crew | | | |
| | | 1047 pm | PRESSURE TEST | PRESSURE TEST TO 900 PSI | 0.5 | 0.5 | 900 |
| | | 1049 pm | SPACER AHEAD | WATER S. | 5.5 | 30 | 120 |
| Tail mixed bbls | 22 | 1053 pm | LEAD CEMENT | CEMENT MIXED AT 13.5 PPG PG. | 5.6 | 163.4 | 220 |
| Tail % Excess | 0% | 1121 pm | TAIL CEMENT | CEMENT MIXED AT 15.2 PPG PG. | 6.5 | 22.6 | 330 |
| Tail Sacks | 100 | 1126 | SHUT DOWN | | | | |
| | | 1128 pm | DROP PLUG | | | | |
| Total Sacks | 647 | 1130 pm | DISPLACEMENT | Bison to DISPLACE | 5.6 | 142.7 | 560 |
| Water Temp | 60 | 1158 pm | Bump Plug | | 3 | 142.7 | 800 |
| bbl Returns | 22 | 1200 am | Casing TEST | 1000 psi 15 min | 0.5 | 0.5 | 1050 |
| | | 1215 am | Check Floats | FLOATS HELD 1 BBL BACK | | | |
| Notes: | | 1230am | RIG DOWN | PRE RIG DOWN MEETING | | | |
| Montered well for | | 100am | Leave Location | | | | |
| 30 Min. No top out | | | | | | | |
| Needed | | | | | | | |

X _____
Work Preformed

X _____
Title

X _____
Date

# Noble
## Guttersen D34-729
## Surface