



**Bison Oil Well Cementing
Tail & Lead**

Date: 7/6/2018

Invoice # 666332

API# 05-123-46769

Supervisor: Nick Vigil

Customer: Noble Energy Inc.
Well Name: Hurley H26-724

County: Weld
State: Colorado

Sec: 19
Twp: 6N
Range: 63W

Consultant: Gary
Rig Name & Number: H&P 517
Distance To Location: 15 miles
Units On Location: 4023/4032
Time Requested: 11:00
Time Arrived On Location: 10:40
Time Left Location:

| WELL DATA | Cement Data |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Casing Size (in) : 9.625 Casing Weight (lb) : 36 Casing Depth (ft.) : 1,944 Total Depth (ft) : 1954 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 80 Conductor ID : 15.25 Shoe Joint Length (ft) : 42 Landing Joint (ft) :</p> <p>Sacks of Tail Requested 100 HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8 Max Pressure: 2000</p> | <p>Lead Cement Name: Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.7 Gallons Per Sack 9.00 % Excess 15%</p> <p>Tail Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.89 % Excess: 0%</p> <p>Fluid Ahead (bbls) 30.0 H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup Dye in second 10 bbl</p> |

Casing ID 8.921 Casing Grade J-55 only used

| Lead Calculated Results | |
|---------------------------------------------------------------------------------------|--------------------|
| HOC of Lead | 1632.44 ft |
| Casing Depth - HOC Tail | |
| Volume of Lead Cement | 797.82 cuft |
| HOC of Lead X Open Hole Ann | |
| Volume of Conductor | 61.05 cuft |
| (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft) | |
| Total Volume of Lead Cement | 858.87 cuft |
| (cuft of Lead Cement) + (Cuft of Conductor) | |
| bbls of Lead Cement | 175.91 bbls |
| (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess) | |
| Sacks of Lead Cement | 581.00 sk |
| (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement) | |
| bbls of Lead Mix Water | 124.50 bbls |
| (Sacks Needed) X (Gallons Per Sack) ÷ 42 | |
| Displacement | 147.72 bbls |
| (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length) | |
| Total Water Needed: | 336.24 bbls |

| Tail Calculated Results | |
|-------------------------------------------------------------------------------------|-------------|
| Tail Cement Volume In Ann | 127.00 cuft |
| (HOC Tail) X (OH Ann) | |
| Total Volume of Tail Cement | 108.77 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 | 222.56 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 | 14.02 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 |

Gary Steptator
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
Two Cement Surface Pipe**

Customer: Noble Energy Inc.
Well Name: Hurley H26-724

Date: 7/6/2018
INVOICE #: 666332
LOCATION: Weld
FOREMAN: Nick Vigil
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DESCRIPTION OF JOB EVENTS

| Amount Pumped | Time/Date | Event | Description | Rate | BBLs | Pressure |
|-----------------|-----------|-------|----------------------|------|------|----------|
| Lead mixed bbls | 175.9 | 10:40 | Arrive On Location | | | |
| Lead % Excess | 15% | 10:45 | Well Site Assessment | | | |
| Lead Sacks | 581 | 12:15 | Rig Up Equipment | | | |
| | | 12:45 | JSA | | | |
| | | 12:58 | Test Lines | | | |
| Tail mixed bbls | 22.6 | 13:00 | Spacer Ahead | | | |
| Tail % Excess | 0% | 13:06 | Lead Cement | | | |
| Tail Sacks | 100 | 13:40 | Tail Cement | | | |
| | | 13:46 | Shut Down | | | |
| Total Sacks | 681 | 13:47 | Drop Plug | | | |
| Water Temp | 60 | 13:48 | Displace | | | |
| bbl Returns | 33 | 14:12 | Bump Plug | | | |
| Notes: | | 14:13 | Casing Test | | | |
| | | 14:28 | Check Floats | | | |
| | | 14:40 | End Job | | | |
| | | 14:45 | Rig Down Equipment | | | |
| | | 15:00 | Crew Left Location | | | |

X Nancy Stepletor
Signature

X WSS
Title

X 7-6-18
Date

Hurley H26-724

