



Bison Oil Well Cementing Tail & Lead

Date: 3/8/2020

Invoice #: 200586

API#

Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: guttersen d34-779

County: Weld

State: Colorado

Sec: 22

Twp: 3N

Range: 64W

Consultant: jim

Rig Name & Number: H&P 321

Distance To Location: 21

Units On Location: 4047/4034/4024

Time Requested: 830 am

Time Arrived On Location: 700 am

Time Left Location: 1:34pm

WELL DATA

Casing Size (in) : 9.625
 Casing Weight (lb) : 36
 Casing Depth (ft.) : 1,920
 Total Depth (ft) : 1965
 Open Hole Diameter (in) : 13.50
 Conductor Length (ft) : 110
 Conductor ID : 15.15
 Shoe Joint Length (ft) : 40
 Landing Joint (ft) : 35

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
 H2O Wash Up (bbls) : 20.0

Spacer Ahead Makeup

30 BBL ahead with Die in 2nd 10

Casing ID

8.921

Casing Grade

J-55 only used

Lead Calculated Results

HOC of Lead : 1550.67 ft
 Casing Depth - HOC Tail
Volume of Lead Cement : 757.86 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 : 839.98 cuft
 (cuft of Lead Cement) + (Cuft of Conductor)
bbls of Lead Cement : 164.56 bbls
 (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)
Sacks of Lead Cement : 549.99 sk
 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
bbls of Lead Mix Water : 116.54 bbls
 (Sacks Needed) X (Gallons Per Sack) ÷ 42
Displacement : 148.03 bbls
 (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe
 Length)
Total Water Needed: 328.38 bbls

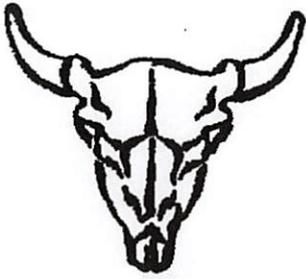
Tail Calculated Results

Tail Cement Volume In Ann : 127.00 cuft
 (HOC Tail) X (OH Ann)
Total Volume of Tail Cement : 109.64 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 : 224.33 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

X

Authorization To Proceed



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

Customer
Well Name

| |
|-------------------|
| Noble Energy Inc. |
| guttersen d34-779 |

Date
INVOICE #
LOCATION
FOREMAN

| |
|---------------|
| 3/8/2020 |
| 200586 |
| Weld |
| Kirk Kallhoff |

Treatment Report Page 2

| Amount Pumped | Time | Event | Description | Rate | BBLs | Pressure |
|--------------------|-------|---------|--------------------|------|-------|----------|
| Lead mixed bbls | 118.6 | 700 am | ARRIVE ON LOCATION | | | |
| Lead % Excess | 12% | 1000 am | JSA | | | |
| Lead Sacks | 559 | 1045 am | JSA | | | |
| | | 1108 am | PRESSURE TEST | | | 1300 |
| | | 1109 am | SPACER AHEAD | 5 | 30 | 200 |
| Tail mixed bbls | 13.81 | 1114 am | LEAD CEMENT | 6 | 164.5 | 220 |
| Tail % Excess | 0% | 1150 am | TAIL CEMENT | 4 | 22.6 | 300 |
| Tail Sacks | 100 | 1156 am | SHUT DOWN | | | |
| | | 1200 pm | DROP PLUG | | | |
| Total Sacks | 659 | 1200 pm | DISPLACEMENT | 8 | 148 | 350 |
| Water Temp | 60 | 1232 pm | Bump Plug | 3 | 148 | 600 |
| bbl Returns | 30 | 1233 pm | Casing TEST | | | 1080 |
| | | 1248 pm | Check Floats | | | |
| Notes: | | 110 pm | RIG DOWN | | | |
| Montered well for | | 130 pm | Leave Location | | | |
| 30 Min. No top out | | | | | | |
| Needed | | | | | | |

X _____
Work Preformed

X WSS
Title

X 3-8-20
Date

SERIES 2000

— PSI — Barrels / Minute — Barrels — Lbs / Gallon — Stage Volume

