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

| | |
|---|---|
| Customer | Anadarko Petroleum Corporation |
| Well Name | prowant 18-5hz |

| | |
|---|---|
| INVOICE # | 200578 |
| LOCATION | Weld |
| FOREMAN | Kirk Kallhoff |
| Date | 3/2/2020 |

**Treatment Report Page 2**

## DESCRIPTION OF JOB EVENTS

| Amount Pumped | | | Event | Description | Rate | BBLs | Pressure |
|---|---|---|---|---|---|---|---|
| % Excess | 10% | 800 am | arived on location | | | | |
| Mixed bbls | 122.4 | 815 am | MIRU | | | | |
| Total Sacks | 695 | 1045 am | JSA | | | | |
| bbl Returns | 18 | 1101 am | Pressure Test | | 0.5 | | 1000 |
| Water Temp | 60 | 1102 am | Spacer Ahead | 30 bbls h2o dye in 2nd 10 | 5 | 30 | 120 |
| | | 1107 am | M&P | 695 sks cement 14.2 lbs 183.2 bbls slurry | 5 | 183.2 | 250 |
| Notes: | | 1155 am | Shutdown | | | | 0 |
| | | 1157 am | Drop Plug | | | | |
| | | 1157 am | Start Displacement | 140.3 bbls h2o | 8 | | 300 |
| | | 1220 pm | Bump Plug | 140.3 bbls h2o 580 psi lift | 2 | 140.3 | 1100 |
| | | 1221 pm | Test Floats | | | | |
| | | 1222 pm | End Job | | | | |
| | | 1230 pm | Rig Down | | | | |
| | | 100 pm | Leave Location | | | | |

X _____ X Co-man X 3-2-20

Work Preformed | Title | Date

# Bison Oil Well Cementing
# Single Cement Surface Pipe

Date: 3/2/2020
Invoice # 200578
API#
Foreman: Kirk Kallhoff

**Customer:** Anadarko Petroleum Corporation
**Well Name:** prowant 18-5hz

County: Weld
State: Colorado
Sec: 18
Twp: 5n
Range: 67w

Consultant: dave
Rig Name & Number: Cartel 88
Distance To Location: 15
Units On Location: 4047/4032/4039
Time Requested: 1000 am
Time Arrived On Location: 800 am
Time Left Location: 1100pm

## WELL DATA

| | |
|---|---|
| Casing Size OD (in) : | 9.625 |
| Casing Weight (lb) : | 36.00 |
| Casing Depth (ft.) : | 1,848 |
| Total Depth (ft) : | 1858 |
| Open Hole Diameter (in.) : | 13.50 |
| Conductor Length (ft) : | 80 |
| Conductor ID : | 15.25 |
| Shoe Joint Length (ft) : | 40 |
| Landing Joint (ft) : | 8 |
| Max Rate: | 8 |
| Max Pressure: | 2000 |

## Cement Data

Cement Name: BFN III

| | |
|---|---|
| Cement Density (lb/gal) : | 14.2 |
| Cement Yield (cuft) : | 1.48 |
| Gallons Per Sack: | 7.40 |
| % Excess: | 10% |
| Displacement Fluid lb/gal: | 8.3 |
| BBL to Pit: | |
| Fluid Ahead (bbls): | 30.0 |
| H20 Wash Up (bbls): | 10.0 |

Spacer Ahead Makeup
30 bbl with Die in 2nd 10

Casing ID 8.921 Casing Grade J-55 only used

## Calculated Results

**cuft of Shoe** 17.36 cuft
(Casing ID Squared) X ( .005454) X (Shoe Joint ft)

**cuft of Conductor** 61.05 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

**cuft of Casing** 950.48 cuft
(Open Hole Squared)-(Casing Size Squared) X ( .005454) X (Casing Depth - Conductor Length )

**Total Slurry Volume** 1028.89 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 183.25 bbls
(Total Slurry Volume) X (.1781)

**Sacks Needed** 695 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 122.49 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 140.39 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

### Pressure of cement in annulus

**Hydrostatic Pressure:** 1363.27 PSI

### Pressure of the fluids inside casing

**Displacement:** 779.58 psi
**Shoe Joint:** 29.51 PSI
**Total** 809.08 psi

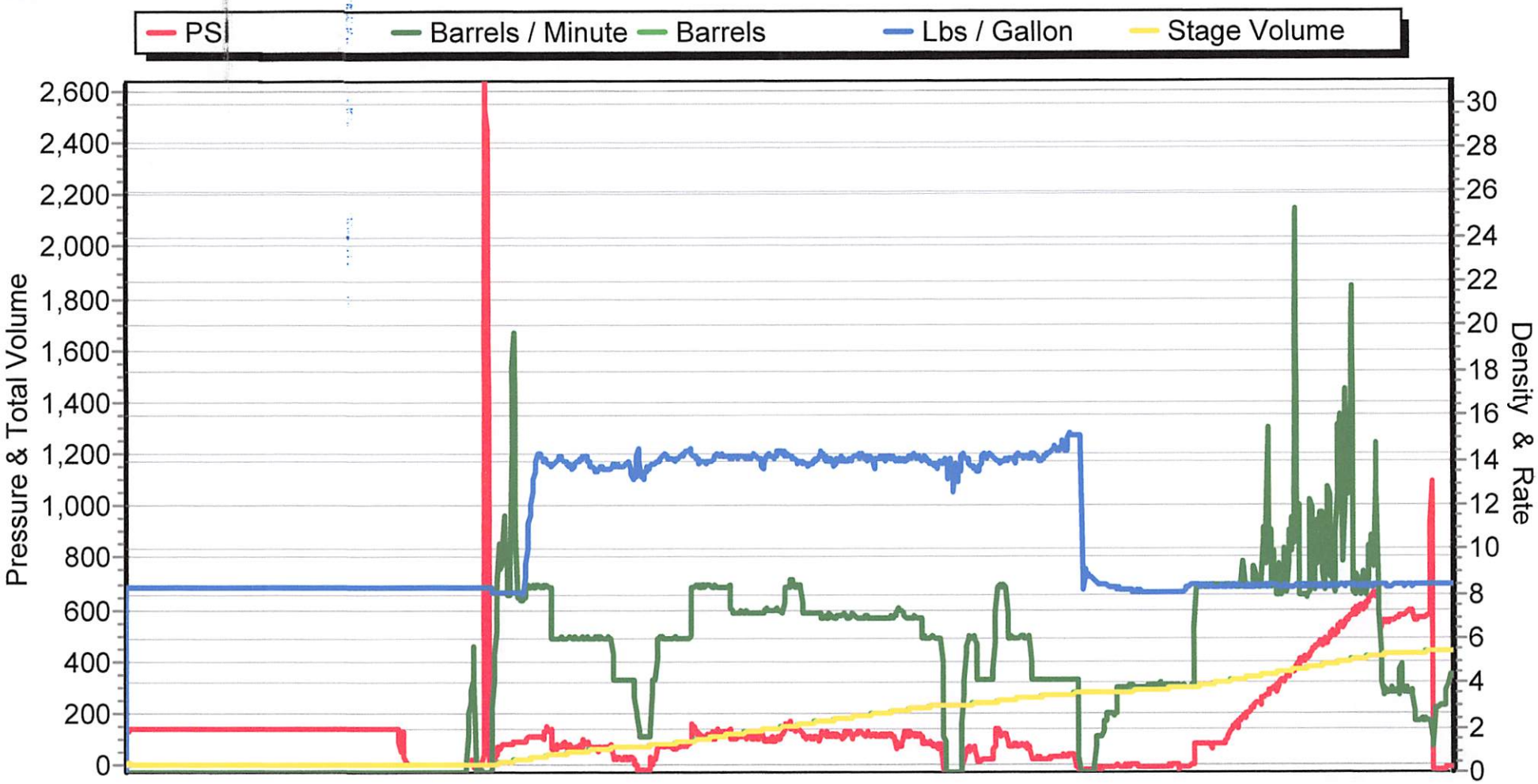
**Differential Pressure:** 554.19 psi

**Collapse PSI:** 2020.00 psi
**Burst PSI:** 3520.00 psi

**Total Water Needed:** 302.88 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.


PSI
Barrels / Minute
Barrels
Lbs / Gallon
Stage Volume
Pressure & Total Volume
Density & Rate
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0