# Bison Oil Well Cementing
# Single Cement Surface Pipe

Date: 1/31/2017
Invoice # 200027
API#
Foreman: Kirk Kallhoff

**Customer:** Anadarko Petroleum Corporation
**Well Name:** whiston 39c-33hz

County: Weld
State: Colorado
Sec: 4
Twp: 2n
Range: 67w

Consultant: lance
Rig Name & Number: wmo 252
Distance To Location: 35
Units On Location: 4028/4030/4033
Time Requested: 330 am
Time Arrived On Location: 215 am
Time Left Location: 7:30 am

## WELL DATA

| | |
|---|---|
| Casing Size OD (in) : | _9.625 |
| Casing Weight (lb) : | 36.00 |
| Casing Depth (ft.) : | 1,846 |
| Total Depth (ft) : | 1856 |
| Open Hole Diameter (in.) : | 13.50 |
| Conductor Length (ft) : | 80 |
| Conductor ID : | 15.5 |
| Shoe Joint Length (ft) : | 42 |
| Landing Joint (ft) : | 15 |
| Max Rate: | 7 |
| Max Pressure: | 1500 |

## Cement Data

| | |
|---|---|
| Cement Name: | BFN III |
| Cement Density (lb/gal) : | 14.2 |
| Cement Yield (cuft) : | 1.48 |
| Gallons Per Sack: | 7.40 |
| % Excess: | 15% |
| Displacement Fluid lb/gal: | 8.3 |
| Fluid Ahead (bbls): | 30.0 |
| H20 Wash Up (bbls): | 10.0 |

Spacer Ahead Makeup: h2o

Casing ID 8.921 Casing Grade J-55 only used

## Calculated Results

**cuft of Shoe** 18.23 cuft
(Casing ID Squared) X ( .005454) X (Shoe Joint ft)

**cuft of Conductor** 64.40 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

**cuft of Casing** 992.56 cuft
(Open Hole Squared)-(Casing Size Squared) X ( .005454) X (Casing Depth - Conductor Length )

**Total Slurry Volume** 1075.20 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

**bbls of Slurry** 191.49 bbls
(Total Slurry Volume) X (.1781)

**Sacks Needed** 726 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

**Mix Water** 128.00 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

**Displacement:** 140.62 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

### Pressure of cement in annulus

Hydrostatic Pressure: 1361.79 PSI

### Pressure of the fluids inside casing

Displacement: 777.85 psi
Shoe Joint: 30.98 psi
Total 808.83 psi

Differential Pressure: 552.96 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 308.62 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.

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

| | |
|---|---|
| Customer | Anadarko Petroleum Corporation |
| Well Name | whiston 39c-33hz |

| | |
|---|---|
| INVOICE # | 200027 |
| LOCATION | Weld |
| FOREMAN | Kirk Kallhoff |
| Date | 1/31/2017 |

**Treatment Report Page 2**

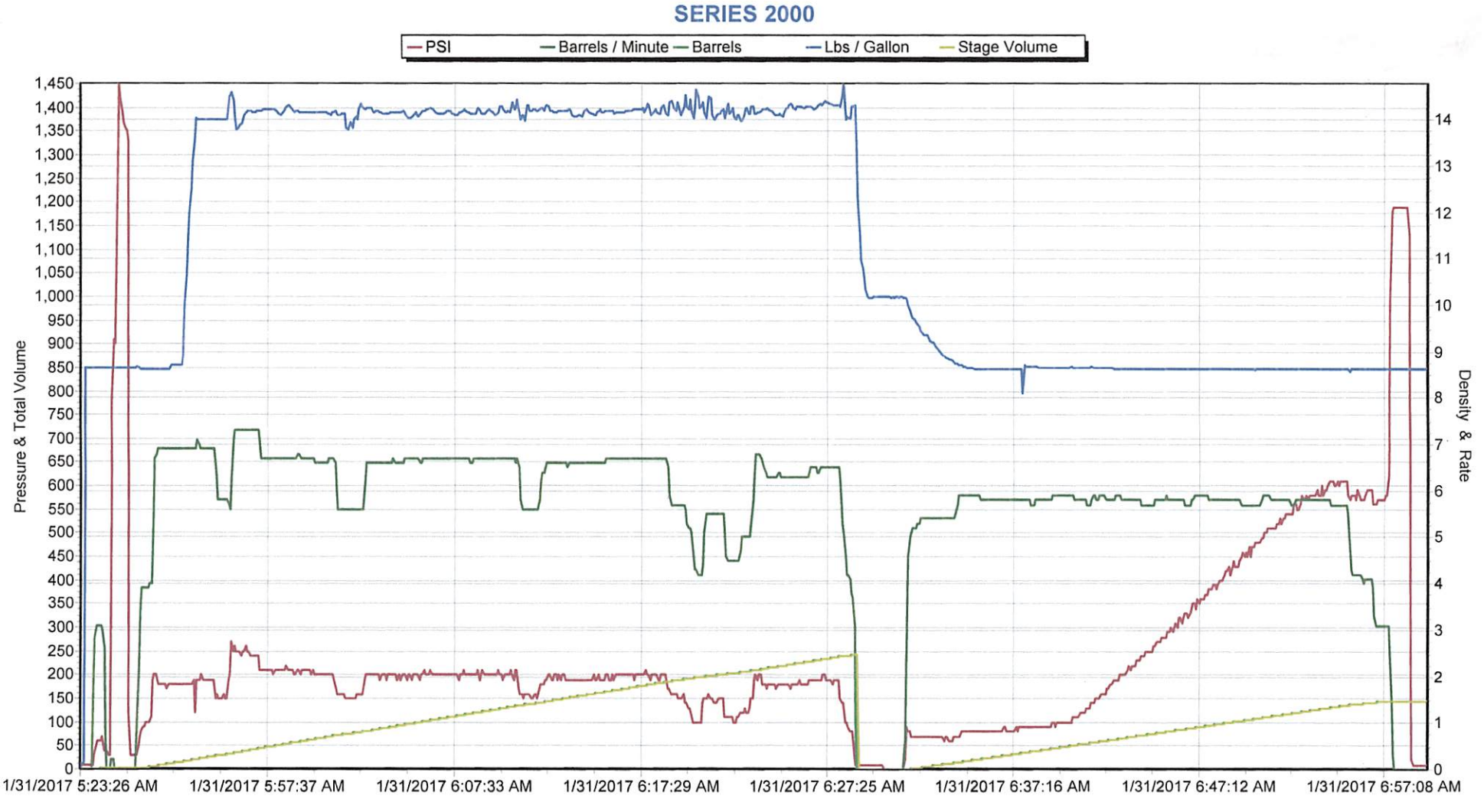
## DESCRIPTION OF JOB EVENTS

| Amount Pumped | | Time/Date | Event | Description | Rate | BBLs | Pressure |
|---|---|---|---|---|---|---|---|
| % Excess | 15% | 215 am | arrived on location | | | | |
| Mixed bbls | 128 | 230 am | Rig up | | | | |
| Total Sacks | 726 | 525 am | JSA | | | | |
| bbl Returns | 26 | 548 am | Pressure Test | | 0.5 | 1 | 1300 |
| Water Temp | 55 | 550 am | Spacer Ahead | 30 bbls h2o dye in 2nd 10 | 6 | 30 | 180 |
| | | 555 am | Lead Cement | 726 sks 14.2 lbs 1.48 yeild 191.4 bbls slurry | 5 | 191.4 | 250 |
| Notes: | | 628 am | Shutdown | | | | 0 |
| | | 631 am | Drop Plug | | | | 0 |
| | | 631 am | Start Displacement | 140.6 bbls h2o | 6 | 140.6 | 200 |
| | | 657 am | Bump Plug | 580 psi lift psi | 1.5 | 140.6 | 1180 |
| | | | | | | | |
| | | 700 am | release psi | floats held | | | |
| | | 710 am | rig down | | | | |
| | | 730 am | leave location | | | | |

x _____
Work Preformed

x Company Man
Title

x 1-31-17
Date


SERIES 2000
PSI
Barrels / Minute
Barrels
Lbs / Gallon
Stage Volume
Pressure & Total Volume
Density & Rate
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
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0
14
13
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11
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7
6
5
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2
1
0
1/31/2017 5:23:26 AM
1/31/2017 5:57:37 AM
1/31/2017 6:07:33 AM
1/31/2017 6:17:29 AM
1/31/2017 6:27:25 AM
1/31/2017 6:37:16 AM
1/31/2017 6:47:12 AM
1/31/2017 6:57:08 AM