Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 2/2/2018
Invoice # 666270
API# 05-123-45918
Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation
Well Name: Azul 13-10HZ

County: Weld
State: Colorado
Sec: 13
Twp: 1N
Range: 66W

Consultant: Brian/Levi
Rig Name & Number: Cartel 88
Distance To Location: 37 Miles
Units On Location: 4023/4039/4041
Time Requested: 4:30
Time Arrived On Location: 3:50
Time Left Location:

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,853
Total Depth (ft) :	1863
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	43
Landing Joint (ft) :	10
Max Rate:	8
Max Pressure:	2000

Cement Data

Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	5%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	
Fluid Ahead (bbls):	30.0
H20 Wash Up (bbls):	20.0

Spacer Ahead Makeup
Dye in second 10 bbl

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 18.66 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 909.84 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 989.56 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 176.24 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 664 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 118.28 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 140.70 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1366.96 PSI

Pressure of the fluids inside casing

Displacement: 780.44 psi
Shoe Joint: 31.72 psi
Total 812.16 psi

Differential Pressure: 554.80 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 308.98 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.

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LOCATION	Weld
FOREMAN	Nick Vigil
Date	2/2/2018

Customer: Anadarko Petroleum Corporatio
Well Name: Azul 13-10HZ

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DESCRIPTION OF JOB EVENTS

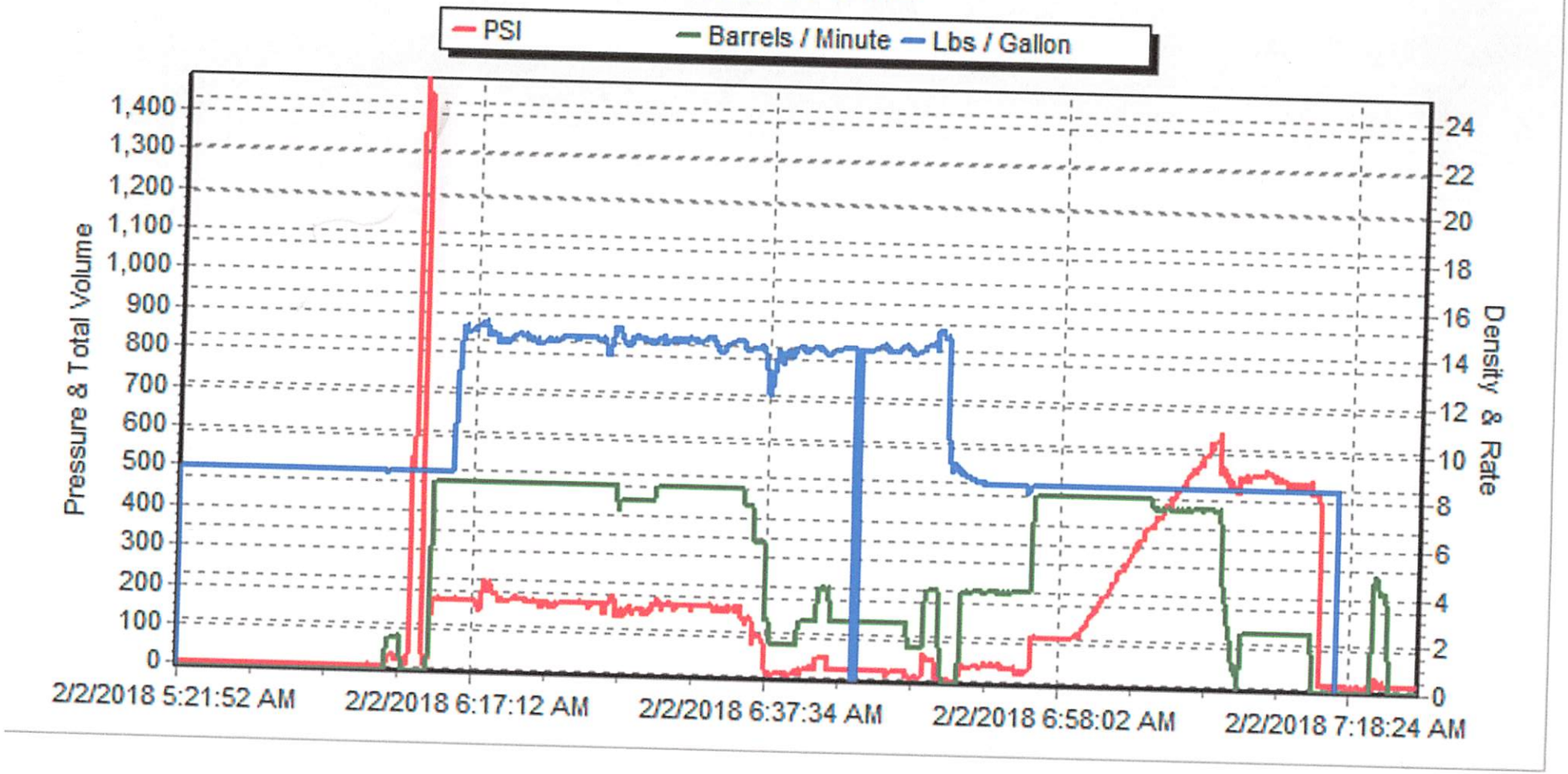
Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	5%	3:50	Arrive On Location	Rig was running casing.			
Mixed bbls	176.2	3:55	Well Site Assesment	Hazard hunt, Rig up safety meeting			
Total Sacks	664	5:30	Rig Up Equipment				
bbl Returned	10	6:00	JSA	Held Safety meeting with all personel involved in job.			
Water Temp	42	6:15	Pressure Test Lines	Pressure tested lines to 1400 psi.			
		6:17	Spacer Ahead	Fresh water with dye in second 10 bbl.	8	30	180
Notes:		6:21	Pump Cement	14.2 ppg Cement	8	176.2	120
		6:51	Shut Down				
		6:52	Drop Plug	Plug was pre loaded.			
		6:53	Pump Displacement	Fresh water	8	70	260
		7:17	Shut Down	Plug did not bump, Pumped half shoe track and shut down	2.4	140.7	
		7:18	Check Floats	Floats held, Flowed back .5 bbl.			
		7:19	End Job	Rig down safety meeting.			
		7:20	Rig Down Equipment				
		7:45	Leave Location				

X _____ Work Preformed

X Co. Man Title

X 2-2-18 Date

Azul 13-10HZ


PSI
Barrels / Minute
Lbs / Gallon
Pressure & Total Volume
Density & Rate
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
24
22
20
18
16
14
12
10
8
6
4
2
0
2/2/2018 5:21:52 AM
2/2/2018 6:17:12 AM
2/2/2018 6:37:34 AM
2/2/2018 6:58:02 AM
2/2/2018 7:18:24 AM