Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 2/3/2018
Invoice # 900252
API# 05-123-45909
Foreman: Corey Barras

Customer: Anadarko Petroleum Corporation

Well Name: Azul 13-12HZ

County: Weld
State: Colorado

Sec: 13
Twp: 1N
Range: 66W

Consultant: Matt
Rig Name & Number: Cartel 88
Distance To Location: 37
Units On Location: 027-3103/4030-3213/4024-320
Time Requested: 1100
Time Arrived On Location: 1000
Time Left Location:

WELL DATA

Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,843
Total Depth (ft) :	1853
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	44
Landing Joint (ft) :	15
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:	5%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	
Fluid Ahead (bbls):	30.0
H20 Wash Up (bbls):	20.0

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 19.10 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 904.71 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 984.86 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 175.40 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 665 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 117.25 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 140.24 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1359.58 PSI

Pressure of the fluids inside casing

Displacement: 775.69 psi
Shoe Joint: 32.46 PSI
Total 808.15 psi

Differential Pressure: 551.43 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 307.48 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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INVOICE #	900252
LOCATION	Weld
FOREMAN	Corey Barras
Date	2/3/2018

Customer	Anadarko Petroleum Corporation
Well Name	Azul 13-12HZ

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DESCRIPTION OF JOB EVENTS

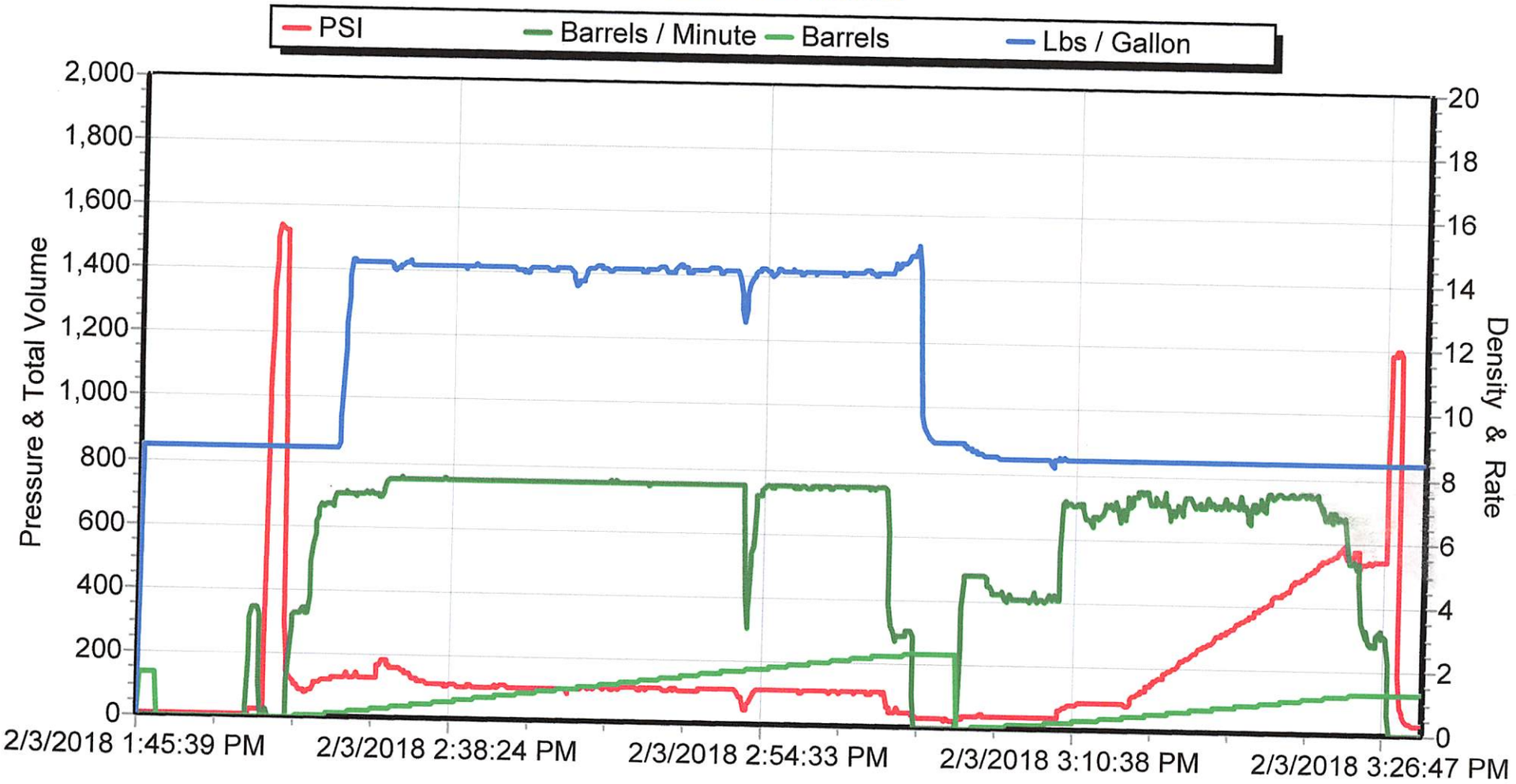
Amount Pumped			Event	Description	Rate	BBLs	Pressure
% Excess	5%	1000	What rig is doing upon Bison Arrival	Running Casing			
Mixed bbls	117.25	1015	JSA	Bison Crew			
Total Sacks	665						
bbl Returns	7	1345	Safety Meeting	Bison and Rig crew			
Water Temp	48	1420	Start Job				
		1422	Pressure Test				
Notes:							
		1424	Spacer Ahead	2nd 10 with die	6	30	70
		1430	Lead Cement	14.2 ppg	8	175	100
		1500	Shutdown				
		1502	Drop Plug	Preloaded in plug container			
		1504	Start Displacement		7	90	340
		1525	Bump Plug	500 over final lift (1180 PSI)	2	140	530
		1527	Floats Held	Held for 2 MIN with .5 bll back			
		1528	End Job				
		1530	Rig Down				
		1600	Leave Location				

X _____ Work Preformed

X C.O. Mun Title

X 2-3-18 Date

Azul 13-12HZ


PSI
Barrels / Minute
Barrels
Lbs / Gallon
Pressure & Total Volume
Density & Rate
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
20
18
16
14
12
10
8
6
4
2
0
2/3/2018 1:45:39 PM
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