Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 2/13/2018
Invoice # 666276
API# 05-123-46107
Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation
Well Name: Azul 13-14HZ

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: 4023/4032
Time Requested: 20:30
Time Arrived On Location: 19:45
Time Left Location:

WELL DATA

Casing Size OD (in) :	_9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,860
Total Depth (ft) :	1874
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 913.44 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 993.15 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 176.88 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 667 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 118.71 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 141.24 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1372.12 PSI

Pressure of the fluids inside casing

Displacement:	783.46 psi
Shoe Joint:	31.72 psi
Total	815.18 psi
Differential Pressure:	556.94 psi
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi
Total Water Needed:	309.95 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	2/14/2018

Customer: Anadarko Petroleum Corporatio
Well Name: Azul 13-14HZ

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DESCRIPTION OF JOB EVENTS

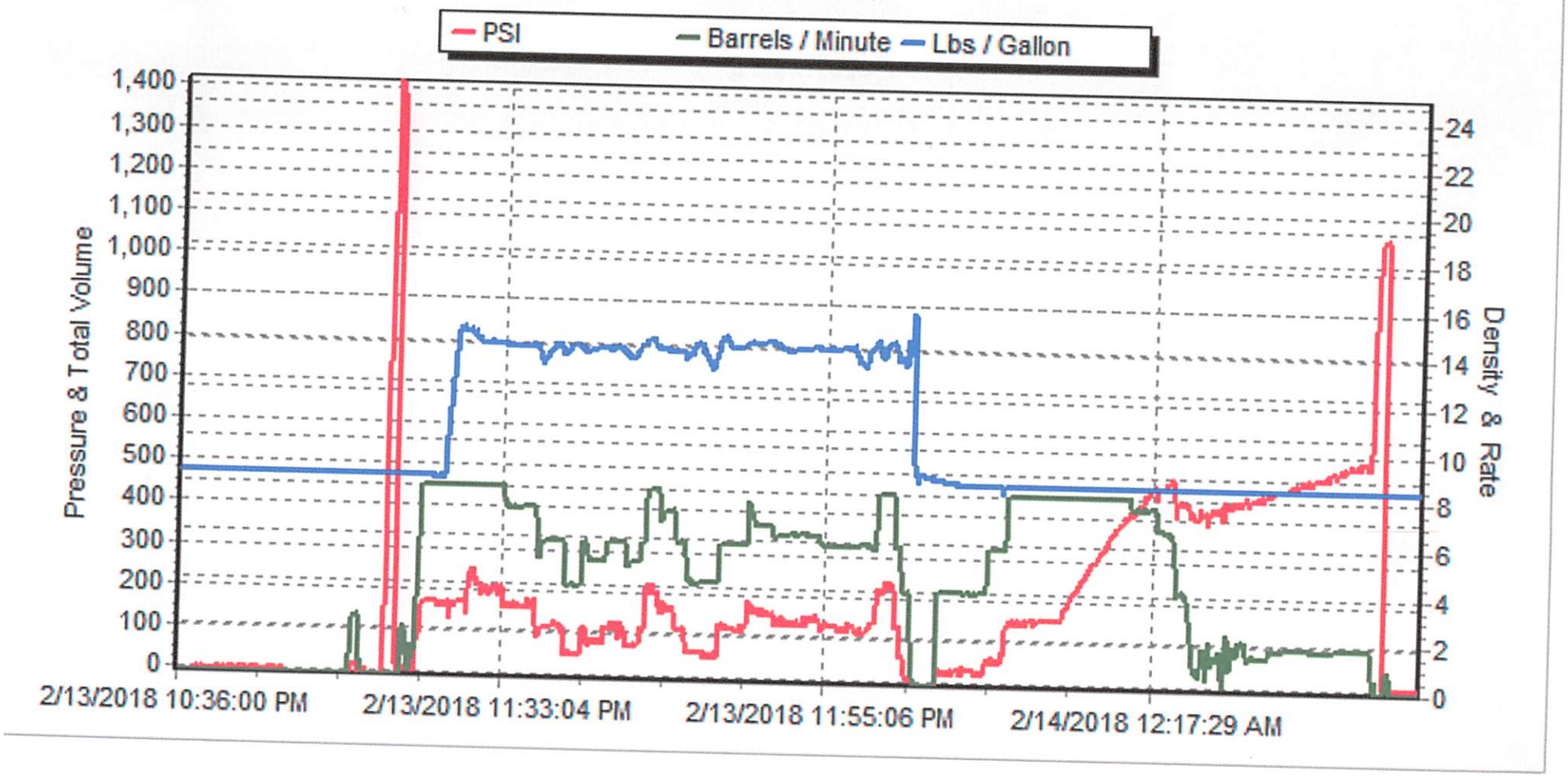
Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
% Excess	5%	19:45	Arrive On Location	Rig was running casing.			
Mixed bbls	176.8	19:50	Well Site Assesment	Hazard hunt, Rig up safety meeting			
Total Sacks	667	22:30	Rig Up Equipment				
bbl Returned	5	23:00	JSA	Held Safety meeting with all personel involved in job.			
Water Temp	42	23:25	Pressure Test Lines	Pressure tested lines to 1700 psi.			
		23:28	Spacer Ahead	Fresh water with dye in second 10 bbl.	8	30	170
Notes:		23:32	Pump Cement	14.2 ppg Cement	6.5	176.4	140
		0:02	Shut Down				
		0:03	Drop Plug	Plug was pre loaded.			
		0:04	Pump Displacement	Fresh water	8	70	290
		0:34	Bump Plug	Bumped plug 520 psi over final lift (1070 psi)	1.8	141.2	550
		0:35	Check Floats	Floats held, Flowed back .5 bbl.			
		0:36	End Job	Rig down safety meeting.			
		0:40	Rig Down Equipment				
		1:00	Leave Location				

x Chris Kellogg
Work Preformed

x WSC
Title

x 2/14/18
Date

Azul 13-14HZ


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
2/13/2018 10:36:00 PM
2/13/2018 11:33:04 PM
2/13/2018 11:55:06 PM
2/14/2018 12:17:29 AM