Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 7/4/2019
Invoice # 200467
API#
Foreman: Kirk Kallhoff

Customer: Anadarko Petroleum Corporation
Well Name: sarchet 21-4hz

County: Weld
State: Colorado
Sec: 8
Twp: 1n
Range: 65w

Consultant: bryan
Rig Name & Number: Cartel 88
Distance To Location: 21
Units On Location: 4047/4033/4023
Time Requested: 700 am
Time Arrived On Location: 430 am
Time Left Location: 10:30 am

WELL DATA

Casing Size OD (in) :	_9.625
Casing Weight (lb) :	36.00
Casing Depth (ft.) :	1,851
Total Depth (ft) :	1861
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	41
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 17.80 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 952.09 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 1030.94 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 183.61 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 697 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 122.73 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 140.55 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1365.48 PSI

Pressure of the fluids inside casing

Displacement: 780.44 psi
Shoe Joint: 30.25 PSI
Total 810.68 psi

Differential Pressure: 554.80 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 303.28 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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Customer	Anadarko Petroleum Corporation
Well Name	sarchet 21-4hz

INVOICE #	200467
LOCATION	Weld
FOREMAN	Kirk Kallhoff
Date	7/4/2019

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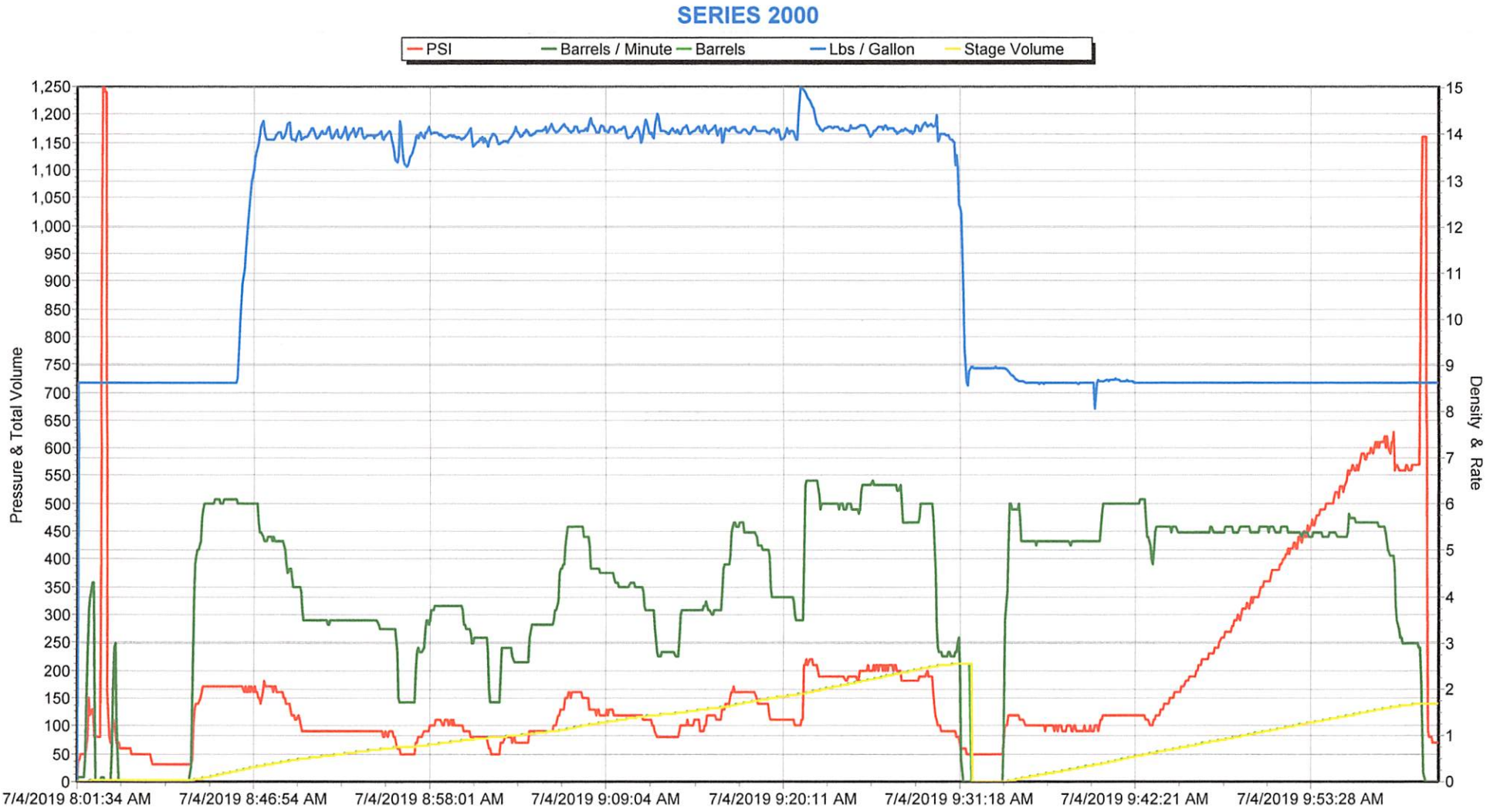
DESCRIPTION OF JOB EVENTS

Amount Pumped			Event	Description	Rate	BBLs	Pressure
% Excess	10%	430 am	arived on location				
Mixed bbls	122.7	445 am	MIRU				
Total Sacks	697	815 am	JSA				
bbl Returns	10	842 am	Pressure Test		0.5		1000
Water Temp	60	843 am	Spacer Ahead	30 bbls h2o dye in 2nd 10	5	30	120
		847 am	M&P	697 sks cement 14.2 lbs 183.6 bbls slurry	6	183.6	250
Notes:		931 am	Shutdown				0
		933 am	Drop Plug				
		933 am	Start Displacement	140.5 bbls h2o	6		450
		1000 am	Bump Plug	140.5 bbls h2o 580 psi lift	2	140.5	1160
		1001 am	Test Floats				
		1002 am	End Job				
		1005 am	Rig Down				
		1030 am	Leave Location				

X _____
Work Preformed

X Co-Man
Title

X 7-4-19
Date


SERIES 2000
PSI
Barrels / Minute
Barrels
Lbs / Gallon
Stage Volume
Pressure & Total Volume
Density & Rate
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
650
600
550
500
450
400
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7/4/2019 8:01:34 AM
7/4/2019 8:46:54 AM
7/4/2019 8:58:01 AM
7/4/2019 9:09:04 AM
7/4/2019 9:20:11 AM
7/4/2019 9:31:18 AM
7/4/2019 9:42:21 AM
7/4/2019 9:53:28 AM