Bison Oil Well Cementing
Single Cement Surface Pipe

Date: 7/1/2019
Invoice # 200466
API#
Foreman: KirkKallhoff

Customer: Anadarko Petroleum Corporation
Well Name: sarchet 21-1hz

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

Consultant: bryan
Rig Name & Number: Cartel 88
Distance To Location: 21
Units On Location: 4047/4033/4041
Time Requested: 1030 pm
Time Arrived On Location: 830 pm
Time Left Location: 4:00 pm

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) :	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:	15%
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 996.50 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 1075.34 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 191.52 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 727 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 128.02 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: 781.30 psi
Shoe Joint: 30.25 PSI
Total 811.55 psi

Differential Pressure: 555.41 psi

Collapse PSI: 2020.00 psi
Burst PSI: 3520.00 psi

Total Water Needed: 308.72 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	sarchet 21-1hz

INVOICE #	200466
LOCATION	Weld
FOREMAN	KirkKallhoff
Date	7/2/2019

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DESCRIPTION OF JOB EVENTS

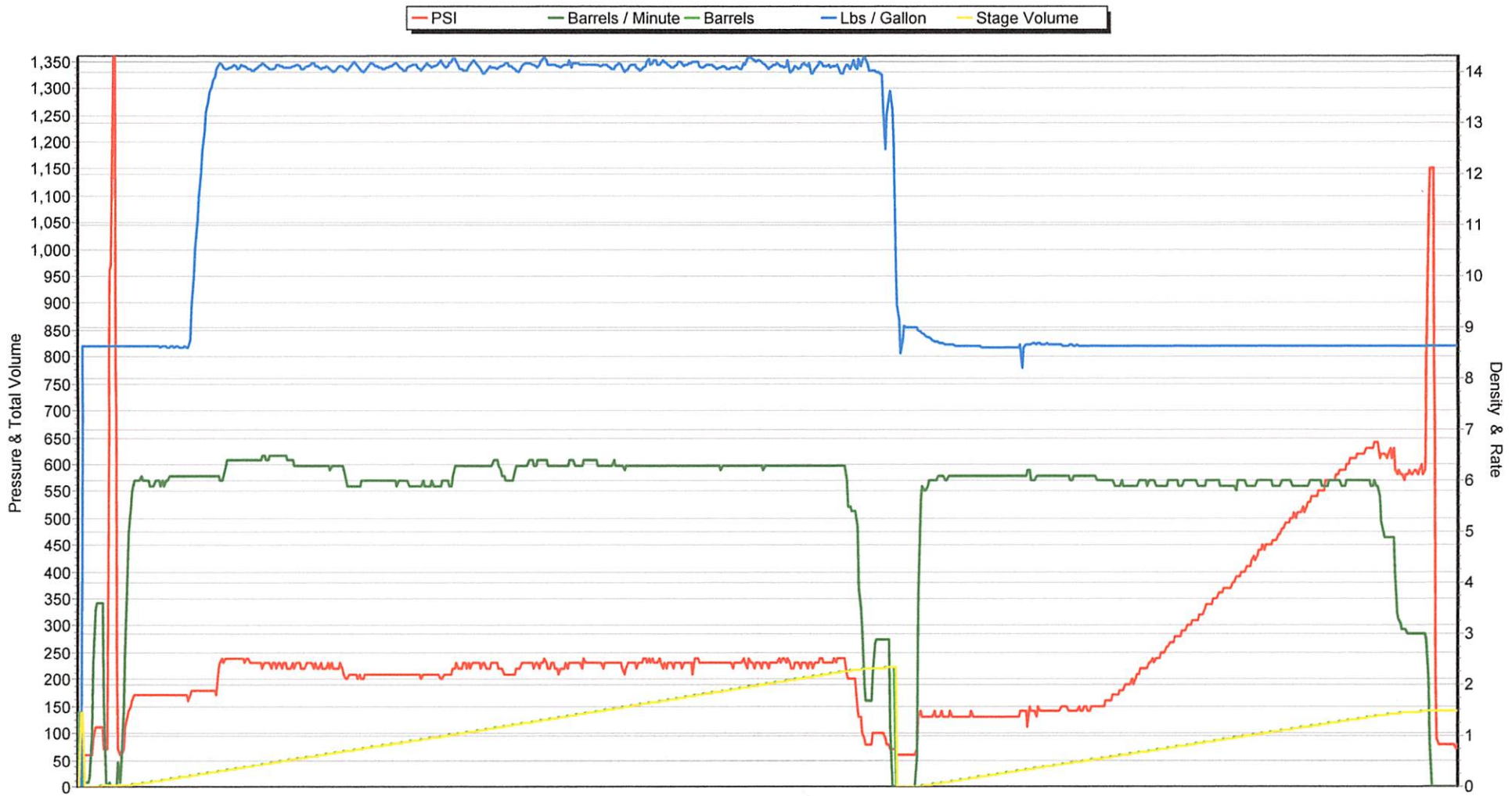
Amount Pumped			Event	Description	Rate	BBLs	Pressure
% Excess	15%	830 pm	arived on location				
Mixed bbls	128	845 pm	MIRU				
Total Sacks	727	145 am	JSA				
bbl Returns	26	207 am	Pressure Test		0.5		1000
Water Temp	50	208 am	Spacer Ahead	30 bbls h2o dye in 2nd 10	5	30	120
		213 am	M&P	727 sks cement 14.2 lbs 191.5 bbls slurry	6	191.5	250
Notes:		256 am	Shutdown				0
		258 am	Drop Plug				
		258 am	Start Displacement	140 bbls h2o	6		450
		323 am	Bump Plug	140 bbls h2o 570 psi lift	2	140	1210
		324 am	Test Floats				
		325 am	End Job				
		330 am	Rig Down				
		400 am	Leave Location				

X _____ Work Preformed

X C. Man Title

X 7-2-19 Date

SERIES 2000


PSI
Barrels / Minute
Barrels
Lbs / Gallon
Stage Volume
Pressure & Total Volume
Density & Rate
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
50
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14
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12
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