



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/19/2014
 Invoice # 45058
 API# 05-123-3645
 Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation
Well Name: BUFFALO 14N-15HZ

County: Weld
 State: Colorado
 Sec: 15
 Twp: 1N
 Range: 68W

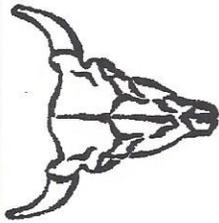
Consultant: TOBY
 Rig Name & Number: MAJORS 42
 Distance To Location: 30
 Units On Location: 4031-3106/ 4022-3213
 Time Requested: 2030
 Time Arrived: 1930
 Time Left Location: 1200

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft.) : 1,272	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1282	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) :	Displacement Fluid lb/gal: 8.3
Conductor ID :	BBL to Pit: 26.0
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 6	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	30 BBL WATER, DYE IN 2ND 10

Calculated Results	Pressure of cement in annulus
Displacement: 95.48 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	Hydrostatic Pressure: 938.35 PSI
cuft of Shoe 18.66 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of the fluids inside casing
cuft of Conductor 0.00 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Displacement: 529.92 psi
cuft of Casing 714.91 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Shoe Joint: 31.72 psi
Total Slurry Volume 733.58 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Total 561.64 psi
bbls of Slurry 130.65 bbls (Total Slurry Volume) X (.1781)	Differential Pressure: 376.71 psi
Sacks Needed 492 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: 2020.00 psi
Mix Water 87.68 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Burst PSI: 3520.00 psi
	Total Water Needed: 233.16 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 JASON KELEHER
Date 10/19/2014

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Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

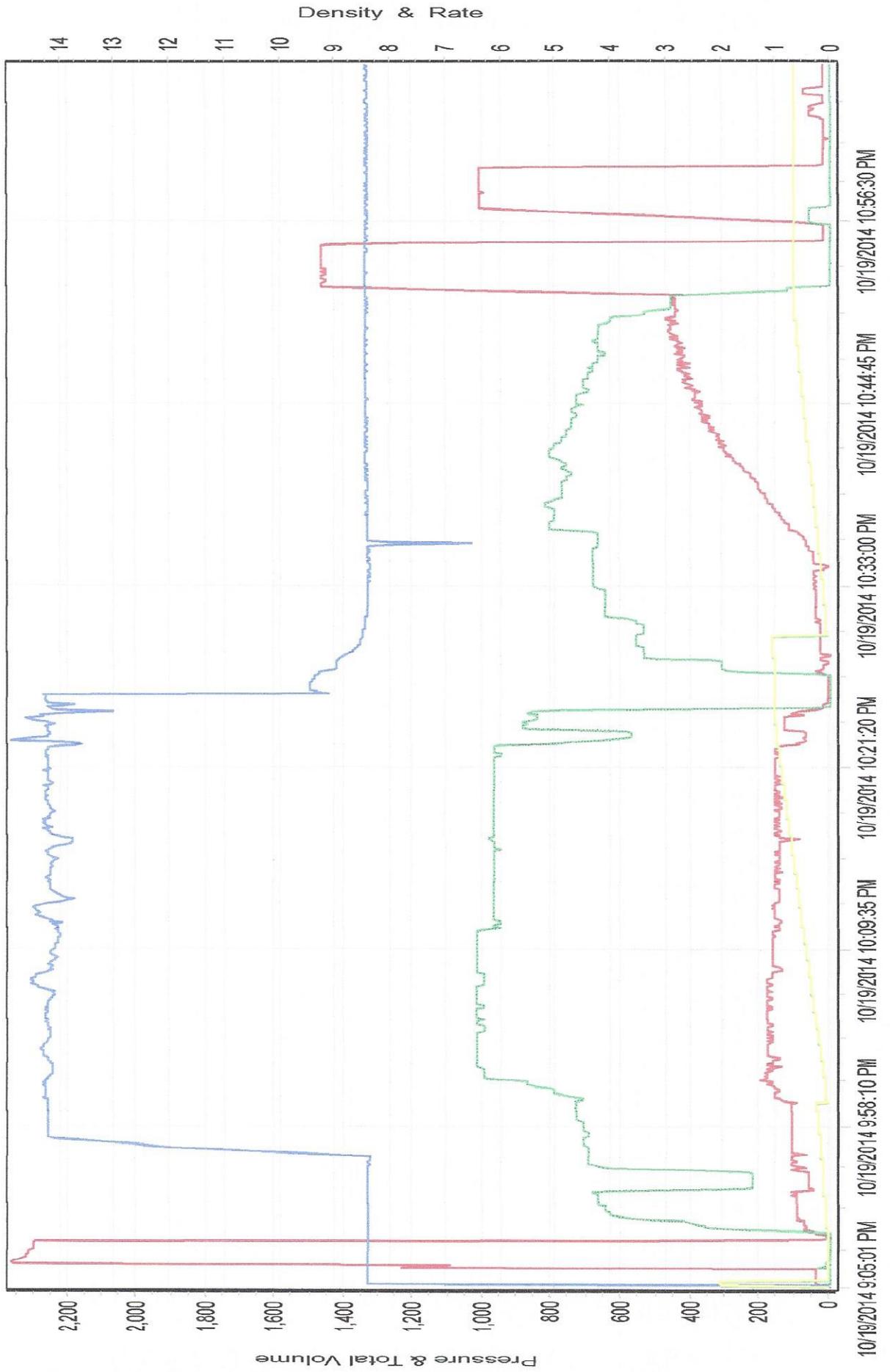
	Displace 1		Displace 2		Displace 3		Displace 4		Displace 5	
	BBLs	Time								
Safety Meeting	2115									
MIRU	2045									
CIRCULATE	2151									
Drop Plug										
2226										
M & P										
Time										
2159-2225										
Sacks	492									
% Excess	15%									
Mixed bbls	87.6									
Total Sacks	492									
bbl Returns	26									
Water Temp	59									

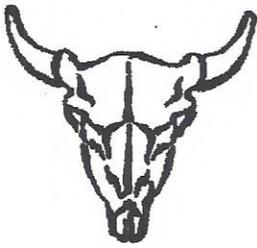
Notes:

PERFORMED PRESSURE TEST TO 2000 PSI AT 2149, PUMPED 30 BBL WATER W/ DYE IN 2ND 10 AT 2151, MIXED AND PUMPED 492 SKS AT 14.2, 130.6 BBL AT 2159, SHUT DOWN AT 2225, STARTED DISPLACEMENT AT 2227, LANDED PLUG AT 470 PSI AT 222 AND PRESSURED UP TO 1460 PSI, HELD FOR 2 MINUTES AND CHECKED FLOATS, GOT .75 BBL BACK, REPRESSED WELL TO 1000 PSI FOR 2 MINUTES AND RELEASED.

X  Title _____ X Date _____

BUFFALO 14N-15HZ SURFACE





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Max Pressure: 2500	30 BBL WATER, DYE IN 2ND 10

Casing ID: 8.921 Casing Grade: J-55 only used

Calculated Results	Pressure and Displacement
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Customers hereby acknowledges and specifically agrees to the terms and condition on this work order, including, without limitation, the provisions on this work order.

Release and Indemnification

Customer acknowledges and assumes the risks associated with oil well drilling, cementing and acidizing, including, without limitation, destabilization, loss of production, contamination, fracturing and loss of well control. Customer agrees to release Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from any and all liability for any and all damages whatsoever to property of any kind owned by, in the possession of, or leased by customer and those persons or entities customer has the ability to bind by contract. Customer also agrees to indemnify and hold harmless Bison Oil Well Cementing, Inc., Bison Energy Services, Inc., its agents, employees and assigns, from and against any and all liability, claims, costs, expenses, attorneys fees and damages whatsoever for claims, costs, expenses, attorneys fees and damages whatsoever for personal injury, illness, death, property damage and loss resulting from: loss or reduction of production, destabilization loss of oil well control, failure of or contamination by acid stimulation, hydraulic fracturing, cementing, pumping services, incompatible fluid or other processes to stimulate, complete or end production, and/or any other condition. Customer's release, indemnity and hold harmless obligation shall apply even if the liability and claims are caused by the sole, concurrent, active or passive negligence, fault, or strict liability of Bison Oil Well Cementing, Inc. and/or Bison Energy Services, Inc. or any defect in the data, products, supplies, materials or equipment furnished by Bison Oil Well Cementing, Inc. whether in the design, manufacturing, maintenance, or marketing thereof or from failure to warn of such defect. In the event that any portion of this release and indemnity is found by a court of competent jurisdiction to be inoperable or unenforceable, the remaining portions and provisions shall apply, and customer agrees that the contract price herein shall be the limit of Bison Oil Well Cementing, Inc.'s liability, if any.