

Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/25/2014
 Invoice # 25075
 API# 05-123-36462
 Foreman: Calvin Reimers

Customer: Anadarko Petroleum Corporation

Well Name: Buffalo 35N-15HZ

County: Weld
 State: Colorado
 Sec: 6
 Twp: 1N
 Range: 68W

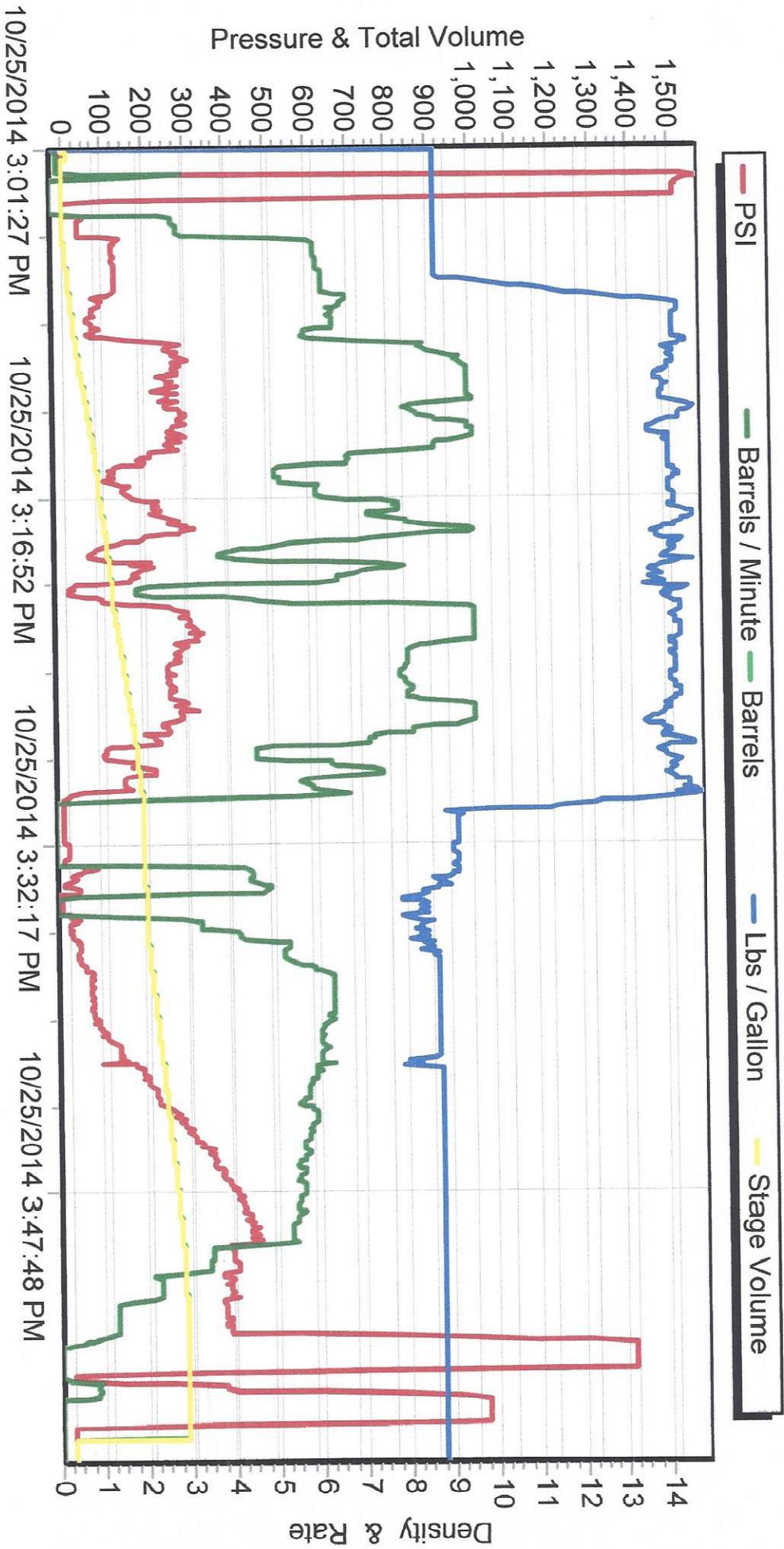
Consultant: Allen
 Rig Name & Number: Major 42
 Distance To Location: 29 Miles
 Units On Location: 4023-3104/4018-3204
 Time Requested: 200pm
 Time Arrived On Location: 1200pm
 Time Left Location: 4:45 pm

WELL DATA		Cement Data	
Casing Size OD (in) :	<u>9.625</u>	Cement Name:	<u>BFN III</u>
Casing Weight (lb) :	<u>36.00</u>	Cement Density (lb/gal) :	<u>14.2</u>
Casing Depth (ft.) :	<u>1,304</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>1320</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>15%</u>
Conductor Length (ft) :		Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :		BBL to Pit:	<u>18</u>
Shoe Joint Length (ft) :	<u>42</u>	Fluid Ahead (bbls):	<u>30.0</u>
Landing Joint (ft) :	<u>8</u>	H2O Wash Up (bbls):	<u>20.0</u>
Max Rate:	<u>7</u>	Spacer Ahead Makeup	
Max Pressure:	<u>2500</u>	<u>30bbls H2O+Dye in 2nd 10bbls</u>	

Calculated Results	Displacement:	98.15 bbls
cuft of Shoe <u>18.28</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Conductor <u>0.00</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus	
cuft of Casing <u>735.61</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure:	<u>961.76 PSI</u>
Total Slurry Volume <u>753.89</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing	
bbls of Slurry <u>134.27</u> bbls (Total Slurry Volume) X (.1781)	Displacement:	<u>543.99 psi</u>
Sacks Needed <u>506</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint:	<u>31.06 psi</u>
Mix Water <u>90.11</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total	<u>575.05 psi</u>
	Differential Pressure:	<u>386.71 psi</u>
	Collapse PSI:	<u>2020.00 psi</u>
	Burst PSI:	<u>3520.00 psi</u>
	Total Water Needed:	<u>238.26 bbls</u>

X Allen
 Authorization To Proceed

SERIES 2000



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.