

# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/10/2014  
 Invoice #: 45071  
 API#: 05-123-39962  
 Foreman: JASON KELEHER

**Customer:** Anadarko Petroleum Corporation

**Well Name:** DEJANE STATE 2N-36HZ

County: Weld  
 State: Colorado  
 Sec: 36  
 Twp: 4N  
 Range: 66W

Consultant: TOBY  
 Rig Name & Number: MAJORS 42  
 Distance To Location: 5  
 Units On Location: 4027-3106/ 4021-3211  
 Time Requested: 830  
 Time Arrived: 830  
 Time Left Location: 1330

WELL DATA	
Casing Size OD (in) :	9.625
Casing Weight (lb) :	36.00
Casing Depth (ft) :	1,219
Total Depth (ft) :	1230
Open Hole Diameter (in.) :	13.50
Conductor Length (ft) :	
Conductor ID :	
Shoe Joint Length (ft) :	43
Landing Joint (ft) :	6
Max Rate:	7
Max Pressure:	2500

Cement Data	
Cement Name:	BFN III
Cement Density (lb/gal) :	14.2
Cement Yield (cuft) :	1.49
Gallons Per Sack:	7.48
% Excess:	15%
Displacement Fluid lb/gal:	8.3
BBL to Pit:	24.0
Fluid Ahead (bbls):	30.0
H2O Wash Up (bbls):	20.0
Spacer Ahead Makeup	
	30 BBL WATER, DYE IN 2ND 10

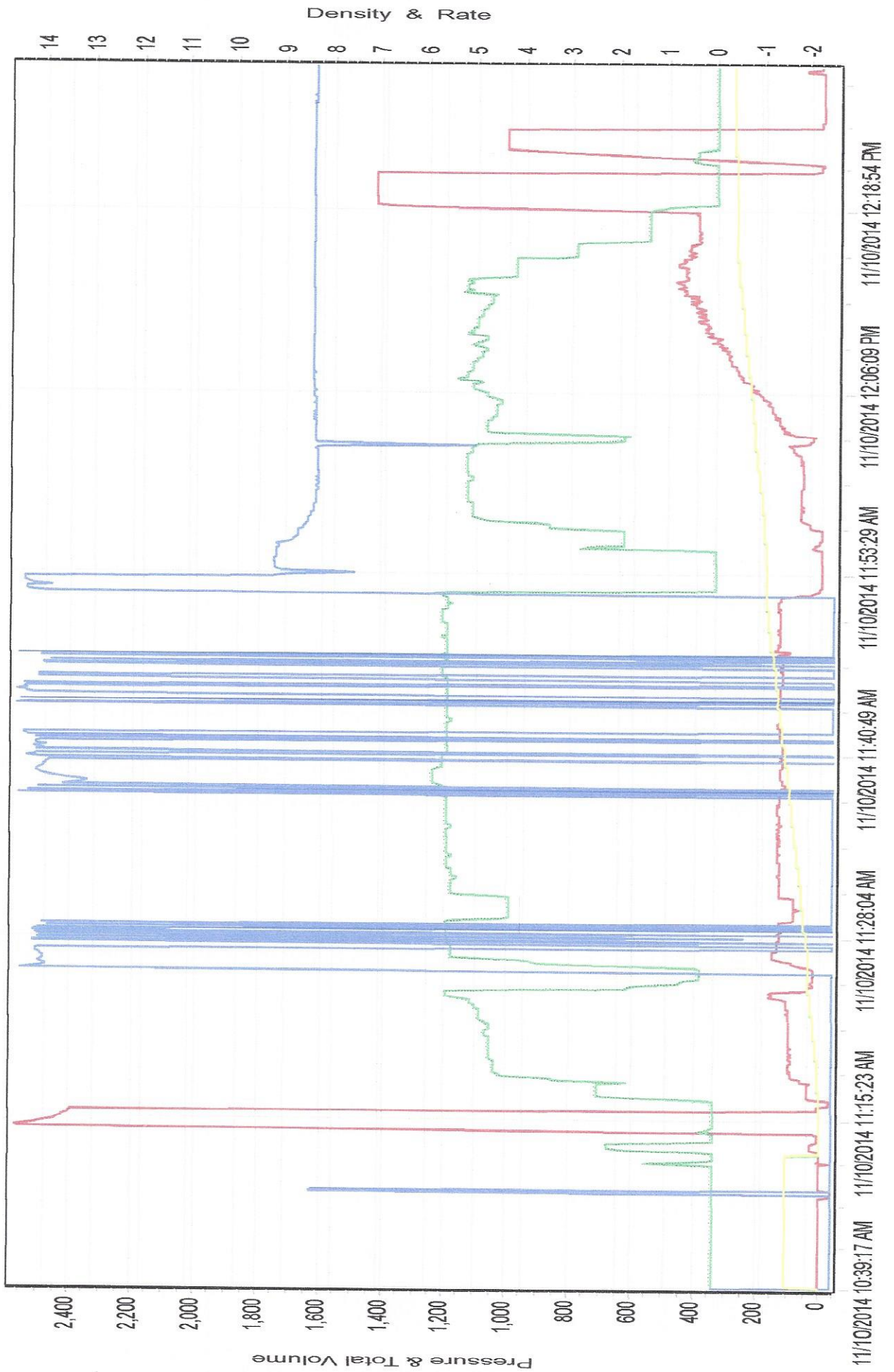
Calculated Results		Casing ID		Casing Grade	
		8.921		J-55 only used	
<b>cuft of Shoe</b>	18.66	cuft		<b>Displacement:</b>	91.38 bbls
(Casing ID Squared) X (.005454) X (Shoe Joint ft)				(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
<b>cuft of Conductor</b>	0.00	cuft		<b>Pressure of cement in annulus</b>	
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)				<b>Hydrostatic Pressure:</b> 899.26 PSI	
<b>cuft of Casing</b>	686.91	cuft		<b>Pressure of the fluids inside casing</b>	
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )				<b>Displacement:</b> 507.07 psi	
<b>Total Slurry Volume</b>	705.58	cuft		<b>Shoe Joint:</b> 31.72 psi	
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)				<b>Total</b> 538.79 psi	
<b>bbls of Slurry</b>	125.66	bbls		<b>Differential Pressure:</b> 360.47 psi	
(Total Slurry Volume) X (.1781)					
<b>Sacks Needed</b>	474	sk		<b>Collapse PSI:</b> 2020.00 psi	
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)				<b>Burst PSI:</b> 3520.00 psi	
<b>Mix Water</b>	84.34	bbls		<b>Total Water Needed:</b> 225.71 bbls	
(Sacks Needed) X (Gallons Per Sack) ÷ 42					

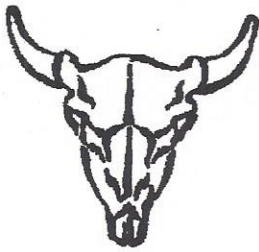
X Authorization To Proceed

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



# DEJANE STATE 2N-36HZ SURFACE





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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.) : 1,219	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1230	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:
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

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results	Pressure of cement in annulus
<b>cuft of Shoe</b> 18.66 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Displacement:</b> 91.38 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
<b>cuft of Conductor</b> 0.00 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Hydrostatic Pressure:</b> 899.26 PSI
<b>cuft of Casing</b> 686.91 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Pressure of the fluids inside casing</b>
<b>Total Slurry Volume</b> 705.58 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Displacement:</b> 507.07 psi
<b>bbls of Slurry</b> 125.66 bbls (Total Slurry Volume) X (.1781)	<b>Shoe Joint:</b> 31.72 psi
<b>Sacks Needed</b> 474 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Total</b> 538.79 psi
<b>Mix Water</b> 84.34 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Differential Pressure:</b> 360.47 psi
	<b>Collapse PSI:</b> 2020.00 psi
	<b>Burst PSI:</b> 3520.00 psi
	<b>Total Water Needed:</b> 225.71 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.

## 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.