



Bison Oil Well Cementing  
 1547 Gaylord Street  
 Denver, CO 80206

FIELD INVOICE #

900042

**FIELD INVOICE**

<b>WELL NO. AND FARM</b>		<b>COUNTY</b>	<b>STATE</b>	<b>DATE</b>	<b>Contractor</b>
KEOWN STATE 19N-34HZ		Weld	Colorado	2/5/2017	SW 105
<b>CHARGE TO</b>		<b>WELL LOCATION</b>			
Anadarko Petroleum Corporation		<b>Section</b>	<b>TWP</b>	<b>RANGE</b>	
PO Box 4995		15	2N	68W	
The Woodlands, TX 77387		<b>DELIVERED TO</b>		<b>LOCATION 1</b>	<b>CODE</b>
		CR 7 & CR 20.5		SHOP	
		<b>SHIPPED VIA</b>		<b>LOCATION 2</b>	<b>CODE</b>
		4027-3103,4019-3214,4020-3212		LOCATION	
		<b>TYPE AND PURPOSE OF JOB</b>		<b>LOCATION 3</b>	<b>CODE</b>
		SURFACE		SHOP	
				<b>WELL TYPE</b>	<b>CODE</b>

ITEM	DESCRIPTION	UNITS	
		QTY.	MEAS.
<b>PUMP CHARGE</b>			
SURFACE		1	
<b>MILLEAGE CHARGE</b>			
Pickup		66	mile
Truck/Equipment		198	mile
<b>CEMENT CHARGE:</b>			
BFN III		914	sack
<b>ADDITIVES CHARGE:</b>			
Sugar		100	lb
Dye Hot Pink		16	oz
<b>FLOAT EQUIPMENT:</b>			
	KEOWN STATE 19N-34HZ SW-105		
	FRANK KINNEY USER ID CU0741		
	CONSULTANT NAME: <i>Louis Fath</i>		
	GL CODE: <i>9002090</i> AFE# 2115572.DRL		
	DATE: <i>2-5-17</i> SIGNATURE: <i>[Signature]</i>		
<b>OTHER CHARGES:</b>			

If this account is not paid within 30 days of invoice date a FINANCE CHARGE will be made. Computed at a single monthly rate of 1 1/2% which is equal to an ANNUAL PERCENTAGE RATE OF 18%.

TAX

SUBJECT TO CORRECTION

*[Signature]*  
 Bison Oil Well Cementing, Inc. Representative

Customer or Agent

Customers hereby acknowledges and specifically agrees to the terms and conditions on this work order, including, without limitation, the provisions on the riverside hereof which include the release and indemnity.



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/5/2017  
 Invoice # 900042  
 API# 05-123-42993  
 Foreman: JASON

**Customer:** Anadarko Petroleum Corporation

**Well Name:** KEOWN STATE 19N-34HZ

County: Weld Consultant: LANCE  
 State: Colorado Rig Name & Number: SW 105  
 Distance To Location: 33  
 Sec: 15 Units On Location: 4027-3103,4019-3214,4020-3214  
 Twp: 2N Time Requested: 900  
 Range: 68W Time Arrived On Location: 800  
 Time Left Location: 1330

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>2,343</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>2353</u>	Gallons Per Sack: <u>7.49</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>15%</u>
Conductor Length (ft) : <u>80</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit: <u>35.0</u>
Shoe Joint Length (ft) : <u>45</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>33</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>2000</u>	<u>30 BBL WATER DYE IN 2ND 10</u>

Calculated Results	Displacement: <u>180.25 bbls</u>
<b>cuft of Shoe</b> <u>19.33</u> <b>cuft</b> (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> <u>61.05</u> <b>cuft</b> (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Pressure of cement in annulus</b>
<b>cuft of Casing</b> <u>1271.97</u> <b>cuft</b> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Hydrostatic Pressure:</b> <u>1728.53 PSI</u>
<b>Total Slurry Volume</b> <u>1352.35</u> <b>cuft</b> (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Pressure of the fluids inside casing</b>
<b>bbls of Slurry</b> <u>240.85</u> <b>bbls</b> (Total Slurry Volume) X (.1781)	<b>Displacement:</b> <u>991.11 psi</u>
<b>Sacks Needed</b> <u>914</u> <b>sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Shoe Joint:</b> <u>32.86 psi</u>
<b>Mix Water</b> <u>162.95</u> <b>bbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Total</b> <u>1023.97 psi</u>
	<b>Differential Pressure:</b> <u>704.56 psi</u>
	<b>Collapse PSI:</b> <u>2020.00 psi</u>
	<b>Burst PSI:</b> <u>3520.00 psi</u>
	<b>Total Water Needed:</b> <u>393.20 bbls</u>

X

Authorization To Proceed



# KEOWN 19N-34HZ SURFACE

