



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/30/2018  
 Invoice # 900250  
 API# 05-123-45912  
 Foreman: Corey Barras

**Customer:** Anadarko Petroleum Corporation  
**Well Name:** Azul 13-6HZ

County: Weld Consultant: Matt  
 State: Colorado Rig Name & Number: Cartel 88  
 Distance To Location: 37  
 Sec: 13 Units On Location: 1027-3103/4030-3214/4024-321  
 Twp: 1N Time Requested: 630  
 Range: 66W Time Arrived On Location: 600  
 Time Left Location: \_\_\_\_\_

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <b>BFN III</b>
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>14.2</u>
Casing Depth (ft.) : <u>1,861</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1871</u>	Gallons Per Sack: <u>7.40</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>5%</u>
Conductor Length (ft) : <u>80</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit:
Shoe Joint Length (ft) : <u>44</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>15</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>2000</u>	<b>30 bbl with Die in 2nd 10</b>

Calculated Results	Displacement: <b>141.63 bbls</b>
<b>cuft of Shoe</b> <u>19.10</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>913.95</u> <b>cuft</b> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Hydrostatic Pressure: 1372.86 PSI</b>
<b>Total Slurry Volume</b> <u>994.10</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>177.05</u> <b>bbls</b> (Total Slurry Volume) X (.1781)	<b>Displacement: 783.46 psi</b>
<b>Sacks Needed</b> <u>672</u> <b>sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Shoe Joint: 32.46 PSI</b>
<b>Mix Water</b> <u>118.34</u> <b>bbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Total 815.91 psi</b>
	<b>Differential Pressure: 556.94 psi</b>
	<b>Collapse PSI: 2020.00 psi</b>
	<b>Burst PSI: 3520.00 psi</b>
	<b>Total Water Needed: 309.97 bbls</b>

X [Signature]  
 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  
Well Name

Anadarko Petroleum Corporation  
Azul 13-6HZ

INVOICE #  
LOCATION  
FOREMAN  
Date

900250  
Weld  
Corey Barras  
1/30/2018

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**DESCRIPTION OF JOB EVENTS**

Amount Pumped		Event	Description	Rate	BBLs	Pressure
% Excess	5%	600	What rig is doing upon Bison Arrival			
Mixed bbls	118.34	615	JSA			
Total Sacks	672					
bbl Returns	46	940	Safety Meeting			
Water Temp	48	1010	Start Job			
		1012	Pressure Test			
Notes:						
		1014	Spacer Ahead	2nd 10 with die	6	30 70
		1020	Lead Cement	14.2 ppg	4	176 80
		1055	Shutdown			
		1057	Drop Plug	Preloaded in plug container		
		1058	Start Displacement		6	90 380
		1125	Bump Plug	500 over final lift (1170 PSI)	2	141 540
		1127	Floats Held	Held for 2 MIN with .5 bll back		
		1129	End Job			
		1130	Rig Down			
		1200	Leave Location			

X *BBB*  
Work Performed

X *Co. Man*  
Title

X *1/30/18*  
Date

# AZUI 13-6HZ

