



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/6/2018  
 Invoice # 900254  
 API# 05-123-46118  
 Foreman: Corey Barras

**Customer:** Anadarko Petroleum Corporation  
**Well Name:** Azul 13-27HZ

County: Weld  
 State: Colorado  
 Sec: 13  
 Twp: 1N  
 Range: 66W

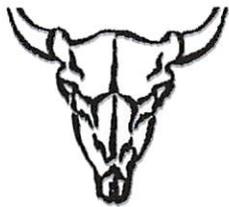
Consultant: Matt  
 Rig Name & Number: Cartel 88  
 Distance To Location: 38  
 Units On Location: 1027-3103/4030-3213/4024-320  
 Time Requested: 1400  
 Time Arrived On Location: 1245  
 Time Left Location: \_\_\_\_\_

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>1,865</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1875</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>	<u>30 bbl with Die in 2nd 10</u>

Calculated Results	Displacement: <u>141.94 bbls</u>
<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>916.00</u> <b>cuft</b> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	<b>Hydrostatic Pressure:</b> <u>1375.81 PSI</u>
<b>Total Slurry Volume</b> <u>996.15</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>177.41</u> <b>bbls</b> (Total Slurry Volume) X (.1781)	<b>Displacement:</b> <u>785.18 psi</u>
<b>Sacks Needed</b> <u>673</u> <b>sk</b> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	<b>Shoe Joint:</b> <u>32.46 PSI</u>
<b>Mix Water</b> <u>118.59</u> <b>bbls</b> (Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Total</b> <u>817.64 psi</u>
	<b>Differential Pressure:</b> <u>558.17 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>310.53 bbls</u>

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.



**Bison Oil Well Cementing  
Single Cement Surface Pipe**

Customer  
Well Name

Anadarko Petroleum Corporation  
Azul 13-27HZ

INVOICE # 900254  
LOCATION Weld  
FOREMAN Corey Barras  
Date 2/6/2018

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**DESCRIPTION OF JOB EVENTS**

Amount Pumped		Event	Description	Rate	BBLs	Pressure
% Excess 5%	1245	What rig is doing upon Bison Arrival	Running Casing			
Mixed bbls 118.59	1300	JSA	Bison Crew			
Total Sacks 673						
bbl Returns 6	1630	Safety Meeting	Bison and Rig crew			
Water Temp 52	1655	Start Job				
	1656	Pressure Test				
Notes:						
	1658	Spacer Ahead	2nd 10 with die	6	30	120
	1705	Lead Cement	14.2 ppg	8	177	140
	1736	Shutdown				
	1738	Drop Plug	Preloaded in plug container			
	1740	Start Displacement		7	90	350
	1800	Bump Plug	500 over final lift (1120 PSI)	2	141	530
	1802	Floats Held	Held for 2 MIN with .5 bll back			
		End Job				
	1805	Rig Down				
	1830	Leave Location				

X Bryan Brown  
Work Performed

X Co. Man  
Title

X 2-6-18  
Date

# AZULI 13-27HZ

