



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/20/2018  
 Invoice # 300192  
 API# 05-123-47721  
 Foreman: JASON KELEHER

**Customer:** Anadarko Petroleum Corporation

**Well Name:** CASTLE PINE 19-2HZ

County: Weld Consultant: LEVI  
 State: Colorado Rig Name & Number: CARTEL 88  
 Sec: 19 Distance To Location: 25  
 Twp: 2N Units On Location: 4044-3103,4039-3214,4041-3201  
 Range: 66W Time Requested: 2030  
 Time Arrived On Location: 1930  
 Time Left Location: 230

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>1,868</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1878</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>10%</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>9.0</u>
Shoe Joint Length (ft) : <u>43</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>5</u>	H2O Wash Up (bbls): <u>10.0</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	Pressure of cement in annulus
<b>Displacement:</b> <u>141.45 bbls</u>	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
<b>cuft of Shoe</b> <u>18.86</u> <b>cuft</b>	<b>Pressure of cement in annulus</b>
(Casing ID Squared) X (.005454) X (Shoe Joint ft)	<b>Hydrostatic Pressure:</b> <u>1378.11 PSI</u>
<b>cuft of Conductor</b> <u>61.05</u> <b>cuft</b>	<b>Pressure of the fluids inside casing</b>
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	<b>Displacement:</b> <u>786.77 psi</u>
<b>cuft of Casing</b> <u>961.30</u> <b>cuft</b>	<b>Shoe Joint:</b> <u>32.05 psi</u>
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length )	<b>Total</b> <u>818.81 psi</u>
<b>Total Slurry Volume</b> <u>1041.20</u> <b>cuft</b>	<b>Differential Pressure:</b> <u>559.30 psi</u>
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	<b>Collapse PSI:</b> <u>2020.00 psi</u>
<b>bbls of Slurry</b> <u>185.44</u> <b>bbls</b>	<b>Burst PSI:</b> <u>3520.00 psi</u>
(Total Slurry Volume) X (.1781)	<b>Total Water Needed:</b> <u>306.74 bbls</u>
<b>Sacks Needed</b> <u>704</u> <b>sk</b>	
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
<b>Mix Water</b> <u>125.29</u> <b>bbls</b>	
(Sacks Needed) X (Gallons Per Sack) ÷ 42	

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.



# CASTLE PINE 19-2HZ SURFACE

