



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/1/2018
 Invoice # 300200
 API # 05-123-47725
 Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: CASTLE PINES 19-18HZ

County: Weld Consultant: LEVI
 State: Colorado Rig Name & Number: CARTEL 88
 Sec: 19 Distance To Location: 25
 Twp: 2N Units On Location: 4028-3106,4024-3212,4035-3213
 Range: 66W Time Requested: 1330
 Time Arrived On Location: 1300
 Time Left Location: 1830

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>1,874</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1884</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>12.0</u>
Shoe Joint Length (ft) : <u>44</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
Displacement: <u>141.87 bbls</u> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	Hydrostatic Pressure: <u>1382.35 PSI</u>
cuft of Shoe <u>18.99</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of the fluids inside casing
cuft of Conductor <u>61.05</u> cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Displacement: <u>789.11 psi</u>
cuft of Casing <u>964.39</u> cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Shoe Joint: <u>32.28 psi</u>
Total Slurry Volume <u>1044.43</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Total <u>821.39 psi</u>
bbls of Slurry <u>186.01</u> bbls (Total Slurry Volume) X (.1781)	Differential Pressure: <u>560.96 psi</u>
Sacks Needed <u>706</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: <u>2020.00 psi</u>
Mix Water <u>125.68</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Burst PSI: <u>3520.00 psi</u>
	Total Water Needed: <u>307.55 bbls</u>

X [Signature]
 Authorization To Proceed

CASTLE PINES 19-18HZ SURFACE

