



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/9/2018
 Invoice # 666273
 API# 05-123-46112
 Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation
Well Name: Azul 13-31HZ

County: Weld Consultant: Brian/Levi
 State: Colorado Rig Name & Number: Cartel 88
 Sec: 13 Distance To Location: 37 Miles
 Twp: 1N Units On Location: 4023/4039/4041
 Range: 66W Time Requested: 13:00
 Time Arrived On Location: 12:30
 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>1,890</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1899</u>	Gallons Per Sack: <u>7.48</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>43</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>10</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>2000</u>	Dye in second 10 bbl

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>18.66</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>143.56</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>61.05</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: <u>1394.25</u> PSI
cuft of Casing <u>928.83</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume <u>1008.55</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>796.39</u> psi
bbls of Slurry <u>179.62</u> bbls (Total Slurry Volume) X (.1781)	Shoe Joint: <u>31.72</u> psi
Sacks Needed <u>677</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total <u>828.11</u> psi
Mix Water <u>120.55</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: <u>566.14</u> psi
	Collapse PSI: <u>2020.00</u> psi
	Burst PSI: <u>3520.00</u> psi
	Total Water Needed: <u>314.11</u> bbls

X Bryan Brown
 Authorization To Proceed

AZULI 13-31HZ

