



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/16/2017
 Invoice # 200020
 API# _____
 Foreman: Kirk Kallhoff

Customer: Anadarko Petroleum Corporation
Well Name: puma fed 13c-35hz

County: Weld Consultant: brian
 State: Colorado Rig Name & Number: wmo 252
 Distance To Location: 35
 Sec: 23 Units On Location: 4028/4019/4020
 Twp: 1n Time Requested: 200 pm
 Range: 67w Time Arrived On Location: 1230 pm
 Time Left Location: 5:30 pm

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>2,235</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>2260</u>	Gallons Per Sack: <u>7.40</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>15%</u>
Conductor Length (ft) : <u>80</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.5</u>	Fluid Ahead (bbls): <u>30.0</u>
Shoe Joint Length (ft) : <u>42</u>	H2O Wash Up (bbls): <u>10.0</u>
Landing Joint (ft) : <u>15</u>	
Max Rate: <u>7</u>	Spacer Ahead Makeup
Max Pressure: <u>1500</u>	<u>h2o</u>

Calculated Results	Displacement: <u>170.70 bbls</u>
cuft of Shoe <u>18.23</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>64.40</u> cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus
cuft of Casing <u>1211.19</u> cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: <u>1648.76 PSI</u>
Total Slurry Volume <u>1293.83</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing
bbls of Slurry <u>230.43</u> bbls (Total Slurry Volume) X (.1781)	Displacement: <u>945.58 psi</u>
Sacks Needed <u>874</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint: <u>30.98 psi</u>
Mix Water <u>154.03</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total <u>976.56 psi</u>
	Differential Pressure: <u>672.20 psi</u>
	Collapse PSI: <u>2020.00 psi</u>
	Burst PSI: <u>3520.00 psi</u>
	Total Water Needed: <u>364.72 bbls</u>

X BFB
 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.

SERIES 2000

