



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/14/2017
 Invoice # 900030
 API# 05-123-42568
 Foreman: JASON

Customer: Anadarko Petroleum Corporation
Well Name: PUMA FED 4C-14HZ

County: Weld Consultant: BRYAN
 State: Colorado Rig Name & Number: WM 252
 Distance To Location: 35
 Sec: 23 Units On Location: 1027-3103,4032-3215,4019-3214
 Twp: 1N Time Requested: 400
 Range: 67W Time Arrived On Location: 300
 Time Left Location: 1430

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>2,249</u>	Cement Yield (cuft) :	<u>1.48</u>
Total Depth (ft) :	<u>2301</u>	Gallons Per Sack:	<u>7.49</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>15.25</u>	BBL to Pit:	<u>11.0</u>
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 WATER DYE IN 2ND 10</u>	

Calculated Results	Displacement:	171.59 bbls
cuft of Shoe <u>19.31</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>61.05</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus	
cuft of Casing <u>1219.06</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure:	<u>1659.09 PSI</u>
Total Slurry Volume <u>1299.42</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing	
bbls of Slurry <u>231.43</u> bbls (Total Slurry Volume) X (.1781)	Displacement:	<u>950.54 psi</u>
Sacks Needed <u>878</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint:	<u>32.82 psi</u>
Mix Water <u>156.57</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total	<u>983.36 psi</u>
	Differential Pressure:	<u>675.72 psi</u>
	Collapse PSI:	<u>2020.00 psi</u>
	Burst PSI:	<u>3520.00 psi</u>
	Total Water Needed:	<u>378.16 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.

PUMA FED 4C-14HZ SURFACE

