



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/9/2018
 Invoice # 200261
 API# _____
 Foreman: Kirk Kallhoff

Customer: Anadarko Petroleum Corporation
Well Name: quarter circle 24-4hz

County: Weld
 State: Colorado
 Sec: 24
 Twp: 1n
 Range: 67w

Consultant: bryan
 Rig Name & Number: CARTEL 88
 Distance To Location: 33
 Units On Location: 4028/4030/4041
 Time Requested: 130 am
 Time Arrived On Location: 1230 am
 Time Left Location: 5:30 am

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>1,848</u>	Cement Yield (cuft) : <u>1.48</u>
Total Depth (ft) : <u>1858</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>12.25</u>	% Excess: <u>10%</u>
Conductor Length (ft) : <u>80</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.5</u>	BBL to Pit: _____
Shoe Joint Length (ft) : <u>42</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>8</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>140.24 bbls</u> (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	Hydrostatic Pressure: <u>1363.27 PSI</u>
cuft of Shoe <u>18.23 cuft</u> (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of the fluids inside casing
cuft of Conductor <u>64.40 cuft</u> (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Displacement: <u>778.71 psi</u>
cuft of Casing <u>609.07 cuft</u> (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Shoe Joint: <u>30.98 psi</u>
Total Slurry Volume <u>691.71 cuft</u> (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Total <u>809.70 psi</u>
bbls of Slurry <u>123.19 bbls</u> (Total Slurry Volume) X (.1781)	Differential Pressure: <u>553.57 psi</u>
Sacks Needed <u>467 sk</u> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: <u>2020.00 psi</u>
Mix Water <u>83.24 bbls</u> (Sacks Needed) X (Gallons Per Sack) ÷ 42	Burst PSI: <u>3520.00 psi</u>
	Total Water Needed: <u>263.47 bbls</u>

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.

SERIES 2000

