



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/15/2017
 Invoice # 666162
 API# 05-123-44616
 Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation
Well Name: RW 14N-32HZ

County: Weld Consultant: Travis
 State: Colorado Rig Name & Number: Xtreme 22
 Distance To Location: 28 Miles
 Sec: 29 Units On Location: 4023/4030/4035
 Twp: 3N Time Requested: 11:00
 Range: 65W Time Arrived On Location: 10:40
 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>1,852</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1861</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>26.0</u>
Shoe Joint Length (ft) : <u>44</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>17</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 <u>10 bbl</u>

Calculated Results	Pressure of cement in annulus
Displacement: <u>141.09 bbls</u>	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe <u>19.10</u> cuft	Pressure of cement in annulus
(Casing ID Squared) X (.005454) X (Shoe Joint ft)	Hydrostatic Pressure: <u>1366.22 PSI</u>
cuft of Conductor <u>61.05</u> cuft	Pressure of the fluids inside casing
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Displacement: <u>779.58 psi</u>
cuft of Casing <u>952.63</u> cuft	Shoe Joint: <u>32.46 psi</u>
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Total <u>812.03 psi</u>
Total Slurry Volume <u>1032.78</u> cuft	Differential Pressure: <u>554.19 psi</u>
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Collapse PSI: <u>2020.00 psi</u>
bbls of Slurry <u>183.94</u> bbls	Burst PSI: <u>3520.00 psi</u>
(Total Slurry Volume) X (.1781)	Total Water Needed: <u>314.53 bbls</u>
Sacks Needed <u>693</u> sk	
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
Mix Water <u>123.45</u> bbls	
(Sacks Needed) X (Gallons Per Sack) ÷ 42	

X David Covert
 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.

RW 14N-32HZ

— PSI — Barrels / Minute — Lbs / Gallon

