



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/13/2015
 Invoice # 80474
 API# 05-123-40634
 Foreman: Calvin Reimers

Customer: Noble Energy Inc.
Well Name: Ann LC 34-755

County: Weld Consultant: Dave / JW
 State: Colorado Rig Name & Number: H&P 273
 Distance To Location: 55 Miles
 Sec: 34 Units On Location: 4023-3104/4027-3210
 Twp: 9N Time Requested: 900am
 Range: 59W Time Arrived On Location: 730am
 Time Left Location: 815pm

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>610</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>643</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>10%</u>
Conductor Length (ft) :	<u>100</u>	Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :	<u>16</u>	BBL to Pit:	<u>9.0</u>
Shoe Joint Length (ft) :	<u>44</u>	Fluid Ahead (bbls):	<u>40.0</u>
Landing Joint (ft) :	<u>29</u>	H2O Wash Up (bbls):	<u>10.0</u>
Max Rate:	<u>7</u>	Spacer Ahead Makeup	
Max Pressure:	<u>1750</u>	<u>40 bbl H2O+Dye in 2nd 10 bbls</u>	

Calculated Results	Displacement:	45.96 bbls
cuft of Shoe <u>19.18</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>89.10</u> cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus	
cuft of Casing <u>273.91</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure:	<u>449.64 PSI</u>
Total Slurry Volume <u>382.19</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing	
bbls of Slurry <u>68.07</u> bbls (Total Slurry Volume) X (.1781)	Displacement:	<u>243.76 psi</u>
Sacks Needed <u>257</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint:	<u>32.60 psi</u>
Mix Water <u>45.68</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total	<u>276.35 psi</u>
	Differential Pressure:	<u>173.28 psi</u>
	Collapse PSI:	<u>2020.00 psi</u>
	Burst PSI:	<u>3520.00 psi</u>
	Total Water Needed:	<u>141.64 bbls</u>

X Jw Travis
 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.

