



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 6/5/2015
 Invoice # 80046
 API# 05-123-41255
 Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Wells Ranch AA 11-657

County: Weld
 State: Colorado
 Sec: 11
 Twp: 6N
 Range: 63W

Consultant: Mike
 Rig Name & Number: H&P 273
 Distance To Location: 32 Miles
 Units On Location: 4023-3104/4020-3212
 Time Requested: 130am
 Time Arrived On Location: 1100pm
 Time Left Location: 330am

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>622</u>	Cement Yield (cuft) :	<u>1.49</u>
Total Depth (ft) :	<u>653</u>	Gallons Per Sack:	<u>7.48</u>
Open Hole Diameter (in.) :	<u>13.50</u>	% Excess:	<u>43%</u>
Conductor Length (ft) :	<u>100</u>	Displacement Fluid lb/gal:	<u>8.3</u>
Conductor ID :	<u>16</u>	BBL to Pit:	<u>22.0</u>
Shoe Joint Length (ft) :	<u>45</u>	Fluid Ahead (bbls):	<u>50.0</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>2500</u>	50bbls With Dye in Last 10bbls	

Calculated Results	Displacement: 46.82 bbls
cuft of Shoe <u>19.59</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>364.50</u> cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: 458.51 PSI
Total Slurry Volume <u>473.18</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing
bbls of Slurry <u>84.27</u> bbls (Total Slurry Volume) X (.1781)	Displacement: 248.54 psi
Sacks Needed <u>318</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint: 33.29 psi
Mix Water <u>56.56</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total 281.83 psi
	Differential Pressure: 176.68 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 163.38 bbls

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.

