



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/6/2016
 Invoice # 80526
 API# 05-123-43291
 Foreman: Matthew Rosales

Customer: Noble Energy Inc.
Well Name: Harper LD21-668

County: Weld Consultant: Johnny
 State: Colorado Rig Name & Number: H&P 517
 Distance To Location: 65
 Sec: SWNW Units On Location: 3106
 Twp: 229N Time Requested: 10:00am
 Range: 58W Time Arrived On Location: 9:00am
 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>1,932</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1939</u>	Gallons Per Sack: <u>7.48</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>	Fluid Ahead (bbls): <u>50.0</u>
Shoe Joint Length (ft) : <u>48</u>	H2O Wash Up (bbls): <u>20.0</u>
Landing Joint (ft) : <u>5</u>	
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>1700</u>	<u>40 H2O, 10 Dye</u>

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>21.00</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>145.30</u> bbls (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)	Hydrostatic Pressure: <u>1425.24</u> PSI
cuft of Casing <u>889.00</u> cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume <u>1104.00</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>812.40</u> psi
bbls of Slurry <u>197.00</u> bbls (Total Slurry Volume) X (.1781)	Shoe Joint: <u>35.31</u> psi
Sacks Needed <u>742</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total <u>847.71</u> psi
Mix Water <u>132.00</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: <u>577.52</u> psi
	Collapse PSI: <u>2020.00</u> psi
	Burst PSI: <u>3520.00</u> psi
	Total Water Needed: <u>300.00</u> bbls

X
 Authorization To Proceed

