



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/2/2015
 Invoice # 25118
 API# 05-123-39878
 Foreman: Calvin Reimers

Customer: Noble Energy Inc.
Well Name: Tirpucka State LD 02-74-1AHN

County: Weld Consultant: Stetson/Josh
 State: Colorado Rig Name & Number: H&P 321
 Distance To Location: 80 Miles
 Sec: 2 Units On Location: 4023-3104/4034-3211
 Twp: 9N Time Requested: 530am
 Range: 58W Time Arrived On Location: 400am
 Time Left Location: 9:00AM

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>1,211</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1250</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>20%</u>
Conductor Length (ft) : <u>100</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>16</u>	BBL to Pit: <u>26</u>
Shoe Joint Length (ft) : <u>41</u>	Fluid Ahead (bbls): <u>20.0</u>
Landing Joint (ft) : <u>34</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>7</u>	Spacer Ahead Makeup
Max Pressure: <u>2500</u>	<u>50bbls H2O+Dye in 2nd 10bbls</u>

Calculated Results	Pressure of cement in annulus
Casing ID <u>8.921</u> Casing Grade <u>J-55 only used</u>	Displacement: <u>93.10</u> bbls
cuft of Shoe <u>17.80</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)	Hydrostatic Pressure: <u>893.33</u> PSI
cuft of Casing <u>651.56</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>758.45</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>504.46</u> psi
bbls of Slurry <u>135.08</u> bbls (Total Slurry Volume) X (.1781)	Shoe Joint: <u>30.25</u> psi
Sacks Needed <u>509</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total <u>534.72</u> psi
Mix Water <u>90.66</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: <u>358.61</u> psi
	Collapse PSI: <u>2020.00</u> psi
	Burst PSI: <u>3520.00</u> psi
	Total Water Needed: <u>223.75</u> bbls

X [Signature]
 Authorization To Proceed

