



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/15/2015
 Invoice # 90026
 API# 05-123-41922
 Supervisor Nick

Customer: Anadarko Petroleum Corporation
Well Name: Sarchet 37N-20HZ

County: Weld Consultant: Hayden
 State: Colorado Rig Name & Number: Noble 2
 Distance To Location: 25
 Sec: 20 Units On Location: 024/3210/4027/3106/3105/320
 Twp: 2N Time Requested: 22:00
 Range: 65W Time Arrived On Location: 20:25
 Time Left Location: 1:25

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>1,846</u>	Cement Yield (cuft) : <u>1.49</u>
Total Depth (ft) : <u>1856</u>	Gallons Per Sack: <u>7.48</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>15%</u>
Conductor Length (ft) : <u>60</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.25</u>	BBL to Pit: <u>33.0</u>
Shoe Joint Length (ft) : <u>43</u>	Fluid Ahead (bbls): <u>30.0</u>
Landing Joint (ft) : <u>10</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate: <u>8</u>	Spacer Ahead Makeup
Max Pressure: <u>1750</u>	<u>30 bbl dye in second 10</u>

Calculated Results	Pressure of cement in annulus
cuft of Shoe <u>18.66</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>140.16</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>45.79</u> cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: <u>1361.79</u> PSI
cuft of Casing <u>1003.80</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>1068.25</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: <u>777.42</u> psi Shoe Joint: <u>31.72</u> psi Total <u>809.14</u> psi
bbls of Slurry <u>190.26</u> bbls (Total Slurry Volume) X (.1781)	Differential Pressure: <u>552.65</u> psi
Sacks Needed <u>717</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Collapse PSI: <u>2020.00</u> psi Burst PSI: <u>3520.00</u> psi
Mix Water <u>127.69</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total Water Needed: <u>317.84</u> bbls

X Hayden A
 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.

Sarchet 37N-20HZ

