



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/1/2015
 Invoice # 80413
 API# 05-690-6471
 Foreman: Calvin Reimers

Customer: Anadarko Petroleum Corporation
Well Name: Miracle 9C-11HZ

County: Larimer
 State: Colorado
 Sec: 12
 Twp: 5N
 Range: 68W

Consultant: _____
 Rig Name & Number: Noble 2
 Distance To Location: 23 Miles
 Units On Location: 4023-3104/3205/3211
 Time Requested: 100am
 Time Arrived On Location: 1130pm
 Time Left Location: 4:00 AM

WELL DATA	
Casing Size OD (in) :	<u>9.625</u>
Casing Weight (lb) :	<u>36.00</u>
Casing Depth (ft.) :	<u>1,865</u>
Total Depth (ft) :	<u>1866</u>
Open Hole Diameter (in.) :	<u>13.50</u>
Conductor Length (ft) :	<u>40</u>
Conductor ID :	<u>16</u>
Shoe Joint Length (ft) :	<u>43</u>
Landing Joint (ft) :	<u>10</u>
Max Rate:	<u>6</u>
Max Pressure:	<u>1750</u>

Cement Data	
Cement Name:	<u>BFN III</u>
Cement Density (lb/gal) :	<u>14.2</u>
Cement Yield (cuft) :	<u>1.49</u>
Gallons Per Sack:	<u>7.48</u>
% Excess:	<u>15%</u>
Displacement Fluid lb/gal:	<u>8.3</u>
BBL to Pit:	<u>28</u>
Fluid Ahead (bbls):	<u>30.0</u>
H2O Wash Up (bbls):	<u>10.0</u>
Spacer Ahead Makeup	
30 bbls With Dye in 2nd 10 bbls	

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results		
cuft of Shoe	18.66	cuft
<small>(Casing ID Squared) X (.005454) X (Shoe Joint ft)</small>		
cuft of Conductor	35.64	cuft
<small>(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)</small>		
cuft of Casing	1025.72	cuft
<small>(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)</small>		
Total Slurry Volume	1080.02	cuft
<small>(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)</small>		
bbls of Slurry	192.35	bbls
<small>(Total Slurry Volume) X (.1781)</small>		
Sacks Needed	725	sk
<small>(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)</small>		
Mix Water	129.09	bbls
<small>(Sacks Needed) X (Gallons Per Sack) ÷ 42</small>		

Displacement:	141.63	bbls
<small>(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)</small>		
Pressure of cement in annulus		
Hydrostatic Pressure:	1375.81	PSI
Pressure of the fluids inside casing		
Displacement:	785.61	psi
Shoe Joint:	31.72	psi
Total	817.33	psi
Differential Pressure:	558.48	psi
Collapse PSI:	2020.00	psi
Burst PSI:	3520.00	psi
Total Water Needed:	310.72	bbls

X APC/noble2
 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.

SERIES 2000

