



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/15/2015
 Invoice #: 80447
 API#: 05-123-42069
 Foreman: Calvin Reimers

Customer: Anadarko Petroleum Corporation
Well Name: Sunflower 7N-17HZ

County: Weld
 State: Colorado
 Sec: 8
 Twp: 2N
 Range: 65W

Consultant: Hayden / Bryan
 Rig Name & Number: Noble 2
 Distance To Location: 28 Miles
 Units On Location: 4023-3104/4033-3203
 Time Requested: 830pm
 Time Arrived On Location: 710pm
 Time Left Location: 12:15am

| WELL DATA | Cement Data |
|----------------------------------|--------------------------------|
| Casing Size OD (in) : 9.625 | Cement Name: BFN III |
| Casing Weight (lb) : 36.00 | Cement Density (lb/gal) : 14.2 |
| Casing Depth (ft.) : 1,863 | Cement Yield (cuft) : 1.49 |
| Total Depth (ft) : 1880 | Gallons Per Sack: 7.48 |
| Open Hole Diameter (in.) : 13.50 | % Excess: 20% |
| Conductor Length (ft) : 60 | Displacement Fluid lb/gal: 8.3 |
| Conductor ID : 15.25 | BBL to Pit: 33 |
| Shoe Joint Length (ft) : 44 | Fluid Ahead (bbls): 30.0 |
| Landing Joint (ft) : 10 | H2O Wash Up (bbls): 15.0 |
| Max Rate: 8 | Spacer Ahead Makeup |
| Max Pressure: 1250 | 30 bbls H2O+Dye in 2nd 10 bbls |

| Calculated Results | Pressure of cement in annulus |
|--|--|
| cuft of Shoe 19.28 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft) | Displacement: 141.37 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint) |
| cuft of Conductor 45.79 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft) | Hydrostatic Pressure: 1374.42 PSI |
| cuft of Casing 1057.49 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length) | Pressure of the fluids inside casing |
| Total Slurry Volume 1122.55 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing) | Displacement: 784.19 psi |
| bbls of Slurry 199.93 bbls (Total Slurry Volume) X (.1781) | Shoe Joint: 32.77 psi |
| Sacks Needed 753 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement) | Total 816.96 psi |
| Mix Water 134.18 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42 | Differential Pressure: 557.47 psi |
| | Collapse PSI: 2020.00 psi |
| | Burst PSI: 3520.00 psi |
| | Total Water Needed: 320.55 bbls |

X *Calvin Reimers*
 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

— PSI — Barrels / Minute — Barrels — Lbs / Gallon — Stage Volume

