



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/7/2019
 Invoice #: 200548
 API#
 Foreman: Terry Richey

Customer: Anadarko Petroleum Corporation
Well Name: Windsock 21-2HZ

County: Weld
 State: Colorado
 Sec: 21
 Twp: 1n
 Range: 68w

Consultant: Levi
 Rig Name & Number: Cartel 88
 Distance To Location: 84
 Units On Location: 4047/4024/4020
 Time Requested: 8:30: PM
 Time Arrived On Location: 7:30: PM
 Time Left Location: 12:30am

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.) : 1,883	Cement Yield (cuft) : 1.48
Total Depth (ft) : 1893	Gallons Per Sack: 7.40
Open Hole Diameter (in.) : 13.50	% Excess: 10%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 15.0
Shoe Joint Length (ft) : 41	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 8	H2O Wash Up (bbls): 10.0
Max Rate: 8	Spacer Ahead Makeup
Max Pressure: 2000	30 bbl with Die in 2nd 10

Calculated Results	Pressure of cement in annulus
cuft of Shoe 17.80 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 143.02 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 61.05 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 1389.09 PSI
cuft of Casing 969.30 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 1048.14 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 794.24 psi
bbls of Slurry 186.67 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 30.25 PSI
Sacks Needed 708 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 824.48 psi
Mix Water 124.78 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 564.61 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 307.80 bbls



Authorization To Proceed

Windsock 21-2HZ

