



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/14/2016
 Invoice #: 666000
 API#: 05-069-06486
 Supervisor: Nick

Customer: Anadarko Petroleum Corporation
Well Name: Folley North #1

County: Weld
 State: Colorado
 Sec: 13
 Twp: 5N
 Range: 68W

Consultant: Joe
 Rig Name & Number: Precision 461
 Distance To Location: 25
 Units On Location: 4028/3103/4032/3203
 Time Requested: 19:00
 Time Arrived On Location: 17:45
 Time Left Location: 23:55

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) : 1873	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.5	BBL to Pit: 40.0
Shoe Joint Length (ft) : 46	Fluid Ahead (bbls): 20.0
Landing Joint (ft) : 2	H2O Wash Up (bbls): 8.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 1250	30 bbl dye in second 10

Calculated Results	Pressure of cement in annulus
cuft of Shoe 19.97 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 140.62 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 80.51 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 1374.34 PSI
cuft of Casing 990.87 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 1091.35 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 783.46 psi
bbls of Slurry 194.37 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 33.93 psi
Sacks Needed 732 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 817.39 psi
Mix Water 130.45 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 556.94 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 299.07 bbls

X *Joe Waller*
 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.

