



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/17/2017
 Invoice #: 666063
 API#: 05-123-42563
 Foreman: Nick

Customer: Anadarko Petroleum Corporation
 Well Name: Puma Fed 4N-14HZ

County: Weld
 State: Colorado
 Sec: 23
 Twp: 1N
 Range: 67W

Consultant: Brian/Jeremy
 Rig Name & Number: WMO 252
 Distance To Location: 34 miles
 Units On Location: 4020/4030/4032
 Time Requested: 12:00
 Time Arrived On Location: 11:20
 Time Left Location:

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.) : 2,273	Cement Yield (cuft) : 1.49
Total Depth (ft) : 2282	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit: 16.0
Shoe Joint Length (ft) : 44	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 0	H2O Wash Up (bbls): 20.0
Max Rate: 8	Spacer Ahead Makeup
Max Pressure: 2000	Dye in the second 10 bbl

Calculated Results	Pressure of cement in annulus
Displacement: 172.32 bbls	Hydrostatic Pressure: 1676.79 PSI
cuft of Shoe 19.10 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	
cuft of Conductor 61.05 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of the fluids inside casing
cuft of Casing 1232.55 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	
Total Slurry Volume 1312.70 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 961.10 psi
bbls of Slurry 233.79 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 32.46 psi
Sacks Needed 881 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 993.56 psi
Mix Water 156.90 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 683.23 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 379.22 bbls

X 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.

Puma Fed 4N-14HZ

