



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 6/3/2015

Invoice #: 80045

API#: 05-123-41429

Foreman: Calvin Reimers

Customer: Anadarko Petroleum Corporation

Well Name: Viper Pyro 16N-10HZ

County: Weld

State: Colorado

Sec: 15

Twp: 3N

Range: 67W

Consultant: Sam / Toby

Rig Name & Number: Pinnenergy 4

Distance To Location: 17 Miles

Units On Location: 4023-3104/4030-3203

Time Requested: 1030am

Time Arrived On Location: 850am

Time Left Location: 130pm

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.) :	1,861	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 :	16	BBL to Pit:	32
Shoe Joint Length (ft) :	40	Fluid Ahead (bbls):	30.0
Landing Joint (ft) :	10	H2O Wash Up (bbls):	10.0
Max Rate:	6	Spacer Ahead Makeup	
Max Pressure:	1750	30 bbls With Dye in 2nd 10 bbls	

Calculated Results	Displacement: 141.57 bbls
cuft of Shoe 17.28 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 53.46 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus
cuft of Casing 1058.65 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: 1372.95 PSI
Total Slurry Volume 1129.39 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing
bbls of Slurry 201.14 bbls (Total Slurry Volume) X (.1781)	Displacement: 785.31 psi
Sacks Needed 758 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint: 29.38 psi
Mix Water 134.99 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total 814.69 psi
	Differential Pressure: 558.26 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 316.57 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.

SERIES 2000

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

