



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/31/2018

Invoice # 666269

API# 05-123-45910

Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation

Well Name: Azul 13-8HZ

County: Weld

State: Colorado

Sec: 13

Twp: 1N

Range: 66W

Consultant: Brian/Levi

Rig Name & Number: Cartel 88

Distance To Location: 37 Miles

Units On Location: 4023/4039/4041

Time Requested: 18:30

Time Arrived On Location: 18:00

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.) : 1,857	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1867	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 5%
Conductor Length (ft) : 80	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.25	BBL to Pit:
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 10	H2O Wash Up (bbls): 20.0
Max Rate: 8	Spacer Ahead Makeup
Max Pressure: 2000	Dye in second 10 bbl

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results	Displacement: 141.01 bbls
cuft of Shoe 18.66 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 61.05 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus
cuft of Casing 911.90 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: 1369.91 PSI
Total Slurry Volume 991.61 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing
bbls of Slurry 176.61 bbls (Total Slurry Volume) X (.1781)	Displacement: 782.16 psi
Sacks Needed 666 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Shoe Joint: 31.72 psi
Mix Water 118.52 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Total 813.88 psi
	Differential Pressure: 556.03 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 309.53 bbls

X
Authorization To Proceed

Anadarko Azul 13-8HZ

— PSI — Barrels / Minute — Lbs / Gallon

