



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/29/2018
 Invoice #: 666303
 API#: 05-123-46331
 Foreman: Nick Vigil

Customer: Anadarko Petroleum Corporation
Well Name: George 25-3HZ

County: Weld
 State: Colorado
 Sec: 25
 Twp: 2N
 Range: 65W

Consultant: Brian/Levi
 Rig Name & Number: Cartel 88
 Distance To Location: 34 Miles
 Units On Location: 4023/4032/4024
 Time Requested: 21:30
 Time Arrived On Location: 21:00
 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) : 1,909	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1919	Gallons Per Sack: 7.48
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:
Shoe Joint Length (ft) : 42	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

Calculated Results	Pressure of cement in annulus
Casing ID: 8.921 Casing Grade: J-55 only used	Displacement: 145.11 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 18.23 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus
cuft of Conductor 61.05 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 1408.27 PSI
cuft of Casing 983.27 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 1062.56 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 805.02 psi
bbls of Slurry 189.24 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 30.98 psi
Sacks Needed 713 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 836.00 psi
Mix Water 127.00 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 572.27 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 322.11 bbls

[Signature]
 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.

George 25-3HZ

— PSI — Barrels / Minute — Lbs / Gallon

