



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 5/10/2018
 Invoice #: 300126
 API#: 05-123-46442
 Foreman: JASON KELEHER

Customer: Anadarko Petroleum Corporation

Well Name: GRACIE 24-9HZ

County: Weld
 State: Colorado
 Sec: 24
 Twp: 2N
 Range: 66W
 Consultant: LEVI
 Rig Name & Number: CARTEL 88
 Distance To Location: 31
 Units On Location: 4044-3106,4030-3215,4024-3215
 Time Requested: 100
 Time Arrived On Location: 2330
 Time Left Location: 430

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) : 1.48
Total Depth (ft) : 1873	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: 25.0
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 8	H2O Wash Up (bbls): 10.0
Max Rate: 8	Spacer Ahead Makeup
Max Pressure: 2000	30 BBL WATER, DYE IN 2ND 10

Calculated Results	Pressure of cement in annulus
Displacement: 141.30 bbls	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 18.75 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: 1374.29 PSI
cuft of Casing 1002.08 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 1081.88 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 784.64 psi
bbls of Slurry 192.68 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 31.87 psi
Sacks Needed 731 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 816.51 psi
Mix Water 130.19 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 557.78 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 311.49 bbls

X [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.

GRACIE 24-9HZ SURFACE

