



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/9/2015
 Invoice #: 80650
 API#: 05-123-40732
 Foreman: JASON KELEHER

Customer: Noble Energy Inc.
 Well Name: MOSER H34-778

County: Weld
 State: Colorado
 Sec: 22
 Twp: 3W
 Range: 65W

Consultant: DAVE
 Rig Name & Number: H&P 273
 Distance To Location: 26
 Units On Location: 4023-3104/ 4032-3215
 Time Requested: 1030
 Time Arrived On Location: 830
 Time Left Location: 330

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) : 813	Cement Yield (cuft) : 1.49
Total Depth (ft) : 842	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: 21.0
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 24	H2O Wash Up (bbls): 20.0
Max Rate: 6	Spacer Ahead Makeup
Max Pressure: 1000	50 BBL WATER DYE IN 2ND 10

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results	Pressure of cement in annulus
cuft of Shoe 18.73 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: 61.38 bbls (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 Hydrostatic Pressure: 599.84 PSI
cuft of Casing 394.13 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing Displacement: 331.99 psi
Total Slurry Volume 473.91 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Shoe Joint: 31.84 psi
bbls of Slurry 84.40 bbls (Total Slurry Volume) X (.1781)	Total 363.83 psi
Sacks Needed 318 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Differential Pressure: 236.01 psi
Mix Water 56.65 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 188.02 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.

