



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/1/2015

Invoice # 80440

API# 05-123-41786

Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Wells Ranch AF 05-690

County: Weld

State: Colorado

Sec: 32

Twp: 6N

Range: 62W

Consultant: Shane

Rig Name & Number: H&P 273

Distance To Location: 24 Miles

Units On Location: 4023-3104/4033-3212

Time Requested: 730pm

Time Arrived On Location: 555pm

Time Left Location: 1045pm

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 607
Total Depth (ft) : 637
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 100
Conductor ID : 16
Shoe Joint Length (ft) : 45
Landing Joint (ft) : 29

Max Rate: 7
Max Pressure: 2500

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.49
Gallons Per Sack: 7.48
% Excess: 30%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 10.0
Fluid Ahead (bbls): 40.0
H2O Wash Up (bbls): 10.0

Spacer Ahead Makeup

40 bbls H2o+Dye in 2nd 10bbls

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 19.60 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 89.10 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 322.43 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 431.13 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 76.78 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 289 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 51.53 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 45.73 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 448.15 PSI

Pressure of the fluids inside casing

Displacement: 242.47 psi**Shoe Joint:** 33.31 psi**Total** 275.78 psi**Differential Pressure:** 172.36 psi**Collapse PSI:** 2020.00 psi**Burst PSI:** 3520.00 psi**Total Water Needed:** 147.26 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.

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