



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 6/15/2015
Invoice #: 80147
API#: 05-123-41212
Foreman: JASON KELEHER

Customer: Noble Energy Inc.
Well Name: WELLS RANCH AA11-676

County: Weld
State: Colorado
Sec: 11
Twp: 6N
Range: 63W
Consultant: JIM
Rig Name & Number: H&P 321
Distance To Location: 38
Units On Location: 4031-3106/ 4020-3212
Time Requested: 1000
Time Arrived On Location: 900
Time Left Location: 1530

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft) : 598
Total Depth (ft) : 638
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 100
Conductor ID : 15.25
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 34
Max Rate: 6
Max Pressure: 1000

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.49
Gallons Per Sack: 7.48
% Excess: 45%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 18.0
Fluid Ahead (bbls): 40.0
H2O Wash Up (bbls): 20.0
Spacer Ahead Makeup
40 BBL WATER/ DYE IN 2ND 10

Casing ID 8.921 Casing Grade J-55 only used

Calculated Results

cuft of Shoe 18.86 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)
cuft of Conductor 76.31 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)
cuft of Casing 352.91 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 448.08 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 79.80 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 301 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 53.56 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 45.52 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 441.14 PSI

Pressure of the fluids inside casing

Displacement: 239.11 psi

Shoe Joint: 32.05 psi

Total 271.16 psi

Differential Pressure: 169.98 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 159.08 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.

Date _____