



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/25/2015

Invoice # 80128

API# 05-123-40641

Foreman: JASON KELEHER

Customer: Noble Energy Inc.

Well Name: CHRISTINE LC 27-755

County: Weld

State: Colorado

Sec: 34

Twp: 9N

Range: 59W

Consultant: DEREK

Rig Name & Number: H&P 326

Distance To Location: 67

Units On Location: 4031-3107/ 4020-3212

Time Requested: 1530

Time Arrived On Location: 1530

Time Left Location: 1930

WELL DATA

Casing Size OD (in) : 9.625

Casing Weight (lb) : 36.00

Casing Depth (ft.) : 644

Total Depth (ft) : 684

Open Hole Diameter (in.) : 13.50

Conductor Length (ft) : 100

Conductor ID : 15.25

Shoe Joint Length (ft) : 45

Landing Joint (ft) : 35

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: 40%

Displacement Fluid lb/gal: 8.3

BBL to Pit: 21.0

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 19.68 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 372.44 cuft

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

Total Slurry Volume 468.43 cuft

(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 83.43 bbls

(Total Slurry Volume) X (.1781)

Sacks Needed 314 sk

(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 55.99 bbls

(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 49.01 bbls

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

Pressure of cement in annulus

Hydrostatic Pressure: 475.31 PSI

Pressure of the fluids inside casing

Displacement: 258.27 psi

Shoe Joint: 33.45 psi

Total 291.72 psi

Differential Pressure: 183.60 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 165.00 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.

X
Date