



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/3/2015
Invoice #: 80451
API#: 05-123-41732
Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Wells Ranch AE 32-675

County: Weld
State: Colorado
Sec: 32
Twp: 6N
Range: 62W

Consultant: Josh
Rig Name & Number: H&P 343
Distance To Location: 23 Miles
Units On Location: 4023-3104/4033-3212
Time Requested: 430am
Time Arrived On Location: 250am
Time Left Location: 845am

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 604
Total Depth (ft) : 638
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: 40%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 12.0
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 19.66 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 345.02 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 453.78 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 80.82 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 305 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 54.24 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 45.41 bbls

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

Pressure of cement in annulus

Hydrostatic Pressure: 445.76 PSI

Pressure of the fluids inside casing

Displacement: 241.01 psi

Shoe Joint: 33.42 psi

Total 274.43 psi

Differential Pressure: 171.33 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 149.65 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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Customer
Well Name

Noble Energy Inc.
Wells Ranch AE 32-675


INVOICE #
LOCATION
FOREMAN
Date

80451
Weld
Calvin Reimers
10/3/2015

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DESCRIPTION OF JOB EVENTS

[illegible]

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John J. O'Connell

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WSS

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10/3/15