



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 10/18/2015
Invoice #: 80455
API#: 05-123-41733
Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Wells Ranch AE 32-690

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

Consultant: Cliff
Rig Name & Number: H&P 343
Distance To Location: 23 Miles
Units On Location: 4023-3104/4033-3212
Time Requested: 400pm
Time Arrived On Location: 240pm
Time Left Location: 700pm

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 610
Total Depth (ft) : 639
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: 50%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 18.0
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 19.69 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 374.06 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 482.85 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 85.99 bbls
(Total Slurry Volume) X (.1781)

Sacks Needed 324 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 57.71 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 45.87 bbls

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

Pressure of cement in annulus

Hydrostatic Pressure: 450.18 PSI

Pressure of the fluids inside casing

Displacement: 243.57 psi

Shoe Joint: 33.46 psi

Total 277.03 psi

Differential Pressure: 173.15 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 153.59 bbls

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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.



Noble Energy Inc.
Wells Ranch AE 32-690

80455
Weld
Calvin Reimers
10/18/2015

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DESCRIPTION OF JOB EVENTS

X Work Performed

X 10-15-15
Date