



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 4/7/2016
Invoice # 80480
API# 05-123-42421
Foreman: Matthew

Customer: Noble Energy Inc.
Well Name: Wells Ranch AA22-645

County: Weld
State: Colorado
Sec: 22
Twp: 6N
Range: 63W

Consultant:
Rig Name & Number: H&P 343
Distance To Location: 18
Units On Location: 3106,
Time Requested: 1930
Time Arrived On Location: 1830
Time Left Location:

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 1,947
Total Depth (ft) : 1952
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 80
Conductor ID : 15.25
Shoe Joint Length (ft) : 45
Landing Joint (ft) : 5
Max Rate: 7
Max Pressure: 1500

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.49
Gallons Per Sack: 7.48
% Excess: 15%
Displacement Fluid lb/gal: 8.7
BBL to Pit: 16.0
Fluid Ahead (bbls): 50.0
H2O Wash Up (bbls): 20.0
Spacer Ahead Makeup
40Water , 10 Dye

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 19.53 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)
cuft of Conductor 61.05 cuft
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)
cuft of Casing 898.00 cuft
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 1113.45 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 198.00 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 747 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 133.04 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 146.70 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 1415.30 PSI

Pressure of the fluids inside casing

Displacement: 857.00 psi

Shoe Joint: 33.20 psi

Total 890.20 psi

Differential Pressure: 525.10 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 349.74 bbls

X

WZ Bern

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 AA22-645

INVOICE #
LOCATION
FOREMAN
Date

80480
Weld
Matthew
1/31/2016

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DESCRIPTION OF JOB EVENTS

X W J Ben
Work Preformed

X *WSS*

X 4/7/14
Date