



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/16/2015
Invoice #: 90039
API#: 05-123-41728
Supervisor: Nick

Customer: Noble Energy Inc.
Well Name: Wells Ranch AE 312-645

County: Weld
State: Colorado
Sec: 32
Twp: 6N
Range: 62W
Consultant: Clifford
Rig Name & Number: H&P 343
Distance To Location: 60
Units On Location: 3102/4028/4022/3215
Time Requested: 10:00
Time Arrived On Location: 9:30
Time Left Location:

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft) : 619
Total Depth (ft) : 629
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 104
Conductor ID : 15.25
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 5

Max Rate: 7
Max Pressure: 1500

Cement Data

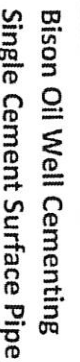
Cement Name: BFN III
Cement Density (lb/gal) : 14.2
Cement Yield (cuft) : 1.49
Gallons Per Sack: 7.48
% Excess: 0%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 0.0
Fluid Ahead (bbls): 40.0
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup
DYE IN SECOND 10 BBL

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 44.70 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe	18.66	cuft	Pressure of cement in annulus
(Casing ID Squared) X (.005454) X (Shoe Joint ft)			
cuft of Conductor	79.37	cuft	Hydrostatic Pressure: 456.64 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)			
cuft of Casing	239.42	cuft	Pressure of the fluids inside casing
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)			
Total Slurry Volume	337.45	cuft	Displacement: 248.36 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)			
bbls of Slurry	60.10	bbls	Shoe Joint: 31.72 psi
(Total Slurry Volume) X (.1781)			
Sacks Needed	227	sk	Total 280.08 psi
Mix Water	40.43	bbls	Differential Pressure: 176.55 psi
(Sacks Needed) X (Gallons Per Sack) ÷ 42			
			Collapse PSI: 2020.00 psi
			Burst PSI: 3520.00 psi
			Total Water Needed: 145.13 bbls

X
Authorization to Proceed

Customer hereby acknowledges and specifically agrees to the terms and conditions of this work order, including, without limitation, the provisions on this work order.



Noble Energy Inc.
Wells Ranch AE 32-045

90039
Weld
Nick
9/16/2015

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DESCRIPTION OF JOB EVENTS

[illegible]

X	Work Performed
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X	WSS
Title	

X 07/16/15
Date