



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/1/2015
Invoice #: 80423
API#: 05-123-41535
Foreman: Calvin Reimers

Customer: Noble Energy Inc.
Well Name: 70 Ranch State BB 18-647

County: Weld
State: Colorado
Sec: 17
Twp: 5N
Range: 63W
Consultant: John
Rig Name & Number: H&P 326
Distance To Location: 36 Miles
Units On Location: 4023-3104/4033-3212
Time Requested: 700pm
Time Arrived On Location: 555pm
Time Left Location: 900pm

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 14.2
Casing Depth (ft.) : 737	Cement Yield (cuft) : 1.49
Total Depth (ft) : 777	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 10%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit: 10.0
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 34	H2O Wash Up (bbls): 10.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	50bbls H2O+Dye in 2nd 10bbls

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results	Displacement:	56.10	bbls
cuft of Shoe	19.75	cuft	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
(Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus		
cuft of Conductor	89.10	cuft	Hydrostatic Pressure: 543.99 PSI
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of the fluids inside casing		
cuft of Casing	342.68	cuft	Displacement: 298.35 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Shoe Joint:	33.56	psi
Total Slurry Volume	Total	331.91	psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Differential Pressure:	212.09	psi
bbls of Slurry			
(Total Slurry Volume) X (.1781)	Collapse PSI:	2020.00	psi
Sacks Needed	Burst PSI:	3520.00	psi
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total Water Needed:	170.07	bbls
Mix Water			
(Sacks Needed) X (Gallons Per Sack) ÷ 42			

[Signature]
Authorization To Proceed



INVOICE #
LOCATION
FOREMAN
Date

80423
Weld
Calvin Reir
8/1/2011

Customer
Well Name

Noble Energy Inc.
70 Ranch State BB 18-647

DESCRIPTION OF JOB EVENTS

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