



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 12/15/2014
Invoice #: 25104
API#: 05-123-39807
Foreman: Calvin Reimers

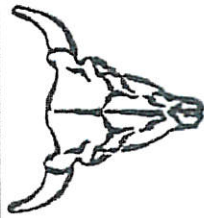
Customer: Noble Energy Inc.
Well Name: Davis State LD 02-73-1BHN

County: Weld
State: Colorado
Sec: 2
Twp: 9N
Range: 58W

Consultant: Mike
Rig Name & Number: H&P 343
Distance To Location: 81 Miles
Units On Location: 4023-3104/4018-3204
Time Requested: 100am
Time Arrived On Location: 445am
Time Left Location: 9:00am

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) : 1,178	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1211	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 20%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit: 16
Shoe Joint Length (ft) : 44	Fluid Ahead (bbls): 30.0
Landing Joint (ft) : 39	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	30bbls H2O+Dye in 2nd 10bbls

Casing ID 8.921	Casing Grade J-55 only used
Calculated Results	Displacement: 90.66 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 19.10 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus
cuft of Conductor 89.10 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 869.19 PSI
cuft of Casing 632.36 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 740.56 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 489.06 psi
bbls of Slurry 131.89 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 32.47 psi
Sacks Needed 497 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 521.52 psi
Mix Water 88.52 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 347.66 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 229.18 bbls
<div>Authorization to Proceed</div>	
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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Single Cement Surface Pipe

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LOCATION
FOREMAN
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25104
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Well Name

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DESCRIPTION OF JOB EVENTS

	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI	BBLs	Time	PSI
Safety Meeting	623am														
MIRU	550am														
CIRCULATE	716am														
Drop Plug															
745aam															
M & P															
Time	Sacks														
723am	497														
742am															
% Excess	20%														
Mixed bbls	88.52														
Total Sacks	497														
bbl Returns	16														
Water Temp	46.7														

Notes:

The day

1/2 bbl back on bleed off

Casing PSI Test 805am 1010psi to 808am 1010psi

X

Work Performed

X

Title

X

Date