



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 2/3/2015

Invoice # 25140

API# 05-123-38141

Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Reliance E 23-69-1HN

County: Weld

State: Colorado

Sec: 23

Twp: 6N

Range: 65W

Consultant: Shane/Gary

Rig Name & Number: H&P326

Distance To Location: 18 Miles

Units On Location: 4030-3104/4033-3205

Time Requested: 630am

Time Arrived On Location: 440am

Time Left Location: 1100am

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft.) : 771
Total Depth (ft) : 811
Open Hole Diameter (in.) : 13.50
Conductor Length (ft) : 100
Conductor ID : 16
Shoe Joint Length (ft) : 45
Landing Joint (ft) : 34

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: 10%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 13.0
Fluid Ahead (bbls): 50.0
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup
50bbls H2O+Dye in 2nd 10bbls

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 19.49 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 360.72 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 469.30 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 83.58 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 315 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 56.09 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 58.74 bbls

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

Pressure of cement in annulus

Hydrostatic Pressure: 568.74 PSI

Pressure of the fluids inside casing

Displacement: 313.07 psi

Shoe Joint: 33.12 psi

Total 346.19 psi

Differential Pressure: 222.55 psi

Collapse PSI: 2020.00 psi

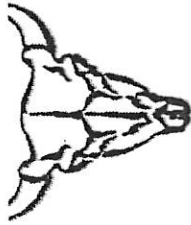
Burst PSI: 3520.00 psi

Total Water Needed: 184.83 bbls

X

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.



Single Cement Surface Pipe

Customer
Well Name

Noble Energy Inc.
Reliance E 23-69-1HN

INVOICE #
LOCATION
FOREMAN
Date

Weld
Calvin Reimers
2/3/2015

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DESCRIPTION OF JOB EVENTS

	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
	716am	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time
Safety Meeting	555am	0	946am	100	0			0			0			0	
MIRU	914am	10	948am	40	10			10			10			10	
CIRCULATE		20	950am	70	20			20			20			20	
Drop Plug		30	952am	120	30			30			30			30	
		40	954am	250	40			40			40			40	
		50	956am	220	50			50			50			50	
M & P		60	1000am	220	60			60			60			60	
Time	Sacks	70	Bump	380	70			70			70			70	
923am		80			80			80			80			80	
942am		90			90			90			90			90	
		100			100			100			100			100	
		110			110			110			110			110	
% Excess	10%	120			120			120			120			120	
Mixed bbls	56.09	130			130			130			130			130	
Total Sacks	315	140			140			140			140			140	
bbl Returns	13	150			150			150			150			150	
Water Temp	30.9														

Notes:

The day

1/2 bbl Back on Bleed Off

Casing PSI Test 1001am 1040psi to 1016am 1040psi

1010psi to 743pm 970psi

[Signature]

X WSS

Title

X 2-3-15

Date

X

Work Performed