



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/12/2015

Invoice #: 80008

API#: 05-123-37604

Foreman: Calvin Reimers

Customer: Noble Energy Inc.

Well Name: Reliance E 23-65-1HN

County: Weld

State: Colorado

Sec: 23

Twp: 6N

Range: 65W

Consultant: Seth

Rig Name & Number: H&P 326

Distance To Location: 17 Miles

Units On Location: 4027-3106/4032-3210

Time Requested: 330pm

Time Arrived On Location: 210pm

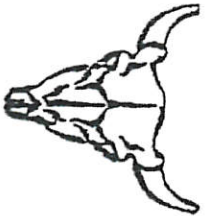
Time Left Location: 745pm

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.): 755	Cement Yield (cuft): 1.49
Total Depth (ft.): 795	Gallons Per Sack: 7.48
Open Hole Diameter (in.): 13.50	% Excess: 34%
Conductor Length (ft.): 100	Displacement Fluid lb/gal: 8.3
Conductor ID: 16	BBL to Pit: 20.0
Shoe Joint Length (ft.): 45	Fluid Ahead (bbls): 60.0
Landing Joint (ft.): 34	H2O Wash Up (bbls): 20.0
Max Rate: 7	Spacer Ahead Makeup
Max Pressure: 2500	60bbls H2O+Gye in 2nd 10bbls

Calculated Results	Displacement: 57.47 bbls
cuft of Shoe 19.69 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor 89.10 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus
cuft of Casing 428.97 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Hydrostatic Pressure: 556.98 PSI
Total Slurry Volume 537.76 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Pressure of the fluids inside casing
bbls of Slurry 95.77 bbls (Total Slurry Volume) X (.1781)	Displacement: 305.99 psi Shoe Joint: 33.46 psi Total: 339.45 psi
Sacks Needed 361 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Differential Pressure: 217.52 psi
Mix Water 64.28 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Collapse PSI: 2020.00 psi Burst PSI: 3520.00 psi
	Total Water Needed: 201.75 bbls

X *Calvin Reimers*
 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.



Bison Oil Well Cementing
Single Cement Surface Pipe

Customer
 Well Name

Noble Energy Inc.
 Reliance E 23-65-1HN

INVOICE #
 LOCATION
 FOREMAN
 Date

80008
 Weld
 Calvin Reimers
 3/12/2015

Treatment Report Page 2

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	513pm														
MIRU	420pm														
CIRCULATE	603pm														
Drop Plug	0	633pm	60	0			0			0			0		
	10	635pm	70	10			10			10			10		
	20	637pm	90	20			20			20			20		
	30	639pm	170	30			30			30			30		
	40	641pm	250	40			40			40			40		
	50	643pm	210	50			50			50			50		
M & P	60	648pm	190	60			60			60			60		
Time	Sacks			70			70			70			70		
615pm	361			80			80			80			80		
630pm				90			90			90			90		
				100			100			100			100		
				110			110			110			110		
				120			120			120			120		
% Excess	34%			130			130			130			130		
Mixed bbls	64.28			140			140			140			140		
Total Sacks	361			150			150			150			150		
bbl Returns	20														
Water Temp	66.9														

Notes:

The day

1/2 bbl Back on Bleed Off

PSI Test603pm to 603pm 1100psi, Clcr 6bbls min. 110psi, Cement 14.2 to 14.1 lb/gal at 6 to 7 bbl min.

X 1 am Barbara Title WSS X 3/12/15 Date