



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 1/25/2015
Invoice #: 65061
API#: AFE 200214
Foreman: Lee Sharp

Customer: Noble Energy Inc.

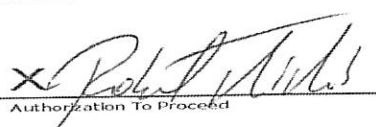
Well Name: Moses State LD11-78-1BHN

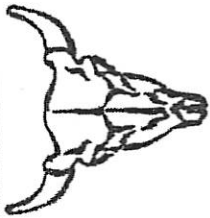
County: Weld
State: Colorado

Sec: 28
Twp: 3N
Range: 68W

Consultant:
Rig Name & Number: H&P 273
Distance To Location: 82
Units On Location: 4027-3106/ 4020-3212
Time Requested: 7:00
Time Arrived On Location: 6:45
Time Left Location:

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) : 1,218	Cement Yield (cuft) : 1.49
Total Depth (ft) : 1224	Gallons Per Sack: 7.48
Open Hole Diameter (in.) : 13.50	% Excess: 0%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.325	BBL to Pit:
Shoe Joint Length (ft) : 45	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 0	H2O Wash Up (bbls): 20.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	10F 10D 30F

Casing ID	8.921	Casing Grade	J-55 only used	
Calculated Results		Displacement: 90.65 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)		
cuft of Shoe	19.61	cuft	Pressure of cement in annulus	
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		Hydrostatic Pressure:	898.37 PSI	
cuft of Conductor	77.56	cuft	Pressure of the fluids inside casing	
(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Displacement:	505.61 psi	
cuft of Casing	546.30	cuft	Shoe Joint:	33.34 psi
(Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Total	538.94 psi	
Total Slurry Volume	643.48	cuft	Differential Pressure:	359.43 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Collapse PSI:	2020.00 psi	
bbls of Slurry	114.60	bbls	Burst PSI:	3520.00 psi
(Total Slurry Volume) X (.1781)		Total Water Needed:	237.57 bbls	
Sacks Needed	432	sk		
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)				
Mix Water	76.91	bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42				
<div><div></div><div>Authorization To Proceed</div></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.				



Bison Oil Well Cementing
Single Cement Surface Pipe

Customer
Well Name

Noble Energy Inc.
Moses State LD11-78-1BHN

INVOICE #
LOCATION
FOREMAN
Date

65061
Weld
Lee Sharp
1/26/2015

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	1025 1010 1107	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI
Safety Meeting		0	1204		0			0			0			0		
MIRU		10	1206	40	10			10			10			10		
CIRCULATE		20	1208	50	20			20			20			20		
Drop Plug		30	1211	100	30			30			30			30		
1204		40	1212	190	40			40			40			40		
		50	1214	250	50			50			50			50		
M & P		60	1216	300	60			60			60			60		
Time		70	1217	350	70			70			70			70		
1114-1204	Sacks	80	1220	380	80			80			80			80		
		90	1223	290	90			90			90			90		
		100	Land	610	100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
% Excess	18%	130			130			130			130			130		
Mixed bbls	91	140			140			140			140			140		
Total Sacks	511	150			150			150			150			150		
bbl Returns	18															
Water Temp	42															

Notes:

The day

Job completed with no major issues

Plug landed on calculated @ 610 psi; time 1223

Floats checked @ 1225 Held

Lee Sharp

X *WSS*

X *1-26-15*

Work Performed

Title

Date