



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 11/29/2014
 Invoice # 55039
 API# _____
 Foreman: Monte

Customer: Noble Energy Inc.
 Well Name: Wells Ranch AE19-685

County: Weld Consultant: Josh
 State: Colorado Rig Name & Number: H&P 321
 Distance To Location: 34.8
 Sec: 20 Units On Location: 4028-3102 4022-3213
 Twp: 6n Time Requested: 2:30am
 Range: 62w Time Arrived On Location: 1:15am
 Time Left Location: 7:15

WELL DATA	Cement Data
Casing Size OD (in) : <u>9.625</u>	Cement Name: <u>BFN III</u>
Casing Weight (lb) : <u>36.00</u>	Cement Density (lb/gal) : <u>15.2</u>
Casing Depth (ft.) : <u>656</u>	Cement Yield (cuft) : <u>1.27</u>
Total Depth (ft) : <u>738</u>	Gallons Per Sack: <u>5.89</u>
Open Hole Diameter (in.) : <u>13.50</u>	% Excess: <u>70%</u>
Conductor Length (ft) : <u>124</u>	Displacement Fluid lb/gal: <u>8.3</u>
Conductor ID : <u>15.6</u>	BBL to Pit:
Shoe Joint Length (ft) : <u>43</u>	Fluid Ahead (bbls): <u>50.0</u>
Landing Joint (ft) : <u>34</u>	H2O Wash Up (bbls): <u>20.0</u>
Max Rate:	Spacer Ahead Makeup
Max Pressure:	<u>10 fresh 10 dye 30 fresh</u>

Calculated Results	Pressure Calculations
cuft of Shoe <u>18.66</u> cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Displacement: <u>50.02</u> bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Conductor <u>101.93</u> cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Pressure of cement in annulus Hydrostatic Pressure: <u>517.98</u> PSI
cuft of Casing <u>442.01</u> cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing Displacement: <u>264.31</u> psi Shoe Joint: <u>33.95</u> psi Total: <u>298.27</u> psi
Total Slurry Volume <u>562.60</u> cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Differential Pressure: <u>219.71</u> psi
bbls of Slurry <u>100.20</u> bbls (Total Slurry Volume) X (.1781)	Collapse PSI: <u>2020.00</u> psi Burst PSI: <u>3520.00</u> psi
Sacks Needed <u>443</u> sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total Water Needed: <u>182.14</u> bbls
Mix Water <u>62.12</u> bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	

[Signature]
 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.



DISPOSITION WELL CEMENTING
Single Cement Surface Pipe

Customer
Well Name

Noble Energy Inc.
Wells Ranch AE19-685

INVOICE #
LOCATION
FOREMAN
Date

00000
Weld
Monte
11/29/2014

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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	4:30am															
MIRU	3:45	0	5:42	0	0			0			0			0		
CIRCULATE	5:08	10	5:48	60	10			10			10			10		
Drop Plug		20	5:50	70	20			20			20			20		
5:41		30	5:52	190	30			30			30			30		
		40	5:54	220	40			40			40			40		
		50	5:56	250	50			50			50			50		
M & P		60	5:57	600	60			60			60			60		
Time	Sacks	70			70			70			70			70		
5:20-5:39	443	80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
		120			120			120			120			120		
% Excess	70%	130			130			130			130			130		
Mixed bbbs	62.12	140			140			140			140			140		
Total Sacks	443	150			150			150			150			150		
bbbl Returns	12															
Water Temp	100															

Notes:

Safety meeting ,miru, pressure test per company man, mix and pump 443 sks, displace 52 h2o, 12 bbbs back

X _____
 Work Performed

X _____
 Title

X 11-29-14
 Date