




Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/23/2014
Invoice #: 55015
API#:
Foreman: monte

Customer: Noble Energy Inc.
Well Name: five rivers k09-86-1ahn

County: Weld
State: Colorado
Sec: 9
Twp: 4n
Range: 66w
Consultant: lane
Rig Name & Number: h&p 330
Distance To Location: 5.8
Units On Location: 4028-3102 4017-3211
Time Requested: 8:30pm
Time Arrived On Location: 7:30
Time Left Location: 1230

WELL DATA	Cement Data
Casing Size OD (in) : 9.625	Cement Name: BFN III
Casing Weight (lb) : 36.00	Cement Density (lb/gal) : 15.2
Casing Depth (ft.) : 598	Cement Yield (cuft) : 1.27
Total Depth (ft) : 633	Gallons Per Sack: 5.89
Open Hole Diameter (in.) : 13.50	% Excess: 15%
Conductor Length (ft) : 130	Displacement Fluid lb/gal: 8.3
Conductor ID : 15.6	BBL to Pit:
Shoe Joint Length (ft) : 43	Fluid Ahead (bbls): 40.0
Landing Joint (ft) : 30	H2O Wash Up (bbls): 20.0
Max Rate: 5	Spacer Ahead Makeup
Max Pressure: 2000	10 fresh 10 dye 20 fresh

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 45.23 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe 18.66 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus		
cuft of Conductor 106.86 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 472.18 PSI		
cuft of Casing 263.03 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing		
Total Slurry Volume 388.56 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 239.31 psi		
bbls of Slurry 69.20 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 33.95 psi		
Sacks Needed 306 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 273.26 psi		
Mix Water 42.91 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 198.92 psi		
	Collapse PSI: 2020.00 psi		
	Burst PSI: 3520.00 psi		
	Total Water Needed: 148.13 bbls		
 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.			



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five rivers k09-86-1ahn

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DESCRIPTION OF JOB EVENTS

	Time	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	10:35															
MIRU	10:05															
CIRCULATE	10:38	0	11:16	0	0			0			0			0		
Drop Plug		10	11:18	100	10			10			10			10		
10:40		20	11:21	220	20			20			20			20		
		30	11:23	280	30			30			30			30		
		40	11:28	310	40			40			40			40		
M & P		50	11:30	520	50			50			50			50		
Time	Sacks	60			60			60			60			60		
10:47-11:14	306	70			70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	15%	120			120			120			120			120		
Mixed bbls	42.91	130			130			130			130			130		
Total Sacks	306	140			140			140			140			140		
bbl Returns	10	150			150			150			150			150		
Water Temp	75.5															

Notes:

Safety Meeting, miru, pressure test per company man circulate 40 bbls ahead with dye in 2nd 10,
mix and pump 306 sks at 15 % excess. drop plug and displace 46.2 bbls h2o

X

Wick Preferred

X

Title

X

Date