



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/25/2014
Invoice # 35006
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: heartland g 25-72-1hn

County: Weld
State: Colorado
Sec: 25
Twp: 4n
Range: 65w

Consultant: bo
Rig Name & Number: pd 828
Distance To Location: 10
Units On Location: 4030-3103/4018-3204
Time Requested: 200 am
Time Arrived On Location: 1145 pm
Time Left Location: 4:15 pm

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) : 686	Cement Yield (cuft) : 1.27
Total Depth (ft) : 718	Gallons Per Sack : 5.89
Open Hole Diameter (in.) : 13.75	% Excess : 30%
Conductor Length (ft) : 100	Displacement Fluid lb/gal: 8.3
Conductor ID : 16	BBL to Pit:
Shoe Joint Length (ft) : 42	Fluid Ahead (bbls): 50.0
Landing Joint (ft) : 22	H2O Wash Up (bbls): 20.0
Max Rate:	Spacer Ahead Makeup
Max Pressure:	

Casing ID 8.921	Casing Grade J-55 only used
Calculated Results	Displacement: 51.49 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)
cuft of Shoe 18.23 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus
cuft of Conductor 89.10 cuft (Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 541.67 PSI
cuft of Casing 400.62 cuft (Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing
Total Slurry Volume 507.95 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 277.68 psi
bbls of Slurry 90.47 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 33.16 psi
Sacks Needed 400 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 310.84 psi
Mix Water 56.09 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 230.82 psi
	Collapse PSI: 2020.00 psi
	Burst PSI: 3520.00 psi
	Total Water Needed: 177.58 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.



Bison Oil Well Cementing
Single Cement Surface Pipe

Customer
Well Name

Noble Energy Inc.
heartland g 25-72-1hn

INVOICE #
LOCATION
FOREMAN
Date

35006
Weld
Kirk Kallhoff
7/26/2014

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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	147am															
MIRU	120am															
CIRCULATE	226am	0	256am	10	0			0			0			0		
Drop Plug		10	258am	90	10			10			10			10		
	256 am	20	300am	160	20			20			20			20		
		30	302am	240	30			30			30			30		
		40	304am	310	40			40			40			40		
M & P		50	308am	280	50			50			50			50		
Time	Sacks	60			60			60			60			60		
236 am	353	70			70			70			70			70		
256 am stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	8%	120			120			120			120			120		
Mixed bbls	49.5	130			130			130			130			130		
Total Sacks	353	140			140			140			140			140		
bbl Returns	17	150			150			150			150			150		
Water Temp																

Notes:

bumped plug at 309 am 480 psi 79.8 bbls slurry

casing test 1000 psi for 15 min

X
Work Performed

X W.S.S.
Title

X 7-26-14
Date