



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 3/25/2015
Invoice #: 80161
API#: AFE 200118
Foreman: Lee Sharp

Customer: Noble Energy Inc.
Well Name: Reliance E23-66-1HN

County: Weld
State: Colorado
Sec: _____
Twp: _____
Range: _____


Consultant:
Rig Name & Number: H&P 326
Distance To Location: 15
Units On Location: 4027-3106 / 4032
Time Requested: 15:00
Time Arrived On Location: 14:30
Time Left Location: 18:30

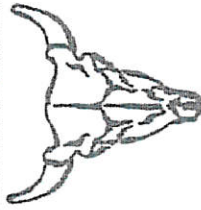
WELL DATA

Casing Size OD (in): 9.625
Casing Weight (lb): 35.00
Casing Depth (ft): 803
Total Depth (ft): 813
Open Hole Diameter (in): 13.50
Conductor Length (ft): 100
Conductor ID: 15.25
Shoe Joint Length (ft): 44
Landing Joint (ft): 0
Max Rate: 7
Max Pressure: 1200

Cement Data

Cement Name: BFM III
Cement Density (lb/gal): 14.2
Cement Yield (cuft): 1.49
Gallons Per Sack: 7.48
% Excess: 25%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 18.0
Fluid Ahead (bbls): 50.0
H2O Wash Up (bbls): 20.0
Spacer Ahead Makeup
50 2nd 10 dye

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 58.70 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe	19.21 cuft (Casing ID Squared) X (.005454) X (Shoe Joint ft)	Pressure of cement in annulus	
cuft of Conductor	76.31 cuft (Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	Hydrostatic Pressure: 592.82 PSI	
cuft of Casing	429.84 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing	
Total Slurry Volume	525.36 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement 327.42 psi	
bbls of Slurry	93.57 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 32.64 psi	
Sacks Needed	353 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 360.06 psi	
Mix Water	62.79 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 232.76 psi	
		Collapse PSI: 2020.00 psi	
		Burst PSI: 3520.00 psi	
		Total Water Needed 191.50 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.			



Bison Oil Well Cementing
Single Cement Surface Pipe

INVOICE #
LOCATION
FOREMAN
Date

80161
Weld
Lee Sharp
3/25/2015

Customer
Well Name

Noble Energy Inc.
Reliance E23-66-1HN

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	16:20														
MIRU	16:00														
CIRCULATE	16:47	0	17:43	0			0			0			0		
Drop Plug		10	17:46	40			10			10			10		
17:42		20	17:48	60			20			20			20		
		30	17:50	160			30			30			30		
		40	17:52	250			40			40			40		
M & P		50	17:54	230			50			50			50		
Time		60	Land	520			60			60			60		
17:18-17:39	Sacks	70					70			70			70		
		80					80			80			80		
		90					90			90			90		
		100					100			100			100		
		110					110			110			110		
		120					120			120			120		
% Excess		130					130			130			130		
Mixed bbls	63	140					140			140			140		
Total Sacks	353	150					150			150			150		
bbl Returns	10														
Water Temp	100														

Notes:

The day

Job completed with no issues

Plug landed on calculated

casing test 17:59 1000psi-18:13 1010psi

Floats checked and held

X Andrea Dupas
Work Performed

X WSS
Title

X
Date