



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 9/3/2014
Invoice #: 25046
API#: 05-123-38856
Foreman: Calvin Reimers

Customer: Noble Energy Inc.
Well Name: Brook LC 28-77-1HNA

County: Weld
State: Colorado
Sec: 28
Twp: 9N
Range: 59W
Consultant: JW
Rig Name & Number: H&P 326
Distance To Location: 66 Miles
Units On Location: 4034-3104/4018-3204
Time Requested: 730am
Time Arrived On Location: 652am
Time Left Location: 1145am

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft) : 606
Total Depth (ft) : 646
Open Hole Diameter (in.) : 13.75
Conductor Length (ft) : 100
Conductor ID : 16
Shoe Joint Length (ft) : 43
Landing Joint (ft) : 34
Max Rate: 7
Max Pressure: 2500

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 15.2
Cement Yield (cuft) : 1.27
Gallons Per Sack: 5.89
% Excess: 33%
Displacement Fluid lb/gal: 8.3
BBL to Pit: 16.0
Fluid Ahead (bbls): 40.0
H2O Wash Up (bbls): 20.0
Spacer Ahead Makeup
40bbls H2O+Dye in 2nd 10bbls

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.82 cuft
(Casing ID Squared) X (.005454) X (Shoe Joint ft)
cuft of Conductor 89.10 cuft
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)
cuft of Casing 353.92 cuft
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)
Total Slurry Volume 461.84 cuft
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)
bbls of Slurry 82.25 bbls
(Total Slurry Volume) X (.1781)
Sacks Needed 364 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
Mix Water 51.00 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 46.11 bbls

(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 478.51 PSI

Pressure of the fluids inside casing

Displacement: 242.61 psi

Shoe Joint: 34.24 psi

Total 276.85 psi

Differential Pressure: 201.67 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 157.11 bbls

X Jw Irwin
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.
Brook LC 28-77-1HNA

INVOICE #
LOCATION
FOREMAN
Date

2504b
Weld
Calvin Reimers
9/3/2014

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	945am															
MIRU	917am															
CIRCULATE	1026am	0	1051am	90	0			0			0			0		
Drop Plug		10	1054am	100	10			10			10			10		
1050am		20	1055am	160	20			20			20			20		
		30	1057am	220	30			30			30			30		
		40	1059am	240	40			40			40			40		
M & P		50	1103am	220	50			50			50			50		
Time	Sacks	60	Bump	340	60			60			60			60		
1032am	364	70			70			70			70			70		
1064am		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	33%	120			120			120			120			120		
Mixed bbls	51	130			130			130			130			130		
Total Sacks	364	140			140			140			140			140		
bbl Returns	16	150			150			150			150			150		
Water Temp	71.7															

Notes:

The day

1/2 BBL Back on Bleed Off

X Jim Irwin
Work Performed

X WSS
Title

X 9-3-14
Date