



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 8/5/2014
Invoice #: 35011
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: rainbow lc 28-74-1hnd

County: Weld

State: Colorado

Sec: 28

Twp: 9n

Range: 59w

Consultant: mike m

Rig Name & Number: h&p 273

Distance To Location: 45

Units On Location: 4030-3103/4033-3210

Time Requested: 300 am

Time Arrived On Location: 230 am

Time Left Location: 5:30 am

WELL DATA

Casing Size OD (in) : 9.625
Casing Weight (lb) : 36.00
Casing Depth (ft) : 587
Total Depth (ft) : 625
Open Hole Diameter (in.) : 13.75
Conductor Length (ft) : 100
Conductor ID : 16
Shoe Joint Length (ft) : 42
Landing Joint (ft) : 30

Max Rate:

Max Pressure:

Cement Data

Cement Name: BFN III
Cement Density (lb/gal) : 15.2
Cement Yield (cuft) : 1.27
Gallons Per Sack: 5.89
% Excess: 30%
Displacement Fluid lb/gal: 8.3
BBL to Pit:
Fluid Ahead (bbls): 40.0
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

Casing ID

8.921

Casing Grade

J-55 only used

Calculated Results

cuft of Shoe 18.23 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 332.94 cuft

(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)

Total Slurry Volume 440.26 cuft

(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)

bbls of Slurry 78.41 bbls

(Total Slurry Volume) X (.1781)

Sacks Needed 347 sk

(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

Mix Water 48.62 bbls

(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 44.45 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

Pressure of cement in annulus

Hydrostatic Pressure: 463.50 PSI

Pressure of the fluids inside casing

Displacement: 234.99 psi

Shoe Joint: 33.16 psi

Total 268.16 psi

Differential Pressure: 195.34 psi

Collapse PSI: 2020.00 psi

Burst PSI: 3520.00 psi

Total Water Needed: 153.07 bbls

X *Michael Mayne*
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.
rainbow lc 28-74-1hnd

INVOICE #
LOCATION
FOREMAN
Date

35011
Weld
Kirk Kallhoff
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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	352am															
MIRU	330am															
CIRCULATE	407am	0	441am	10	0			0			0			0		
Drop Plug		10	444am	110	10			10			10			10		
441 am		20	446am	180	20			20			20			20		
		30	448am	250	30			30			30			30		
		40	451am	270	40			40			40			40		
M & P		50			50			50			50			50		
Time	Sacks	60			60			60			60			60		
416 am	347	70			70			70			70			70		
437 am stop		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	30%	120			120			120			120			120		
Mixed bbls	48.7	130			130			130			130			130		
Total Sacks	347	140			140			140			140			140		
bbl Returns	16	150			150			150			150			150		
Water Temp																

Notes:

bumped plug at 454 am 450 psi 78.4 bbls slurry

X

Wopk-Preformed

X

Title

X

Date