



Bison Oil Well Cementing Single Cement Surface Pipe

Date: 6/17/2014
 Invoice # 25013
 API# 05-123-38864
 Foreman: Calvin Reimers

Customer: Noble Energy Inc.
 Well Name: Seneca E 15-72-1HN

County: Weld
 State: Colorado
 Sec: 14
 Twp: 6N
 Range: 65W

Consultant: Roger
 Rig Name & Number: PD 829
 Distance To Location: 18 Miles
 Units On Location: 4023-3104/4020-3212
 Time Requested: 500pm
 Time Arrived On Location: 340pm
 Time Left Location: 645pm

WELL DATA

Casing Size OD (in) : 9.625
 Casing Weight (lb) : 36.00
 Casing Depth (ft.) : 639
 Total Depth (ft) : 665
 Open Hole Diameter (in.) : 13.75
 Conductor Length (ft) : 100
 Conductor ID : 16
 Shoe Joint Length (ft) : 43
 Landing Joint (ft) : 18
 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: 30%
 Displacement Fluid lb/gal: 8.3
 BBL to Pit: 12.0
 Fluid Ahead (bbls): 40.0
 H2O Wash Up (bbls): 20.0
 Spacer Ahead Makeup
10bbls H2O+KCL+Dye in 2nd 10bbls

Casing ID	8.921	Casing Grade	J-55 only used
Calculated Results		Displacement: 47.44 bbls (Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Shoe	18.82 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: 504.55 PSI	
cuft of Casing	368.49 cuft (Open Hole Squared)-(Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)	Pressure of the fluids inside casing	
Total Slurry Volume	476.41 cuft (cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)	Displacement: 256.82 psi	
bbls of Slurry	84.85 bbls (Total Slurry Volume) X (.1781)	Shoe Joint: 34.24 psi	
Sacks Needed	375 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	Total 291.07 psi	
Mix Water	52.61 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Differential Pressure: 213.49 psi	
		Collapse PSI: 2020.00 psi	
		Burst PSI: 3520.00 psi	
		Total Water Needed: 160.05 bbls	

X [Signature]
 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.
Seneca E 15-72-1HN

INVOICE #
LOCATION
FOREMAN
Date

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DESCRIPTION OF JOB EVENTS

		Displace 1			Displace 2			Displace 3			Displace 4	
		BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time
Safety Meeting	435pm											
MIRU	350pm											
CIRCULATE	504pm	0	532pm	80	0			0			0	
Drop Plug		10	535pm	120	10			10			10	
531pm		20	537pm	190	20			20			20	
		30	538pm	260	30			30			30	
		40	540pm	260	40			40			40	
M & P		50	544pm	240	50			50			50	
Time	Sacks	60	Bump	440	60			60			60	
512pm	375	70			70			70			70	
529pm		80			80			80			80	
		90			90			90			90	
		100			100			100			100	
		110			110			110			110	
% Excess	30%	120			120			120			120	
Mixed bbls	52.61	130			130			130			130	
Total Sacks	375	140			140			140			140	
bbl Returns	12	150			150			150			150	
Water Temp	71.4											

Notes:

The day

1/2 bbl Back on Bleed off

Casing PSI Test 544pm 1050psi to 559pm 1100psi

X Ed Arnold
Work Preformed

X Co Man
Title