



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 7/18/2014

Invoice # 55002

API#

Foreman: monte

Customer: EnCana Oil & Gas (USA) Inc.

Well Name: jilian-east rinn 3f-22h-m1268

County: Weld

State: Colorado

Sec: 22

Twp: 2n

Range: 68w

Consultant: rich

Rig Name & Number: ensign 124

Distance To Location: 26.7

Units On Location: 4028-3102 4020-3212

Time Requested: 4:30AM

Time Arrived On Location: 3:00AM

Time Left Location:

## WELL DATA

Casing Size OD (in) : 9.625

Casing Weight (lb) : 40.00

Casing Depth (ft.) : 814

Total Depth (ft) : 870

Open Hole Diameter (in.) : 12.25

Conductor Length (ft) : 93

Conductor ID : 15.6

Shoe Joint Length (ft) : 44

Landing Joint (ft) : 17

Max Rate: 5

Max Pressure: 2000

## Cement Data

Cement Name: BFN III

Cement Density (lb/gal) : 15.2

Cement Yield (cuft) : 1.27

Gallons Per Sack: 5.89

% Excess: 50%

Displacement Fluid lb/gal: 8.3

BBL to Pit:

Fluid Ahead (bbls): 30.0

H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup

10 fresh 10 dye 10 fresh

Casing ID

8.835

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 18.73 cuft

(Casing ID Squared) X (.005454) X (Shoe Joint ft)

cuft of Conductor 76.45 cuft

(Conductor Width Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

cuft of Casing 338.70 cuft

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

Total Slurry Volume 433.88 cuft

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

bbls of Slurry 77.27 bbls

(Total Slurry Volume) X (.1781)

Sacks Needed 342 sk

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

Mix Water 47.91 bbls

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

Displacement: 59.67 bbls

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

## Pressure of cement in annulus

Hydrostatic Pressure: 642.73 PSI

## Pressure of the fluids inside casing

Displacement: 332.01 psi

Shoe Joint: 34.74 psi

Total 366.75 psi

Differential Pressure: 275.98 psi

Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

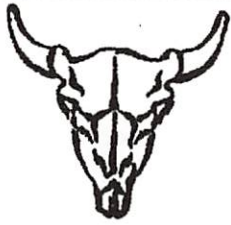
Total Water Needed: 157.59 bbls

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

*Enigma*  
Noble Energy Inc.  
jilian-east rinn 3f-22h-m1268

INVOICE #  
LOCATION  
FOREMAN  
Date

55002  
Weld  
monte  
7/18/2014

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**DESCRIPTION OF JOB EVENTS**

Safety Meeting		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
MIRU		BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI
CIRCULATE	5:43	0	6:08	0	0			0			0			0		
Drop Plug		10	6:11	20	10			10			10			10		
6:08		20	6:13	170	20			20			20			20		
		30	6:15	210	30			30			30			30		
		40	6:18	320	40			40			40			40		
M & P		50	6:20	350	50			50			50			50		
Time	Sacks	60	6:24	600	60			60			60			60		
5:47-6:06	342	70			70			70			70			70		
		80			80			80			80			80		
		90			90			90			90			90		
		100			100			100			100			100		
		110			110			110			110			110		
% Excess	50%	120			120			120			120			120		
Mixed bbls	47.91	130			130			130			130			130		
Total Sacks	342	140			140			140			140			140		
bbl Returns	26	150			150			150			150			150		
Water Temp	64.9															

Notes:

Safety Meeting, miru, pressure test per company manm circulate 30 bbls ahead with dye in 2nd 10, mix and pump 342 sks cement at 50% excess, drop plug and displ  
bumped at 6:24 am, at 600 psi, 26 bbls to pit raise pressure to 1500 psi, hold 15 min

X *[Signature]*  
Work Performed

X  
Title

X  
Date