

# Bison Oil Well Cementing Tail & Lead

Date: 12/13/2013  
Invoice # 12597  
API# 05-123-37790  
Foreman: Calvin Reimers

Customer: Encana  
Well Name: Lochbuie 2C-31H

County: Weld  
State: Colorado  
Sec: 31  
Twp: 1N  
Range: 65W

Consultant: Sandy  
Rig Name & Number: H&P 522  
Distance To Location: 26 Miles  
Units On Location: 3106/3203  
Time Requested: 800am  
Time Arrived On Location: 715am  
Time Left Location:

## WELL DATA

Casing Size (in) : 9.625  
Casing Weight (lb) : 40  
Casing Depth (ft.) : 1,475  
Total Depth (ft) : 1513  
Open Hole Diameter (in) : 12.25  
Conductor Length (ft) : 84  
Conductor ID : 16  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 33

Sacks of Tail Requested 120  
HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 7  
Max Pressure: 2500

## Cement Data

### Lead

Cement Name:  
Cement Density (lb/gal) : 13.1  
Cement Yield (cuft) : 1.69  
Gallons Per Sack : 8.64  
% Excess : 62%

### Tail

Cement Name:  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack : 5.89  
% Excess : 0%

Fluid Ahead (bbls) 110.9  
H2O Wash Up (bbls) 20.0

### Spacer Ahead Makeup

30bbls H2O With KCL+Blue Dye in 2nd 10bbls

Casing ID

8.835

Casing Grade

J-55 only used

## Lead Calculated Results

HOC of Lead 932.64 ft  
Casing Depth - HOC Tail  
Volume of Lead Cement 292.08 cuft  
HOC of Lead X Open Hole Ann  
Volume of Conductor 74.84 cuft  
(Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
Total Volume of Lead Cement 366.92 cuft  
(cuft of Lead Cement) + (Cuft of Conductor)  
bbls of Lead Cement 105.87 bbls  
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)  
Sacks of Lead Cement 351.73 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
bbls of Lead Mix Water 72.35 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42  
Displacement 110.89 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)

Total Water Needed: 251 bbls

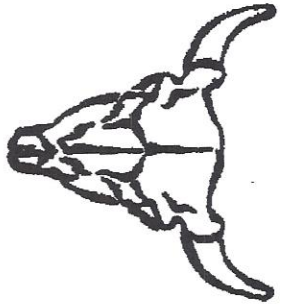
## Tail Calculated Results

Tail Cement Volume In Ann 152.40 cuft  
(HOC Tail) X (OH Ann)  
Total Volume of Tail Cement 133.24 Cuft  
(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)  
bbls of Tail Cement 27.14 bbls  
(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)  
HOC Tail 425.45 ft  
(Tail Cement Volume) ÷ (OH Ann)  
Sacks of Tail Cement 120.00 sk  
(Total Volume of Tail Cement) ÷ (Cement Yield)  
bbls of Tail Mix Water 16.83 bbls  
(Sacks of Tail Cement X Gallons Per Sack) ÷ 42  
Pressure of cement in annulus  
Hydrostatic Pressure 1003.73 PSI  
Collapse PSI: 2570.00 psi  
Burst PSI: 3950.00 psi

X

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  
Two Cement Surface Pipe**

Customer  
Well Name

Encana  
Lochbuie 2C-31H

Date 12/13/2013  
INVOICE # 12597  
LOCATION Weld  
FOREMAN Calvin Reimers  
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	929am															
MIRU	805am															
CIRCULATE	1003am	0	1045am	90	0			0			0			0		
Drop Plug		10	1048am	150	10			10			10			10		
		20	1050am	150	20			20			20			20		
		30	1052am	140	30			30			30			30		
		40	1053am	140	40			40			40			40		
		50	1055am	160	50			50			50			50		
M & P		60	1057am	210	60			60			60			60		
		70	1058am	290	70			70			70			70		
Time	Sacks															
1010am	472	80	1100am	390	80			80			80			80		
1041am		90	1102am	510	90			90			90			90		
		100	1104am	560	100			100			100			100		
		110	1107am	530	110			110			110			110		
		120	Bump	1060	120			120			120			120		
Lead mixed bbls	72.41	130			130			130			130			130		
Lead % Excess	62%	140			140			140			140			140		
Lead Sacks	352	150			150			150			150			150		
Notes:																
Tail mixed bbls	16.83	Float Held														
Tail % Excess	0%															
Tail Sacks	120															
Total Sacks	472															
bbl Returns	10															

X *Barney Valley*

X *Arlo Foreman*

X *12-13-13*

Work Performed

Title

Date