

# Bison Oil Well Cementing Tail & Lead

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

Date: 11/27/2013  
Invoice #: 12591  
API#: 05-123-37789  
Foreman: Calvin Reimers

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

Consultant: Roy  
Rig Name & Number: H&P 522  
Distance To Location: 26 Miles  
Units On Location: 3106/3205  
Time Requested: 345pm  
Time Arrived On Location: 345pm  
Time Left Location: 300 am

## WELL DATA

Casing Size (in) : 9.625  
Casing Weight (lb) : 40  
Casing Depth (ft.) : 1,469  
Total Depth (ft) : 1504  
Open Hole Diameter (in) : 12.25  
Conductor Length (ft) : 84  
Conductor ID : 16  
Shoe Joint Length (ft) : 44  
Landing Joint (ft) : 35

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) 110.7  
H2O Wash Up (bbls) 20.0

### Spacer Ahead Makeup

30bbls H2O with KCL+Dye in 2nd 10bbls

Casing ID 8.835

Casing Grade J-55 only used

## Lead Calculated Results

HOC of Lead 922.99 ft  
Casing Depth - HOC Tail  
Volume of Lead Cement 289.06 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 363.90 cuft  
(cuft of Lead Cement) + (Cuft of Conductor)  
bbls of Lead Cement 104.99 bbls  
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)  
Sacks of Lead Cement 348.83 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
bbls of Lead Mix Water 71.76 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42  
Displacement 110.68 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)  
Total Water Needed: 202.43 bbls

## Tail Calculated Results

Tail Cement Volume In Ann 152.40 cuft  
(HOC Tail) X (OH Ann)  
Total Volume of Tail Cement 133.83 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 427.33 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 999.67 PSI  
Collapse PSI: 2570.00 psi  
Burst PSI: 3950.00 psi

X *Roy*  
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.







Encana
Lochbuie 2B-31H

Treatment Report Page 2

Safety Meeting		100am		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
MIRU	1110pm	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI		
CIRCULATE	Drop Plug	110am	0	146am	50	0					0			0				
		10	149am	150	10						10			10				
		20	151am	150	20						20			20				
		30	152am	140	30						30			30				
		40	154am	130	40						40			40				
M & P		50	156am	190	50					50			50					
Time		Sacks		60	157am	250	60				60			60				
117am		469	70	159am	320	70					70			70				
142am			80	201am	380	80					80			80				
			90	203am	480	90					90			90				
			100	205am	520	100					100			100				
			110	207am	440	110					110			110				
			120	Bump	980	120					120			120				
Lead mixed bbls		71.79	130			130					130			130				
Lead % Excess		62%	140			140					140			140				
Lead Sacks		349	150			150					150			150				

X	
Work Performed	

X 11-28-2013