

**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

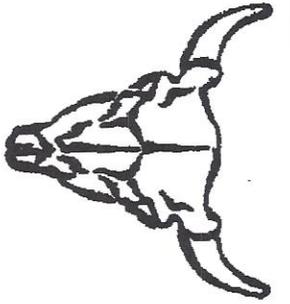
Consultant: Sandy
 Rig Name & Number: H&P 522
 Distance To Location: 26 Miles
 Units On Location: 3106/3203
 Time Requested: 800am
 Time Arrived On Location: 715am
 Time Left Location: _____

WELL DATA	Cement 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 <small>One or the other, cannot have quantity in both</small> Max Rate: 7 Max Pressure: 2500	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

Lead Calculated Results	Tail Calculated Results
HOC of Lead 932.64 ft	Tail Cement Volume In Ann 152.40 cuft (HOC Tail) X (OH Ann)
Volume of Lead Cement 292.08 cuft HOC of Lead X Open Hole Ann	Total Volume of Tail Cement 133.24 Cuft (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor 74.84 cuft (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	bbls of Tail Cement 27.14 bbls (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement 366.92 cuft (cuft of Lead Cement) + (Cuft of Conductor)	HOC Tail 425.45 ft (Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement 105.87 bbls (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	Sacks of Tail Cement 120.00 sk (Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement 351.73 sk (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	bbls of Tail Mix Water 16.83 bbls (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water 72.35 bbls (Sacks Needed) X (Gallons Per Sack) ÷ 42	Pressure of cement in annulus
Displacement 110.89 bbls (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Hydrostatic Pressure 1003.73 PSI
Total Water Needed: 251 bbls 288 bbls	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

	929am 805am 1003am	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI
Safety Meeting																
MIRU																
CIRCULATE		0	1045am	90	0		0		0		0		0		0	
Drop Plug		10	1048am	150	10		10		10		10		10		10	
		20	1050am	150	20		20		20		20		20		20	
		30	1052am	140	30		30		30		30		30		30	
		40	1053am	140	40		40		40		40		40		40	
		50	1055am	160	50		50		50		50		50		50	
M & P		60	1057am	210	60		60		60		60		60		60	
Time	Sacks	70	1058am	290	70		70		70		70		70		70	
1010am	472	80	1100am	390	80		80		80		80		80		80	
1041am		90	1102am	510	90		90		90		90		90		90	
		100	1104am	560	100		100		100		100		100		100	
		110	1107am	530	110		110		110		110		110		110	
		120		Bump	120		120		120		120		120		120	
		130		1060	130		130		130		130		130		130	
Lead mixed bbls	72.41	140			140		140		140		140		140		140	
Lead % Excess	62%	150			150		150		150		150		150		150	
Lead Sacks	352															
Notes:																
Tail mixed bbls	16.83	Float Held														
Tail % Excess	0%															
Tail Sacks	120															
Total Sacks	472															
bbl Returns	10															

X *Sandy Valley*
 Work Performed

X *Arlo Foreman*
 Title

X *12-13-13*
 Date