

Bison Oil Well Cementing Tail & Lead

Date: 2/3/2014
 Invoice # 12824
 API# 05-123-37788
 Foreman: Calvin Reimers

Customer: Encana
 Well Name: Lochbuie 2G-31H-D165

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: 3106/3212
 Time Requested: 300am
 Time Arrived On Location: 300am
 Time Left Location: 1245pm

WELL DATA

Casing Size (in) : 9.625
 Casing Weight (lb) : 40
 Casing Depth (ft) : 1,474
 Total Depth (ft) : 1512
 Open Hole Diameter (in) : 12.25
 Conductor Length (ft) : 84
 Conductor ID : 16
 Shoe Joint Length (ft) : 38
 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: [Redacted]
 Cement Density (lb/gal) : 13.1
 Cement Yield (cuft) : 1.69
 Gallons Per Sack : 8.64
 % Excess : 55%

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

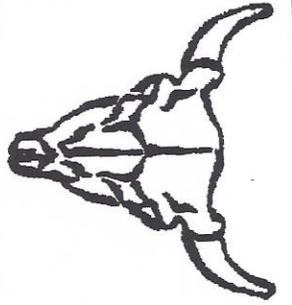
Fluid Ahead (bbls) 111.4
 H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup
30bbls H2O+KCL+Dye in 2nd 10bbls

Casing ID	8.835	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead	921.91 ft	Tail Cement Volume In Ann (HOC Tail) X (OH Ann)	152.40 cuft
Casing Depth - HOC Tail	288.72 cuft	Total Volume of Tail Cement (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	136.30 Cuft
Volume of Lead Cement (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	74.84 cuft	bbls of Tail Cement (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	27.14 bbls
Total Volume of Lead Cement (cuft of Lead Cement) + (Cuft of Conductor)	363.56 cuft	HOC Tail (Tail Cement Volume) ÷ (OH Ann)	435.21 ft
bbls of Lead Cement (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	100.36 bbls	Sacks of Tail Cement (Total Volume of Tail Cement) ÷ (Cement Yield)	120.00 sk
Sacks of Lead Cement (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	333.45 sk	bbls of Tail Mix Water (Sacks of Tail Cement X Gallons Per Sack) ÷ 42	16.83 bbls
bbls of Lead Mix Water (Sacks Needed) X (Gallons Per Sack) ÷ 42	68.59 bbls	Pressure of cement in annulus	
Displacement (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	111.36 bbls	Hydrostatic Pressure	1003.07 PSI
Total Water Needed:	199.95 bbls	Collapse PSI:	2570.00 psi
		Burst PSI:	3950.00 psi

Sandy Pulley 2-3-14
 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 2G-31H-D165

Date
INVOICE #
LOCATION
FOREMAN

2/3/2014
12824
Weld
Calvin Reimers

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

	946am 905am 1040am	Displace 1		Displace 2		Displace 3		Displace 4		Displace 5			
		BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI	BLS	Time	PSI
Safety Meeting													
MIRU		0	1118am	70	0		0		0		0		
CIRCULATE		10	1121am	120	10		10		10		10		
Drop Plug		20	1123am	110	20		20		20		20		
		30	1125am	110	30		30		30		30		
		40	1126am	110	40		40		40		40		
		50	1128am	110	50		50		50		50		
M & P		60	1130am	170	60		60		60		60		
		70	1131am	250	70		70		70		70		
Time	Sacks	80	1133am	350	80		80		80		80		
1047am	454	90	1135am	450	90		90		90		90		
1111am		100	1137am	560	100		100		100		100		
		110	1139am	440	110		110		110		110		
		120	1141am	450	120		120		120		120		
		130	Bump	910	130		130		130		130		
		140			140		140		140		140		
		150			150		150		150		150		
Lead mixed bbls	68.7												
Lead % Excess	55%												
Lead Sacks	334												
Notes:													
	16.83	Float Held											
Tail mixed bbls	0%	1/2 bbl back on bleed off											
Tail % Excess	120	Water was 57°F											
Tail Sacks													
Total Sacks	454												
bbl Returns	19												

X *Jandy Valley* 2-3-14
Work Performed

X _____ X _____
Title Date