



Bison Oil Well Cementing Tail & Lead

Customer: Noble Energy
Well Name: lilli federal lg 13-02

Date: 9/7/2014
Invoice # 12179
API#
Foreman: kirk

County: Weld
State: Colorado
Sec: 4
Twp: 9n
Range: 58w

Consultant: derick
Rig Name & Number: h&p 330
Distance To Location:
Units On Location: 4030-3103/4020-3212
Time Requested: 1200 pm
Time Arrived On Location: 1200pm
Time Left Location: 5:30pm

WELL DATA

Casing Size (in) 9.625
Casing Weight (lb) 36
Casing Depth (ft) 1,225
Total Depth (ft) 1270
Open Hole Diameter (in) 13.50
Conductor Length (ft) 100
Conductor ID 16
Shoe Joint Length (ft) 42
Landing Joint (ft) 35

Sacks of Tail Requested 100
HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate:
Max Pressure:

Cement Data

Lead

Cement Name: bfn III 3%
Cement Density (lb/gal) 13.1
Cement Yield (cuft) 1.69
Gallons Per Sack 8.64
% Excess 25%


Tail

Cement Name: bfn III 3%
Cement Density (lb/gal) 15.2
Cement Yield (cuft) 1.27
Gallons Per Sack 5.89
% Excess: 0%

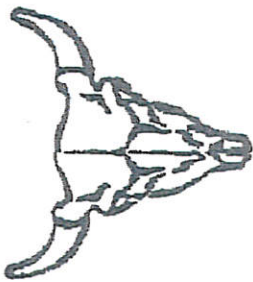
Fluid Ahead (bbls) 30.0
H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup

Casing ID	8.921	Casing Grade	J-55 only used
Lead Calculated Results		Tail Calculated Results	
HOC of Lead	867.44 ft	Tail Cement Volume in Ann (HOC Tail) X (OH Ann)	127.00 cuft
Casing Depth - HOC Tail		Total Volume of Tail Cement (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	108.77 Cuft
Volume of Lead Cement	423.95 cuft	bbls of Tail Cement (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)	22.62 bbls
HOC of Lead X Open Hole Ann		HOC Tail (Tail Cement Volume) ÷ (OH Ann)	222.56 ft
Volume of Conductor (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	89.10 cuft	Sacks of Tail Cement (Total Volume of Tail Cement) ÷ (Cement Yield)	100.00 sk
Total Volume of Lead Cement (cuft of Lead Cement) + (Cuft of Conductor)	513.04 cuft	bbls of Tail Mix Water (Sacks of Tail Cement X Gallons Per Sack) ÷ 42	14.02 bbls
bbls of Lead Cement (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	114.22 bbls	Pressure of cement in annulus	
Sacks of Lead Cement (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	379.47 sk	Hydrostatic Pressure	833.61 PSI
bbls of Lead Mix Water (Sacks Needed) X (Gallons Per Sack) ÷ 42	78.06 bbls	Collapse PSI:	2020.00 psi
Displacement (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	94.15 bbls	Burst PSI:	3520.00 psi
Total Water Needed	128.06 bbls		


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**

Date 9/7/2014
INVOICE # 12179
LOCATION Weld
FOREMAN kirk

Customer Noble Energy
Well Name illi federal lg 13-02

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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	0	415pm	10	0			0			0			0		
MIRU	10	418pm	60	10			10			10			10		
CIRCULATE	20	420pm	80	20			20			20			20		
Drop Plug	30	422pm	80	30			30			30			30		
	40	424pm	130	40			40			40			40		
	50	426pm	190	50			50			50			50		
M & P	60	428pm	250	60			60			60			60		
Time	70	430pm	320	70			70			70			70		
342pm	80	432pm	380	80			80			80			80		
413 pm stop	90	435pm	400	90			90			90			90		
	100			100			100			100			100		
	110			110			110			110			110		
	120			120			120			120			120		
	130			130			130			130			130		
	140			140			140			140			140		
	150			150			150			150			150		

Notes:

Tail mixed bbls	14	BUMPED PLUG at 437 pm 670 PSI	114.2 bbls slurry lead	22.6 bbls slurry tail.
Tail % Excess	0%			
Tail Sacks	100			
Total Sacks	479			
bbl Returns	21			

X *Deborah Dupont*

X *WJSS*

X 9-7-14

Work Performed

Title

Date