



**Bison Oil Well Cementing
Tail & Lead**

Date: 12/5/2014

Invoice # 65036

API# _____

Foreman: Lee Sharp

Customer: Noble Energy

Well Name: Tally(Morton State LD01-79-1BHN)

County: Weld
 State: Colorado
 Sec: 1
 Twp: 9N
 Range: 58W

Consultant: Damon
 Rig Name & Number: Precision 828
 Distance To Location: 81
 Units On Location: 3103-
 Time Requested: 18:30
 Time Arrived On Location: 18:30
 Time Left Location: _____

WELL DATA

Casing Size (in) : 9.625
 Casing Weight (lb) : 36
 Casing Depth (ft.) : 1,213
 Total Depth (ft) : 1236
 Open Hole Diameter (in) : 13.50
 Conductor Length (ft) : 116
 Conductor ID : 15.5
 Shoe Joint Length (ft) : 44
 Landing Joint (ft) : 18

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:
 Cement Density (lb/gal) : 13.1
 Cement Yield (cuft) : 1.84
 Gallons Per Sack 10.06
 % Excess 30%

Tail

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

Fluid Ahead (bbls) 50.0
 H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup
 10F+10D+30F=50bbbl

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results

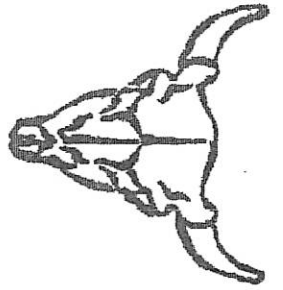
HOC of Lead 858.41 ft
 Casing Depth - HOC Tail
 Volume of Lead Cement 419.53 cuft
 HOC of Lead X Open Hole Ann
 Volume of Conductor 93.39 cuft
 (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X
 (Conductor Length ft)
 Total Volume of Lead Cement 512.92 cuft
 (cuft of Lead Cement) + (Cuft of Conductor)
 bbls of Lead Cement 118.76 bbls
 (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)
 Sacks of Lead Cement 362.39 sk
 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
 bbls of Lead Mix Water 86.80 bbls
 (Sacks Needed) X (Gallons Per Sack) ÷ 42
 Displacement 91.74 bbls
 (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe
 Length)
 Total Water Needed: 262.56 bbls

Tail Calculated Results

Tail Cement Volume In Ann 127.00 cuft
 (HOC Tail) X (OH Ann)
 Total Volume of Tail Cement 107.81 Cuft
 (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
 bbls of Tail Cement 22.62 bbls
 (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (%
 Excess)
 HOC Tail 220.59 ft
 (Tail Cement Volume) ÷ (OH Ann)
 Sacks of Tail Cement 100.00 sk
 (Total Volume of Tail Cement) ÷ (Cement Yield)
 bbls of Tail Mix Water 14.02 bbls
 (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
 Pressure of cement in annulus
 Hydrostatic Pressure 825.45 PSI
 Collapse PSI: 2020.00 psi
 Burst PSI: 3520.00 psi

X [Signature]
 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

Noble Energy
Billy/Morton State LD01-79-1BHT

Date: 12/5/2014
 INVOICE #: 65036
 LOCATION: Weld
 FOREMAN: Lee Sharp
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DESCRIPTION OF JOB EVENTS

	25	Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI	BBS	Time	PSI
Safety Meeting																
MIRRU																
CIRCULATE		0	12:09	60	0		0		0		0		0			
Drop Plug		10	12:12	60	10		10		10		10		10			
		20	12:16	70	20		20		20		20		20			
		30	12:19	70	30		30		30		30		30			
		40	12:22	130	40		40		40		40		40			
		50	12:24	190	50		50		50		50		50			
M & P		60	12:26	260	60		60		60		60		60			
Time	Sacks	70	12:28	320	70		70		70		70		70			
		80	12:30	410	80		80		80		80		80			
		90	12:34	360	90		90		90		90		90			
		100	Land	860	100		100		100		100		100			
		110			110		110		110		110		110			
		120			120		120		120		120		120			
Lead mixed bbls	87	130			130		130		130		130		130			
Lead % Excess	30%	140			140		140		140		140		140			
Lead Sacks	363	150			150		150		150		150		150			

Notes:

14 Job completed with no issue.
 Tail mixed bbls
 Tail % Excess 0% final lift 360 psi landed @ 860 psi @ 1236 am
 Tail Sacks 100 casing test @ 12:38 AM 1130psi
 Total Sacks 463 casing test released @ 12:53 AM 1140 psi casing test passed
 Water Temp 70 Floats Held
 bbl Returns 19

X *[Signature]* Title WSS X 12/6/14 Date