



**Bison Oil Well Cementing
Tail & Lead**

Date: 3/7/2020

Invoice # 200584

API# _____

Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.

Well Name: guttersen d34-759

County: Weld

State: Colorado

Sec: 22

Twp: 3N

Range: 64W

Consultant: joe

Rig Name & Number: H&P 321

Distance To Location: 21

Units On Location: 4047/4024/4034

Time Requested: 1030 pm

Time Arrived On Location: 830 pm

Time Left Location: _____

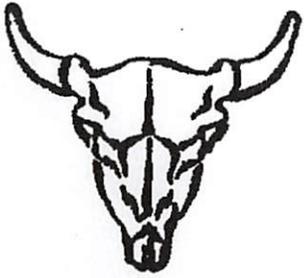
WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u> Casing Weight (lb) : <u>36</u> Casing Depth (ft.) : <u>1,920</u> Total Depth (ft) : <u>1965</u> Open Hole Diameter (in) : <u>13.50</u> Conductor Length (ft) : <u>110</u> Conductor ID : <u>15.15</u> Shoe Joint Length (ft) : <u>40</u> Landing Joint (ft) : <u>3</u></p> <p>Sacks of Tail Requested <u>100</u> HOC Tail (ft): <u>0</u></p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: <u>8</u> Max Pressure: <u>2500</u></p>	<p>Lead</p> <p>Cement Name: <u>BFN III</u> Cement Density (lb/gal) : <u>13.5</u> Cement Yield (cuft) : <u>1.68</u> Gallons Per Sack <u>8.90</u> % Excess <u>10%</u></p> <p>Tail Type III</p> <p>Cement Name: Cement Density (lb/gal) : <u>15.2</u> Cement Yield (cuft) : <u>1.27</u> Gallons Per Sack: <u>5.80</u> % Excess: <u>0%</u></p> <p>Fluid Ahead (bbls) <u>30.0</u> H2O Wash Up (bbls) <u>20.0</u></p> <p>Spacer Ahead Makeup <u>30 BBL ahead with Die in 2nd 10</u></p>

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead <u>1582.67 ft</u> Casing Depth - HOC Tail	Tail Cement Volume In Ann <u>127.00 cuft</u> (HOC Tail) X (OH Ann)
Volume of Lead Cement <u>773.50 cuft</u> HOC of Lead X Open Hole Ann	Total Volume of Tail Cement <u>109.64 Cuft</u> (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <u>82.12 cuft</u> (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)	bbls of Tail Cement <u>22.62 bbls</u> (HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement <u>855.62 cuft</u> (cuft of Lead Cement) + (Cuft of Conductor)	HOC Tail <u>224.33 ft</u> (Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement <u>167.62 bbls</u> (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	Sacks of Tail Cement <u>100.00 sk</u> (Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement <u>560.23 sk</u> (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	bbls of Tail Mix Water <u>13.81 bbls</u> (Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water <u>118.71 bbls</u> (Sacks Needed) X (Gallons Per Sack) ÷ 42	Pressure of cement in annulus
Displacement <u>145.56 bbls</u> (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Hydrostatic Pressure <u>585.23 PSI</u>
Total Water Needed: <u>328.08 bbls</u>	Collapse PSI: <u>2020.00 psi</u> Burst PSI: <u>3520.00 psi</u>



 Authorization To Proceed



**Bison Oil Well Cementing
Two Cement Surface Pipe**

Customer
Well Name

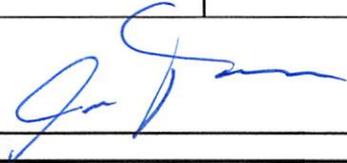
Noble Energy Inc.
guttersen d34-759

Date
INVOICE #
LOCATION
FOREMAN

3/7/2020
200584
Weld
Kirk Kallhoff

Treatment Report Page 2

Amount Pumped	Time	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	118.7	830 pm	ARRIVE ON LOCATION			
Lead % Excess	10%	1100 pm	JSA			
Lead Sacks	560	100 am	JSA			
		118 am	PRESSURE TEST			750
		119 am	SPACER AHEAD	5	30	200
Tail mixed bbls	13.81	124 am	LEAD CEMENT	6	167.6	220
Tail % Excess	0%	203 am	TAIL CEMENT	4	22.6	300
Tail Sacks	100	210 am	SHUT DOWN			
		217 am	DROP PLUG			
Total Sacks	660	217 am	DISPLACEMENT	5	145.5	350
Water Temp	60	252 am	Bump Plug	3	145.5	800
bbl Returns	23	253 am	Casing TEST			1050
		308 am	Check Floats			
Notes:		320 am	RIG DOWN			
Montered well for		340 pm	Leave Location			
30 Min. No top out						
Needed						

X 
Work Prefomed

X WSS
Title

X 3-7-20
Date

SERIES 2000

