

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

Customer: **Noble Energy Inc.**
Well Name: **Guttersen DD30-745**

Date: **11/23/2019**
INVOICE #: **900452**
LOCATION: **Weld**
FOREMAN: **Corey Barras**

Treatment Report Page 2

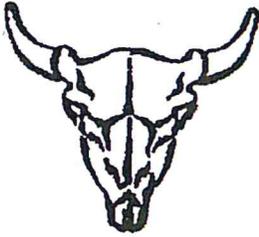
DESCRIPTION OF JOB EVENTS

	Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	116.3	2150	ARRIVE ON LOCATION			
Lead % Excess	10%	2300	MIRU			
Lead Sacks	543	2345	PRE JOB SAFETY MEETING			
		1208	PRESSURE TEST LINES			1500
		1209	bbls ahead			
Tail mixed bbls	14	1216	LEAD CEMENT	6	30	100
Tail % Excess	0%	1246	TAIL CEMENT	6	164.3	110
Tail Sacks	100	1255	SHUT DOWN	4	22.6	90
		1257	DROP PLUG			
Total Sacks	643	1258	DISPLACEMENT			
Water Temp	50		Displace w/ H2O (Lift 420 PSI)	7	70	360
bbl Returns	26	131	BUMP PLUG	2	145	1180
		146	15 Min Casing Test @ 1180 PSI			
		155	CHECK FLOATS			
			FLOATS HELD/ WATCH FOR FALL BACK			
Notes:		230	RIG DOWN			
			LEAVE LOCATION			
			monitered well no top off			

[Signature] X
Work Performed

[Signature] X
Title

X
Date



**Bison Oil Well Cementing
Tail & Lead**

Date: 11/23/2019

Invoice # 900452

API# 05-123-48666

Foreman: Corey Barras

Customer: Noble Energy Inc.

Well Name: Gutttersen DD30-745

County: Weld
State: Colorado

Sec: 30
Twp: 3N
Range: 03W

Consultant: Tim

Rig Name & Number: H&P 321

Distance To Location: 26

Units On Location: 4028/3103-4020/3203

Time Requested: 2230

Time Arrived On Location: 2150

Time Left Location:

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625</p> <p>Casing Weight (lb) : 36</p> <p>Casing Depth (ft.) : 1,922</p> <p>Total Depth (ft) : 1932</p> <p>Open Hole Diameter (in) : 13.50</p> <p>Conductor Length (ft) : 80</p> <p>Conductor ID : 15.25</p> <p>Shoe Joint Length (ft) : 44</p> <p>Landing Joint (ft) : 30</p> <p>Sacks of Tail Requested 100</p> <p>HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8</p> <p>Max Pressure: 1500</p>	<p>Lead</p> <p>Cement Name:</p> <p>Cement Density (lb/gal) : 13.5</p> <p>Cement Yield (cuft) : 1.7</p> <p>Gallons Per Sack 9.00</p> <p>% Excess 10%</p> <p>Tail</p> <p>Cement Name:</p> <p>Cement Density (lb/gal) : 15.2</p> <p>Cement Yield (cuft) : 1.27</p> <p>Gallons Per Sack: 5.89</p> <p>% Excess: 0%</p> <p>Fluid Ahead (bbls) 30.0</p> <p>H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup</p> <p>30BBL WATER DYE IN 2ND 10</p>

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead 1591.22 ft	Tail Cement Volume In Ann 127.00 cuft
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement 777.68 cuft	Total Volume of Tail Cement 107.90 Cuft
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor 61.05 cuft	bbls of Tail Cement 22.62 bbls
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)
Total Volume of Lead Cement 838.73 cuft	HOC Tail 220.78 ft
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement 164.31 bbls	Sacks of Tail Cement 100.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement 542.71 sk	bbls of Tail Mix Water 14.02 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water 116.29 bbls	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure 585.23 PSI
Displacement 145.17 bbls	
(Casing ID Squared) X (.0009714) X (Casing Depth) - (Shoe Length)	Collapse PSI: 2020.00 psi
Total Water Needed: 325.49 bbls	Burst PSI: 3520.00 psi

X *Tim [Signature]*
Authorization To Proceed

Guttersen State DD30-745

