Bison Oil Well Cementing
Tail & Lead

Date: 10/29/2019
Invoice # 900430
API# 05-123-48664
Foreman: Corey Barras

Customer: Noble Energy Inc.
Well Name: Guttersen State DD30-775

Consultant: Gary
County: Weld
State: Colorado
Rig Name & Number: H&P 321
Distance To Location: 29
Units On Location: 4028/3203-4020/3203/4031/3207
Sec: 36
Twp: 3N
Range: 63W
Time Requested: 1230
Time Arrived On Location: 1145
Time Left Location:

WELL DATA

Casing Size (in) :	9.625
Casing Weight (lb) :	36
Casing Depth (ft.) :	1,899
Total Depth (ft) :	1939
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	80
Conductor ID :	15.25
Shoe Joint Length (ft) :	42
Landing Joint (ft) :	0
Sacks of Tail Requested	100
HOC Tail (ft):	0

One or the other, cannot have quantity in both

Max Rate:	8
Max Pressure:	1500

Cement Data

Lead

Cement Name:	
Cement Density (lb/gal) :	13.5
Cement Yield (cuft) :	1.7
Gallons Per Sack	9.00
% Excess	10%

Tail

Cement Name:	
Cement Density (lb/gal) :	15.2
Cement Yield (cuft) :	1.27
Gallons Per Sack:	5.89
% Excess:	0%
Fluid Ahead (bbls)	30.0
H20 Wash Up (bbls)	20.0

Spacer Ahead Makeup

30BBL WATER DYE IN 2ND 10

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results

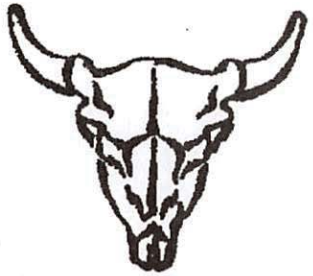
HOC of Lead (Casing Depth - HOC Tail)	1596.44 ft
Volume of Lead Cement (HOC of Lead X Open Hole Ann)	780.23 cuft
Volume of Conductor (Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	61.05 cuft
Total Volume of Lead Cement (cuft of Lead Cement) + (Cuft of Conductor)	841.28 cuft
bbls of Lead Cement (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	164.82 bbls
Sacks of Lead Cement (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	544.36 sk
bbls of Lead Mix Water (Sacks Needed) X (Gallons Per Sack) ÷ 42	116.65 bbls
Displacement (Casing ID Squared) X (.0009714) X (Casing Depth) - (Shoe Length)	143.55 bbls
Total Water Needed:	324.22 bbls

Tail Calculated Results

Tail Cement Volume In Ann (HOC Tail) X (OH Ann)	127.00 cuft
Total Volume of Tail Cement (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)	108.77 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 Tail (Tail Cement Volume) ÷ (OH Ann)	222.56 ft
Sacks of Tail Cement (Total Volume of Tail Cement) ÷ (Cement Yield)	100.00 sk
bbls of Tail Mix Water (Sacks of Tail Cement X Gallons Per Sack) ÷ 42	14.02 bbls
Pressure of cement in annulus	
Hydrostatic Pressure	585.23 PSI
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi

X Ray Stapleton
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	Noble Energy Inc.
Well Name	Guttersen State DD30-775

Date	10/29/2019
INVOICE #	900430
LOCATION	Weld
FOREMAN	Corey Barras

Treatment Report Page 2

Lead mixed bbls	116.6
Lead % Excess	10%
Lead Sacks	544
Tail mixed bbls	14
Tail % Excess	0%
Tail Sacks	100
Total Sacks	644
Water Temp	50
bbl Returns	14

Notes:

DESCRIPTION OF JOB EVENTS

Time/Date	Event	Description	Rate	BBLs	Pressure
1145	ARRIVE ON LOCATION	ASSESS LOCATION AND HAZARDS			
1400	MIRU	SPOT EQUIPMENT, PRE RIG UP MEETING			
1500	PRE JOB SAFETY MEETING	RIG CREW AND BISON			
1607	PRESSURE TEST LINES				1500
1608	bbls ahead	WATER SUPPLIED RIG W/DYE IN 2ND 10	6	30	80
1615	LEAD CEMENT	CEMENT MIXED AT 13.5 PPG	7	164.8	140
1648	TAIL CEMENT	CEMENT MIXED AT 15.2 PPG	5	22.6	90
1658	SHUT DOWN				
1659	DROP PLUG				
1700	DISPLACEMENT	Rig Displace (Lift 590PSI)	7	70	380
1734	BUMP PLUG	15 Min Casing Test @ 1000 PSI	2	143.5	1000
1750	CHECK FLOATS	FLOATS HELD/ WATCH FOR FALL BACK			
1800	RIG DOWN				
1830	LEAVE LOCATION				
		monitered well no top off			

Work Preformed — x Gary Stapleton

Title — WSS x

Date — 10/29/19 x

Guttersen State DD30-775