Bison Oil Well Cementing
Tail & Lead

Date: 1/29/2018
Invoice # 200235
API#
Foreman: Kirk Kallhoff

Customer: Noble Energy Inc.
Well Name: centennial state g34-679

County: Weld
State: Colorado
Sec: 16
Twp: 2n
Range: 64w

Consultant: woody
Rig Name & Number: H&P 517
Distance To Location: 20
Units On Location: 1
Time Requested: 400 am
Time Arrived On Location: 130 am
Time Left Location: 9:00am

WELL DATA

Casing Size (in) :	9.625
Casing Weight (lb) :	36
Casing Depth (ft.) :	1,925
Total Depth (ft) :	1969
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	110
Conductor ID :	16
Shoe Joint Length (ft) :	43
Landing Joint (ft) :	35
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	15%

Tail

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

Fluid Ahead (bbls)	50.0
H20 Wash Up (bbls)	20.0

Spacer Ahead Makeup

50 BBL WATER DYE IN 2ND 10

Casing ID 8.921 Casing Grade J-55 only used

Lead Calculated Results

HOC of Lead	1558.33 ft
Casing Depth - HOC Tail	
Volume of Lead Cement	761.60 cuft
HOC of Lead X Open Hole Ann	
Volume of Conductor	98.01 cuft
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	859.61 cuft
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	176.06 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	581.50 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	124.61 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	148.18 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	356.82 bbls

Tail Calculated Results

Tail Cement Volume In Ann	127.00 cuft
(HOC Tail) X (OH Ann)	
Total Volume of Tail Cement	108.34 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	221.67 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	585.23 PSI
Collapse PSI:	2020.00 psi
Burst PSI:	3520.00 psi

X

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	centennial state g34-679

Date	1/29/2018
INVOICE #	200235
LOCATION	Weld
FOREMAN	Kirk Kallhoff

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	124.8	130 am	ARRIVE ON LOCATION	ASSESS LOCATION AND HAZARDS			
Lead % Excess	15%	910 am	MIRU	SPOT EQUIPMENT, PRE RIG UP MEETING			
Lead Sacks	582	545 am	PRE JOB SAFETY MEETING	RIG CREW AND BISON			
		618 am	PRESSURE TEST LINES				1200
		620 am	bbls ahead	WATER SUPPLIED RIG W/DYE IN 2ND 10	6	50	120
Tail mixed bbls	14	628 am	LEAD CEMENT	CEMENT MIXED AT 13.5 PPG 582 SKS	5	176	200
Tail % Excess	0%	707 am	TAIL CEMENT	CEMENT MIXED AT 15.2 PPG 100 SKS	5	22.6	250
Tail Sacks	100	714 am	SHUT DOWN				
		717 am	DROP PLUG				
Total Sacks	682	717 am	DISPLACEMENT	RIG DISPLACES	6	148	630
Water Temp	62	745 am	BUMP PLUG	rig to do casing test 490 lift psi			1060
bbl Returns	48	800 am	CHECK FLOATS	FLOATS HELD/ WATCH FOR FALL BACK			0
		830 am	RIG DOWN				
Notes:		900 am	LEAVE LOCATION				
				monitered well no top off			

X _____ Work Preformed

X _____ Title

X 1-29-18 Date


SERIES 2000
PSI
Barrels / Minute
Barrels
Lbs / Gallon
Stage Volume
Pressure & Total Volume
Density & Rate
1,050
1,000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1/29/2018 5:22:13 AM
1/29/2018 6:25:10 AM
1/29/2018 6:33:11 AM
1/29/2018 6:41:12 AM
1/29/2018 6:49:13 AM
1/29/2018 6:57:14 AM
1/29/2018 7:05:15 AM
1/29/2018 7:13:16 AM