



**Bison Oil Well Cementing
Tail & Lead**

Date: 3/24/2018

Invoice # 606453

API# 05-123-48562

Supervisor: Nick Vigil

Customer: Noble Energy Inc.

Well Name: Vogler State D21-750

Consultant: John

County: Weld

Rig Name & Number: H&P 517

State: Colorado

Distance To Location: 22 miles

Sec: 19

Units On Location: 4045/4032

Twp: 6N

Time Requested: 1:00

Range: 63W

Time Arrived On Location: 12:00

Time Left Location:

WELL DATA

Casing Size (in) : 9.625
 Casing Weight (lb) : 36
 Casing Depth (ft.) : 1,929
 Total Depth (ft) : 1940
 Open Hole Diameter (in) : 13.50
 Conductor Length (ft) : 80
 Conductor ID : 15.25
 Shoe Joint Length (ft) : 49
 Landing Joint (ft) :

Sacks of Tail Requested 100
 HOC Tail (ft): 0

One or the other, cannot have quantity in both

Max Rate: 8
 Max Pressure: 2000

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) 30.0
 H2O Wash Up (bbls) 20.0

Spacer Ahead Makeup

Dye in second 10 bbl

Casing ID 8.921 Casing Grade J-55 only used

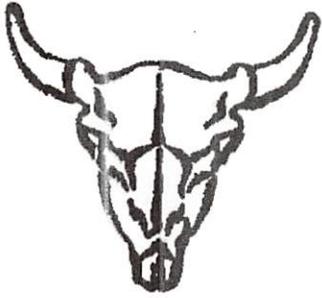
Lead Calculated Results

HOC of Lead 1632.66 ft
 Casing Depth - HOC Tail
 Volume of Lead Cement 797.93 cuft
 HOC of Lead X Open Hole Ann
 Volume of Conductor 61.05 cuft
 (Conductor ID Squared) - (Casing Size OD Squared) X (.005454) X
 (Conductor Length ft)
 Total Volume of Lead Cement 858.98 cuft
 (cuft of Lead Cement) + (Cuft of Conductor)
 bbls of Lead Cement 175.93 bbls
 (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)
 Sacks of Lead Cement 581.07 sk
 (Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)
 bbls of Lead Mix Water 124.52 bbls
 (Sacks Needed) X (Gallons Per Sack) ÷ 42
 Displacement 145.32 bbls
 (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe
 Length)
 Total Water Needed: 333.86 bbls

Tail Calculated Results

Tail Cement Volume In Ann 127.00 cuft
 (HOC Tail) X (OH Ann)
 Total Volume of Tail Cement 105.73 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 216.34 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

[Signature]
 Authorization To Proceed



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

Customer: **Noble Energy Inc.**
Well Name: **Vogler State D21-750**

Date: **3/24/2018**
INVOICE #: **606453**
LOCATION: **Weld**
FOREMAN: **Nick Vigil**

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DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	176.3	0:00	Arrive On Location			
Lead % Excess	15%	0:05	Well Site Assessment			
Lead Sacks	581	5:30	Rig Up Equipment			
		6:15	JSA	Held safety meeting with all personell involved in job.		
		6:55	Test Lines	Pressure tested lines to 1500 psi.		
Tail mixed bbls	22.6	6:58	Spacer Ahead		8	30
Tail % Excess	0%	7:01	Lead Cement	13.5 ppg	5.5	175.9
Tail Sacks	100	7:36	Tail Cement	15.2 ppg	5.5	22.6
		7:43	Shut Down			
Total Sacks	681	7:44	Drop Plug			
Water Temp	75	7:45	Displace		8	70
bbl Returns	40	8:13	Bump Plug	Bumped plug 540 psi over final lift (1100 psi)	1	145.8
		8:14	Casing Test	Pressured up casing to 1000 psi and held for 15 min.		
Notes:		8:30	Check Floats			
		8:40	End Job	Monitored well for top out.		
		18:16	Rig Down Equipment	Rig down safety meeting.		
		18:30	Crew Left Location			

X 
Signature

X _____
Title

X _____
Date

Vogler State D21-750

