

Bison Oil Well Cementing  
Two Cement Surface Pipe

Customer: Noble Energy Inc.  
Well Name: Wells Ranch State AA32-751

Date: 11/27/2019  
INVOICE #: 900453  
LOCATION: Weld  
FOREMAN: Corey Barras

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

		Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	118.3	300	ARRIVE ON LOCATION	ASSESS LOCATION AND HAZARDS			
Lead % Excess	10%	415	MIRU	SPOT EQUIPMENT, PRE RIG UP MEETING			
Lead Sacks	552	515	PRE JOB SAFETY MEETING	RIG CREW AND BISON			
		552	PRESSURE TEST LINES				1500
		553	bbls ahead	WATER SUPPLIED RIG W/DYE IN 2ND 10	7	30	140
Tail mixed bbls	14	605	LEAD CEMENT	CEMENT MIXED AT 13.5 PPG	7	167.1	190
Tail % Excess	0%	641	TAIL CEMENT	CEMENT MIXED AT 15.2 PPG	4	22.6	90
Tail Sacks	100	650	SHUT DOWN				
		651	DROP PLUG				
Total Sacks	652	652	DISPLACEMENT	Rig DISPLACE	7	70	420
Water Temp	62	725	BUMP PLUG	Casing Test for 15 Min @ 1010 Psi ( Lift 610 )	3	144.5	1010
bbl Returns	21	740	CHECK FLOATS	FLOATS HELD/ WATCH FOR FALL BACK			
		750	RIG DOWN				
Notes:		830	LEAVE LOCATION				
				monitered well no top off			

*Chas [Signature]*

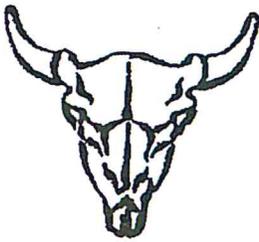
WSS

11/28/19

Work Performed

Title

Date



**Bison Oil Well Cementing  
Tail & Lead**

Date: 11/27/2019  
 Invoice # 900453  
 API # 05-123-50171  
 Foreman: Corey Barras

Customer: Noble Energy Inc.  
 Well Name: Wells Ranch State AA32-751

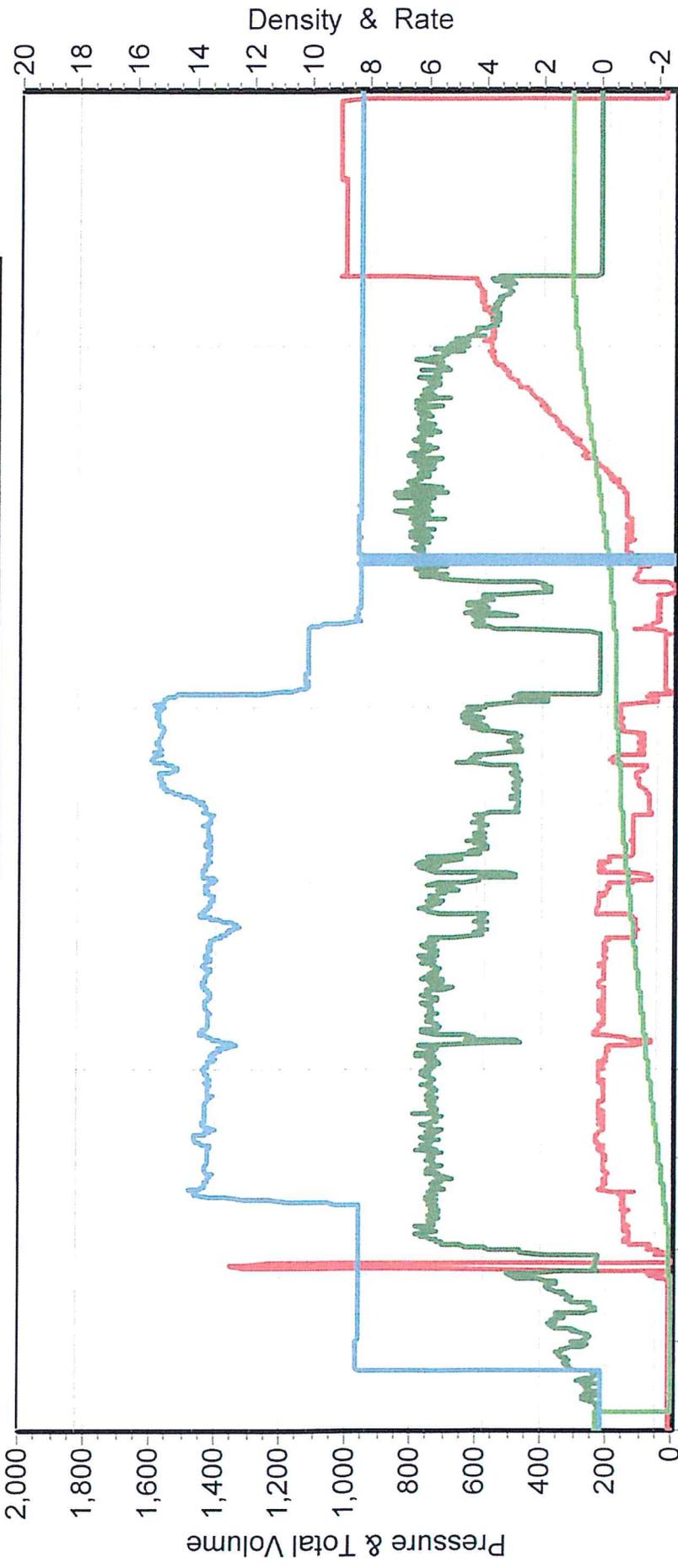
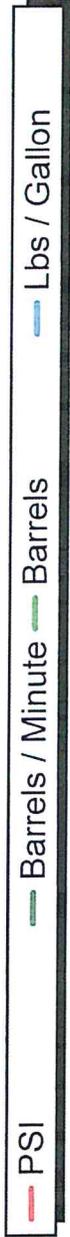
County: Weld      Consultant: Tommie  
 State: Colorado      Rig Name & Number: H&P 517  
 Distance To Location: 23  
 Units On Location: 4028/3103-4039/3213-4032/3212  
 Time Requested: 400  
 Time Arrived On Location: 300  
 Time Left Location: \_\_\_\_\_  
 Sec: 5  
 Twp: 5N  
 Range: 63W

WELL DATA	Cement Data
Casing Size (in) : <u>9.625</u> Casing Weight (lb) : <u>36</u> Casing Depth (ft.) : <u>1,918</u> Total Depth (ft) : <u>1958</u> Open Hole Diameter (in) : <u>13.50</u> Conductor Length (ft) : <u>80</u> Conductor ID : <u>15.25</u> Shoe Joint Length (ft) : <u>48</u> Landing Joint (ft) : <u>0</u>  Sacks of Tail Requested : <u>100</u> HOC Tail (ft): <u>0</u> One or the other, cannot have quantity in both  Max Rate: <u>8</u> Max Pressure: <u>1500</u>	Lead Cement Name: Cement Density (lb/gal) : <u>13.5</u> Cement Yield (cuft) : <u>1.7</u> Gallons Per Sack : <u>9.00</u> % Excess : <u>10%</u>  Tail Cement Name: Cement Density (lb/gal) : <u>15.2</u> Cement Yield (cuft) : <u>1.27</u> Gallons Per Sack : <u>5.89</u> % Excess: <u>0%</u>  Fluid Ahead (bbls) : <u>30.0</u> H2O Wash Up (bbls) : <u>20.0</u>  Spacer Ahead Makeup <u>30BBL WATER DYE IN 2ND 10</u>

Lead Calculated Results	Tail Calculated Results
HOC of Lead : <u>1620.77 ft</u>	Tail Cement Volume In Ann : <u>127.00 cuft</u>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement : <u>792.12 cuft</u>	Total Volume of Tail Cement : <u>106.17 Cuft</u>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor : <u>61.05 cuft</u>	bbls of Tail Cement : <u>22.62 bbls</u>
(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 : <u>853.17 cuft</u>	HOC Tail : <u>217.23 ft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement : <u>167.14 bbls</u>	Sacks of Tail Cement : <u>100.00 sk</u>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement : <u>552.05 sk</u>	bbls of Tail Mix Water : <u>14.02 bbls</u>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water : <u>118.30 bbls</u>	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure : <u>585.23 PSI</u>
Displacement : <u>144.55 bbls</u>	
(Casing ID Squared) X (.0009714) X (Casing Depth) - (Shoe Length)	Collapse PSI: <u>2020.00 psi</u>
Total Water Needed: <u>326.87 bbls</u>	Burst PSI: <u>3520.00 psi</u>

X [Signature]  
 Authorization To Proceed

# Wells Ranch State AA32-751



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