



Bison Oil Well Cementing Tail & Lead

Date: 6/1/2018

Invoice # 900308

API# 05-123-46130

Foreman: Corey Barras

Customer: Crestone Peak Resources

Well Name: Sam 3M-25H-M166

County: Weld

State: Colorado

Sec: 4

Twp: 1N

Range: 65W

Consultant: Jerry Thorstad

Rig Name & Number: Ensign 122

Distance To Location: 40 Miles

Units On Location: 4027-3103/4041-3205/4039-3214

Time Requested: 1830

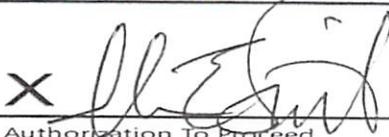
Time Arrived On Location: 1710

Time Left Location: _____

WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u> Casing Weight (lb) : <u>40</u> Casing Depth (ft.) : <u>2,415</u> Total Depth (ft) : <u>2430</u> Open Hole Diameter (in) : <u>13.50</u> Conductor Length (ft) : <u>98</u> Conductor ID : <u>15.25</u> Shoe Joint Length (ft) : <u>80</u> Landing Joint (ft) : <u>6</u></p> <p>Sacks of Tail Requested : <u>190</u> HOC Tail (ft): <u>0</u></p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: Max Pressure:</p>	<p>Lead</p> <p>Cement Name: Cement Density (lb/gal) : <u>13.5</u> Cement Yield (cuft) : <u>1.68</u> Gallons Per Sack : <u>8.90</u> % Excess : <u>25%</u></p> <p>Tail</p> <p>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></p> <p>Fluid Ahead (bbls) : <u>60.0</u> H2O Wash Up (bbls) : <u>20.0</u></p> <p>Spacer Ahead Makeup <u>60 BBL with Die in 2nd 10</u></p>

Casing ID 8.835 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead <u>1886.96 ft</u>	Tail Cement Volume In Ann <u>241.30 cuft</u>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement <u>922.21 cuft</u>	Total Volume of Tail Cement <u>207.24 Cuft</u>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <u>74.79 cuft</u>	bbls of Tail Cement <u>42.98 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>997.00 cuft</u>	HOC Tail <u>424.04 ft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement <u>221.96 bbls</u>	Sacks of Tail Cement <u>190.00 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>741.81 sk</u>	bbls of Tail Mix Water <u>26.65 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>157.19 bbls</u>	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure <u>585.23 PSI</u>
Displacement <u>177.45 bbls</u>	Collapse PSI: <u>2570.00 psi</u>
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Burst PSI: <u>3950.00 psi</u>
Total Water Needed: <u>441.29 bbls</u>	



 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
Well Name

Crestone Peak Resources
Sam 3M-25H-M166

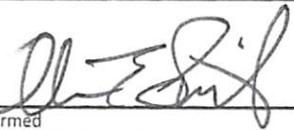
Date
INVOICE #
LOCATION
FOREMAN

6/1/2018
900308
Weld
Corey Barras

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DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	157.19	1710	Arrive on Location			
Lead % Excess	25%	2015	Rig Up			
Lead Sacks	742	2100	Safety Meeting			
			Bison and Rig Crew			
		2120	Start Job			
Tail mixed bbls	26.6	2122	Test Lines	1500 IPSI	1.5	2 1500
Tail % Excess	0%	2124	Pump Spacer	Water	7	60 140
Tail Sacks	190					
		2135	Lead Cement	13.5 PPG	7	222 100
Total Sacks	931	2210	Tail Cement	15.2 PPG	5	43 90
Water Temp	58					
bbl Returns	1	2222	Shut Down			
		2224	Drop Plug			
			Preloaded in Plug Container			
Notes:						
		2226	Pump Displacement	Water	7	90 250
		2258	Bump Plug	500 PSI over Final Lift (1240 PSI)	2	177 720
			With 1 bbl Back to surface			
		2310	Rig Down			
		2330	Leave Location			

X 
Work Performed

X
Title

X
Date