



**Bison Oil Well Cementing  
Tail & Lead**

Date: 5/2/2018

Invoice # 300121

API# 05-123-46570

Foreman: JASON KELEHER

Customer: Crestone Peak Resources

Well Name: Ruegge 3F-4H-N165

Consultant: ROBERT

County: Weld  
State: Colorado

Rig Name & Number: Ensign 122

Distance To Location: 36

Units On Location: 3

Time Requested: 700

Time Arrived On Location: 600

Time Left Location: 1400

Sec: 4

Twp: 1N

Range: 65W

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625            Casing Weight (lb) : 40            Casing Depth (ft.) : 2,486            Total Depth (ft) : 2505            Open Hole Diameter (in) : 13.50            Conductor Length (ft) : 98            Conductor ID : 15.5            Shoe Joint Length (ft) : 76            Landing Joint (ft) : 12</p> <p>Sacks of Tail Requested 190            HOC Tail (ft):</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8            Max Pressure: 2000</p>	<p><b>Lead N-Gel-12</b>            Cement Name:            Cement Density (lb/gal) : 13.5            Cement Yield (cuft) : 1.7            Gallons Per Sack 9.00            % Excess 15%</p> <p><b>Tail Type III</b>            Cement Name:            Cement Density (lb/gal) : 15.2            Cement Yield (cuft) : 1.27            Gallons Per Sack: 5.89            % Excess:</p> <p><b>Fluid Ahead (bbls) 60.0</b>  <b>H2O Wash Up (bbls) 10.0</b></p> <p><b>Spacer Ahead Makeup</b>  <b>60 BBL WATER DYE IN 2ND 10</b></p>

Lead Calculated Results	Tail Calculated Results
<b>HOC of Lead 1964.00 ft</b>	<b>Tail Cement Volume In Ann 244.35 cuft</b>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
<b>Volume of Lead Cement 1185.50 cuft</b>	<b>Total Volume of Tail Cement 210.30 Cuft</b>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
<b>Volume of Conductor 79.90 cuft</b>	<b>bbls of Tail Cement 42.98 bbls</b>
(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)
<b>Total Volume of Lead Cement 1265.40 cuft</b>	<b>HOC Tail 500.00 ft</b>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
<b>bbls of Lead Cement 225.30 bbls</b>	<b>Sacks of Tail Cement 190.00 sk</b>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
<b>Sacks of Lead Cement 744.00 sk</b>	<b>bbls of Tail Mix Water 28.58 bbls</b>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
<b>bbls of Lead Mix Water 159.43 bbls</b>	<b>Pressure of cement in annulus</b>
(Sacks Needed) X (Gallons Per Sack) ÷ 42	<b>Hydrostatic Pressure 585.23 PSI</b>
<b>Displacement 183.57 bbls</b>	<b>Collapse PSI: 2570.00 psi</b>
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	<b>Burst PSI: 3950.00 psi</b>
<b>Total Water Needed: 444.00 bbls</b>	



Authorization To Proceed

