



# Bison Oil Well Cementing Tail & Lead

**Customer:** Crestone Peak Resources  
**Well Name:** Ruegge 3N-4H

**Date:** 5/13/2018  
**Invoice #** 666310  
**API#** 05-123-  
**Supervisor:** Nick Vigil

**County:** Weld  
**State:** Colorado  
**Sec:** 4  
**Twp:** 1N  
**Range:** 65W

**Consultant:** Derek  
**Rig Name & Number:** Ensign 122  
**Distance To Location:** 36 Miles  
**Units On Location:** 3  
**Time Requested:** 8:30  
**Time Arrived On Location:** 8:00  
**Time Left Location:** 13:45

| WELL DATA  | Cement Data   |
|--|---|
| <p>Casing Size (in) : 9.625</p> <p>Casing Weight (lb) : 40</p> <p>Casing Depth (ft.) : 2,494</p> <p>Total Depth (ft) : 2505</p> <p>Open Hole Diameter (in) : 13.50</p> <p>Conductor Length (ft) : 111</p> <p>Conductor ID : 15.56</p> <p>Shoe Joint Length (ft) : 78</p> <p>Landing Joint (ft) :</p> <p>Sacks of Tail Requested 190</p> <p>HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8</p> <p>Max Pressure: 2500</p> | <p><b>Lead</b></p> <p>Cement Name:</p> <p>Cement Density (lb/gal) : 13.5</p> <p>Cement Yield (cuft) : 1.7</p> <p>Gallons Per Sack 9.00</p> <p>% Excess 25%</p> <p><b>Tail</b></p> <p>Cement Name:</p> <p>Cement Density (lb/gal) : 15.2</p> <p>Cement Yield (cuft) : 1.27</p> <p>Gallons Per Sack: 5.89</p> <p>% Excess: 0%</p> <p><b>Fluid Ahead (bbls)</b> 60.0</p> <p><b>H2O Wash Up (bbls)</b> 20.0</p> <p><b>Spacer Ahead Makeup</b></p> <p>Dye in 2nd 10 bbl.</p> |

| Casing ID 8.835  | Casing Grade J-55 only used  |
|--|--|
| Lead Calculated Results  | Tail Calculated Results  |
| <b>HOC of Lead</b> 1957.22 ft  | <b>Tail Cement Volume In Ann</b> 241.30 cuft   |
| Casing Depth - HOC Tail  | (HOC Tail) X (OH Ann)  |
| <b>Volume of Lead Cement</b> 956.55 cuft   | <b>Total Volume of Tail Cement</b> 208.09 Cuft                                       |
| HOC of Lead X Open Hole Ann  | (HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)                                 |
| <b>Volume of Conductor</b> 90.49 cuft  | <b>bbls of Tail Cement</b> 42.98 bbls  |
| (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</b> 1047.04 cuft                                      | <b>HOC Tail</b> 425.78 ft  |
| (cuft of Lead Cement) + (Cuft of Conductor)  | (Tail Cement Volume) ÷ (OH Ann)  |
| <b>bbls of Lead Cement</b> 233.10 bbls   | <b>Sacks of Tail Cement</b> 190.00 sk  |
| (Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)                             | (Total Volume of Tail Cement) ÷ (Cement Yield)                                       |
| <b>Sacks of Lead Cement</b> 769.88 sk  | <b>bbls of Tail Mix Water</b> 26.65 bbls   |
| (Total Slurry Volume) ÷ (Cement Yield) X (%) Excess Cement)                          | (Sacks of Tail Cement X Gallons Per Sack) ÷ 42                                       |
| <b>bbls of Lead Mix Water</b> 164.97 bbls  | <b>Pressure of cement in annulus</b>   |
| (Sacks Needed) X (Gallons Per Sack) ÷ 42   | <b>Hydrostatic Pressure</b> 585.23 PSI   |
| <b>Displacement</b> 183.13 bbls  |  |
| (Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)  | <b>Collapse PSI:</b> 2570.00 psi   |
| <b>Total Water Needed:</b> 454.75 bbls   | <b>Burst PSI:</b> 3950.00 psi  |

X

Authorization To Proceed

