



**Bison Oil Well Cementing
Tail & Lead**

Date: 5/27/2018

Invoice # 200293

API# _____

Foreman: Kirk Kallhoff

Customer: Crestone Peak Resources

Well Name: sam 3g-25h-m166

County: Weld

State: Colorado

Sec: 4

Twp: 1n

Range: 65w

Consultant: satch

Rig Name & Number: ENSIGN 122

Distance To Location: 40

Units On Location: 4028/4040/4034/4032

Time Requested: 700 am

Time Arrived On Location: 600 am

Time Left Location: 12:00 pm

WELL DATA	Cement Data
<p>Casing Size (in) : <u>9.625</u></p> <p>Casing Weight (lb) : <u>40</u></p> <p>Casing Depth (ft.) : <u>2,417</u></p> <p>Total Depth (ft) : <u>2430</u></p> <p>Open Hole Diameter (in) : <u>13.50</u></p> <p>Conductor Length (ft) : <u>110</u></p> <p>Conductor ID : <u>15.6</u></p> <p>Shoe Joint Length (ft) : <u>79</u></p> <p>Landing Joint (ft) : <u>17</u></p> <p>Sacks of Tail Requested : <u>190</u></p> <p>HOC Tail (ft): <u>0</u></p> <p><small>One or the other, cannot have quantity in both</small></p> <p>Max Rate: <u>8</u></p> <p>Max Pressure: <u>2000</u></p>	<p>Lead</p> <p>Cement Name: _____</p> <p>Cement Density (lb/gal) : <u>13.5</u></p> <p>Cement Yield (cuft) : <u>1.7</u></p> <p>Gallons Per Sack : <u>9.00</u></p> <p>% Excess : <u>25%</u></p> <p>Tail</p> <p>Cement Name: _____</p> <p>Cement Density (lb/gal) : <u>15.2</u></p> <p>Cement Yield (cuft) : <u>1.27</u></p> <p>Gallons Per Sack: <u>5.89</u></p> <p>% Excess: _____</p> <p>Fluid Ahead (bbls) : <u>60.0</u></p> <p>H2O Wash Up (bbls) : <u>10.0</u></p> <p>Spacer Ahead Makeup</p> <p>60 BBL WATER DYE IN 2ND 10</p>

Casing ID 8.835 Casing Grade J-55 only used

Lead Calculated Results	Tail Calculated Results
HOC of Lead <u>1865.09 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>911.52 cuft</u>	Total Volume of Tail Cement <u>207.67 Cuft</u>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <u>90.42 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>1001.95 cuft</u>	HOC Tail <u>424.91 ft</u>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement <u>223.06 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>736.72 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>157.87 bbls</u>	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure <u>585.23 PSI</u>
Displacement <u>178.51 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>433.02 bbls</u>	

X Francis Bowl

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.

