



# Bison Oil Well Cementing Tail & Lead

Date: 5/19/2018  
 Invoice #: 200287  
 API#  
 Foreman: Kirk Kallhoff

Customer: Crestone Peak Resources  
 Well Name: rugge 3r-4h

County: Weld  
 State: Colorado  
 Sec: 4  
 Twp: 1n  
 Range: 65w

Consultant: brent  
 Rig Name & Number: ENSIGN 122  
 Distance To Location: 36  
 Units On Location: 4028/4034/4024  
 Time Requested: 800 pm  
 Time Arrived On Location: 730 pm  
 Time Left Location:

WELL DATA	
Casing Size (in) :	9.625
Casing Weight (lb) :	40
Casing Depth (ft.) :	2,563
Total Depth (ft) :	2595
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	110
Conductor ID :	15.6
Shoe Joint Length (ft) :	70
Landing Joint (ft) :	17
Sacks of Tail Requested	190
HOC Tail (ft):	0
One or the other, cannot have quantity in both	
Max Rate:	8
Max Pressure:	2000

Cement Data	
<b>Lead</b>	
Cement Name:	
Cement Density (lb/gal) :	13.5
Cement Yield (cuft) :	1.7
Gallons Per Sack	9.00
% Excess	25%
<b>Tail</b>	
Cement Name:	
Cement Density (lb/gal) :	15.2
Cement Yield (cuft) :	1.27
Gallons Per Sack:	5.89
% Excess:	
Fluid Ahead (bbls)	60.0
H2O Wash Up (bbls)	10.0
<b>Spacer Ahead Makeup</b>	
60 BBL WATER DYE IN 2ND 10	

Lead Calculated Results	Tail Calculated Results
HOC of Lead <b>2003.25 ft</b>	Tail Cement Volume In Ann <b>241.30 cuft</b>
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement <b>979.05 cuft</b>	Total Volume of Tail Cement <b>211.50 Cuft</b>
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor <b>90.42 cuft</b>	bbls of Tail Cement <b>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)
Total Volume of Lead Cement <b>1069.47 cuft</b>	HOC Tail <b>432.75 ft</b>
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement <b>238.09 bbls</b>	Sacks of Tail Cement <b>190.00 sk</b>
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement <b>786.37 sk</b>	bbls of Tail Mix Water <b>26.65 bbls</b>
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water <b>168.51 bbls</b>	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure <b>585.23 PSI</b>
Displacement <b>190.26 bbls</b>	
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed: <b>455.41 bbls</b>	Collapse PSI: <b>2570.00 psi</b>
	Burst PSI: <b>3950.00 psi</b>

X

Authorization To Proceed

