



**Bison Oil Well
Two Cement Surface Pipe**

Customer: Crestone Peak Resources
Well Name: Ruegge 3M 4H-N165

Date: 5/12/2018
INVOICE #: 666309
LOCATION: Weld
SUPERVISOR: Nick Vigil

DESCRIPTION OF JOB EVENTS

Amount Pumped	Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	228.2	0:00	Arrive on Location			
			Rig was running casing.			
Lead % Excess	25%	0:05	Well Site Assesment			
			Hazard hunt, rig up safety meeting			
Lead Sacks	754	0:30	Rig Up Equipment			
		2:10	JSA			
			Held safety meeting with all personell involved in job.			
		4:40	Pressure Test			
			Pressure tested lines to 1600 psi.			
Tail mixed bbls	42.9	4:42	Spacer Ahead	8	60	180
			Water with dye in second 10 bbl.			
Tail % Excess	0%	4:50	Lead Cement	5	228.2	80
			13.5 ppg Cement			
Tail Sacks	190	5:45	Tail Cement	4	42.9	80
			15.2 ppg cement			
		5:56	Shut Down			
Total Sacks	944	5:57	Drop Plug			
			Plug was pre loaded.			
Water Temp	50	5:58	Displacement	5	90	240
			Fresh Water			
bbl Returns	20	6:50	Bump Plug	2.9	180.2	860
			Bumped plug 570 psi over final lift. (1430 psi)			
		6:55	Check Floats			
			Floats held flowed back 1 bbl			
Notes:		6:56	End Job			
Lost returns while pumping		7:00	Rig Down Equipment			
cement. Gained partial		7:30	Crew Left Location			
returns during displacement						
leading to full returns						
until we bumped the plug.						

X _____
Work Preformed

X _____
Title

X _____
Date



**Bison Oil Well Cementing
Tail & Lead**

Date: 5/12/2018

Invoice #: 666309

API#: 05-123-

Supervisor: Nick Vigil

Customer: Crestone Peak Resources

Well Name: Ruegge 3M 4H-N165

Consultant: Derek

County: Weld
State: Colorado

Rig Name & Number: Ensign 122
Distance To Location: 36 Miles

Sec: 4
Twp: 1N
Range: 65W

Units On Location: 3
Time Requested: 0:30
Time Arrived On Location: 0:00
Time Left Location: 7:30

WELL DATA	Cement Data
<p>Casing Size (in) : 9.625 Casing Weight (lb) : 40 Casing Depth (ft.) : 2,463 Total Depth (ft) : 2475 Open Hole Diameter (in) : 13.50 Conductor Length (ft) : 111 Conductor ID : 15.56 Shoe Joint Length (ft) : 80 Landing Joint (ft) : 15</p> <p>Sacks of Tail Requested 190 HOC Tail (ft): 0</p> <p>One or the other, cannot have quantity in both</p> <p>Max Rate: 8 Max Pressure: 2500</p>	<p>Lead Cement Name: Cement Density (lb/gal) : 13.5 Cement Yield (cuft) : 1.7 Gallons Per Sack 9.00 % Excess 25%</p> <p>Tail Cement Name: Cement Density (lb/gal) : 15.2 Cement Yield (cuft) : 1.27 Gallons Per Sack: 5.89 % Excess: 0%</p> <p>Fluid Ahead (bbls) 60.0 H2O Wash Up (bbls) 20.0</p> <p>Spacer Ahead Makeup Dye in 2nd 10 bbl.</p>

Lead Calculated Results	Tail Calculated Results
HOC of Lead 1912.96 ft	Tail Cement Volume In Ann 241.30 cuft
Casing Depth - HOC Tail	(HOC Tail) X (OH Ann)
Volume of Lead Cement 934.92 cuft	Total Volume of Tail Cement 207.24 Cuft
HOC of Lead X Open Hole Ann	(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)
Volume of Conductor 90.49 cuft	bbls of Tail Cement 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)
Total Volume of Lead Cement 1025.41 cuft	HOC Tail 424.04 ft
(cuft of Lead Cement) + (Cuft of Conductor)	(Tail Cement Volume) ÷ (OH Ann)
bbls of Lead Cement 228.28 bbls	Sacks of Tail Cement 190.00 sk
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	(Total Volume of Tail Cement) ÷ (Cement Yield)
Sacks of Lead Cement 753.98 sk	bbls of Tail Mix Water 26.65 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	(Sacks of Tail Cement X Gallons Per Sack) ÷ 42
bbls of Lead Mix Water 161.57 bbls	Pressure of cement in annulus
(Sacks Needed) X (Gallons Per Sack) ÷ 42	Hydrostatic Pressure 585.23 PSI
Displacement 181.77 bbls	Collapse PSI: 2570.00 psi
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	Burst PSI: 3950.00 psi
Total Water Needed: 449.98 bbls	



Authorization To Proceed