Bison Oil Well Cementing
Tail & Lead

Date:	5/24/2018
Invoice #	900302
API#	05-123-46124

Customer: Crestone Peak Resources
Well Name: Sam 3C-25H-M166
Foreman: Corey Barras

County: Weld	**Consultant:** Jerry Thorstad
State: Colorado	**Rig Name & Number:** Ensign 122
	Distance To Location: 40 Miles
	Units On Location: 4027-3103/4041-3205/4039-3214
Sec: 4	**Time Requested:** 1230
Twp: 1N	**Time Arrived On Location:** 1110
Range: 65W	**Time Left Location:**

WELL DATA

Casing Size (in) :	9.625
Casing Weight (lb) :	40
Casing Depth (ft.) :	2,411
Total Depth (ft) :	2439
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	98
Conductor ID :	15.25
Shoe Joint Length (ft) :	74
Landing Joint (ft) :	6
Sacks of Tail Requested	190
HOC Tail (ft):	0

One or the other, cannot have quantity in both

Max Rate:
Max Pressure:

Cement Data

Lead

Cement Name:	
Cement Density (lb/gal) :	13.5
Cement Yield (cuft) :	1.68
Gallons Per Sack	8.90
% Excess	25%

Tail

Cement Name:	
Cement Density (lb/gal) :	15.2
Cement Yield (cuft) :	1.27
Gallons Per Sack:	5.89
% Excess:	0%

Fluid Ahead (bbls)	60.0
H20 Wash Up (bbls)	20.0

Spacer Ahead Makeup
60 BBL with Die in 2nd 10

Casing ID	8.835	Casing Grade	J-55 only used

Lead Calculated Results

HOC of Lead — 1877.73 ft
Casing Depth - HOC Tail

Volume of Lead Cement — 917.70 cuft
HOC of Lead X Open Hole Ann

Volume of Conductor — 74.79 cuft
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)

Total Volume of Lead Cement — 992.49 cuft
(cuft of Lead Cement) + (Cuft of Conductor)

bbls of Lead Cement — 220.95 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)

Sacks of Lead Cement — 738.46 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)

bbls of Lead Mix Water — 156.48 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement — 177.60 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)

Total Water Needed: — 440.73 bbls

Tail Calculated Results

Tail Cement Volume In Ann — 241.30 cuft
(HOC Tail) X (OH Ann)

Total Volume of Tail Cement — 209.80 Cuft
(HOC Tail X OH Ann) - (Shoe Length X Shoe Joint Ann)

bbls of Tail Cement — 42.98 bbls
(HOC of Tail) X (OH Ann) + (Cement Yield) X (Shoe Joint Ann) X (.1781) X (% Excess)

HOC Tail — 429.27 ft
(Tail Cement Volume) ÷ (OH Ann)

Sacks of Tail Cement — 190.00 sk
(Total Volume of Tail Cement) ÷ (Cement Yield)

bbls of Tail Mix Water — 26.65 bbls
(Sacks of Tail Cement X Gallons Per Sack) ÷ 42

Pressure of cement in annulus

Hydrostatic Pressure — 585.23 PSI

Collapse PSI: — 2570.00 psi
Burst PSI: — 3950.00 psi

X _Francis Bowe_
Authorization To Proceed

Bison Oil Well Cementing
Two Cement Surface Pipe

Customer	Crestone Peak Resources
Well Name	Sam 3C-25H-M166

Date	5/24/2018
INVOICE #	900302
LOCATION	Weld
FOREMAN	Corey Barras

Treatment Report Page 2

DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	156.48	1210	Arrive on Location				
Lead % Excess	25%	1525	Rig Up				
Lead Sacks	738	1600	Safety Meeting	Bison and Rig Crew			
		1612	Start Job				
Tail mixed bbls	26.6	1614	Test Lines	1500 IPSI	1.5	2	1500
Tail % Excess	0%	1616	Pump Spacer	Water	7	60	150
Tail Sacks	190						
		1625	Lead Cement	13.5 PPG	7	220	130
Total Sacks	928	1702	Tail Cement	15.2 PPG	5	43	110
Water Temp	58						
bbl Returns	12	1712	Shut Down				
		1714	Drop Plug	Preloaded in Plug Container			
Notes:							
		1716	Pump Dispacement	Water	7	90	270
		1745	Bump Plug	500 PSI over Final Lift (1250 PSI)	2	177	710
				With 1.5 bbl Back to surface			
		1800	Rig Down				
		1830	Leave Location				

X _[signature]_
Work Preformed

X _Well Site Supervisor_
Title

X _2/24/18_
Date