Bison Oil Well Cementing
Tail & Lead

Date:	6/4/2018
Invoice #	666326
API#	05-123-

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

Supervisor: Nick Vigil

		Consultant:	Clarence
County:	Weld	Rig Name & Number:	Ensign 122
State:	Colorado	Distance To Location:	40 Miles
		Units On Location:	3
Sec:	4	Time Requested:	20:00
Twp:	1N	Time Arrived On Location:	19:30
Range:	65W	Time Left Location:	

WELL DATA

Casing Size (in) :	9.625
Casing Weight (lb) :	40
Casing Depth (ft.) :	2,413
Total Depth (ft) :	2427
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	111
Conductor ID :	15.25
Shoe Joint Length (ft) :	83
Landing Joint (ft) :	
Sacks of Tail Requested	190
HOC Tail (ft):	0

One or the other, cannot have quantity in both

Max Rate:	8
Max Pressure:	2500

Cement Data

Lead

Cement Name:	
Cement Density (lb/gal) :	13.5
Cement Yield (cuft) :	1.7
Gallons Per Sack	9.00
% 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

Dye in 2nd 10 bbl.

Casing ID	8.835	Casing Grade	J-55 only used

Lead Calculated Results

HOC of Lead	1880.57 ft
Casing Depth - HOC Tail	
Volume of Lead Cement	919.09 cuft
HOC of Lead X Open Hole Ann	
Volume of Conductor	84.71 cuft
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	1003.80 cuft
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	223.47 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	738.09 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	158.16 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	176.61 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	441.42 bbls

Tail Calculated Results

Tail Cement Volume In Ann	241.30 cuft
(HOC Tail) X (OH Ann)	
Total Volume of Tail Cement	205.96 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	421.43 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 _____
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.

Bison Oil Well
Two Cement Surface Pipe

Date	6/4/2018
INVOICE #	666326
LOCATION	Weld
SUPERVISOR	Nick Vigil

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

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	223.4	19:30	Arrive on Location	Rig was running casing.			
Lead % Excess	25%	19:35	Well Site Assesment	Hazard hunt, rig up safety meeting			
Lead Sacks	738	22:30	Rig Up Equipment				
		23:05	JSA	Held safety meeting with all personell involved in job.			
		23:22	Pressure Test	Pressure tested lines to 1500 psi.			
Tail mixed bbls	42.9	23:48	Spacer Ahead	Water with dye in second 10 bbl.	7.3	60	230
Tail % Excess	0%	23:57	Lead Cement	13.5 ppg Cement	7.3	223.4	220
Tail Sacks	190	0:32	Tail Cement	15.2 ppg cement	5.3	42.9	170
		0:42	Shut Down				
Total Sacks	928	0:42	Drop Plug	Plug was pre loaded.			
Water Temp	50	0:43	Displacement	Fresh Water	7.3	90	320
bbl Returns	14	1:15	Bump Plug	Bumped plug 480 psi over final lift. (1200 psi)	2.9	176.6	720
		1:20	Check Floats	Floats held flowed back .5 bbl			
Notes:		1:21	End Job				
		1:25	Rig Down Equipment				
		1:45	Topped Off Wells				
		2:30	Crew Left Location				

X _____
Work Preformed

X _____
Title

X _____
Date