Bison Oil Well Cementing
Tail & Lead

Date: 5/28/2018
Invoice # 200294
API#
Foreman: Kirk Kallhoff

Customer: Crestone Peak Resources
Well Name: sam 3h-25h-m166

Consultant: satch
County: Weld
State: Colorado
Rig Name & Number: ENSIGN 122
Distance To Location: 40
Units On Location: 4028/4040/4039
Sec: 4
Twp: 1n
Range: 65w
Time Requested: 1230 pm
Time Arrived On Location: 1200 pm
Time Left Location:

WELL DATA

Casing Size (in) :	9.625
Casing Weight (lb) :	40
Casing Depth (ft.) :	2,398
Total Depth (ft) :	2430
Open Hole Diameter (in) :	13.50
Conductor Length (ft) :	110
Conductor ID :	15.6
Shoe Joint Length (ft) :	78
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

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:	
Fluid Ahead (bbls)	60.0
H20 Wash Up (bbls)	10.0

Spacer Ahead Makeup

60 BBL WATER DYE IN 2ND 10

Casing ID 8.835 Casing Grade J-55 only used

Lead Calculated Results

HOC of Lead	1845.22 ft
Casing Depth - HOC Tail	
Volume of Lead Cement	901.81 cuft
HOC of Lead X Open Hole Ann	
Volume of Conductor	90.42 cuft
(Conductor ID Squared) -(Casing Size OD Squared) X (.005454) X (Conductor Length ft)	
Total Volume of Lead Cement	992.23 cuft
(cuft of Lead Cement) + (Cuft of Conductor)	
bbls of Lead Cement	220.90 bbls
(Total cuft of Lead Cement) X (.1781) X (1+%Lead Excess)	
Sacks of Lead Cement	729.58 sk
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)	
bbls of Lead Mix Water	156.34 bbls
(Sacks Needed) X (Gallons Per Sack) ÷ 42	
Displacement	177.14 bbls
(Casing ID Squared) X (.0009714) X (Casing Depth) + (Landing Joint) - (Shoe Length)	
Total Water Needed:	430.13 bbls

Tail Calculated Results

Tail Cement Volume In Ann	241.30 cuft
(HOC Tail) X (OH Ann)	
Total Volume of Tail Cement	208.09 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	425.78 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 Satch Bowe

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 Cementing
Two Cement Surface Pipe

Customer	Crestone Peak Resources
Well Name	sam 3h-25h-m166

Date	5/28/2018
INVOICE #	200294
LOCATION	Weld
FOREMAN	Kirk Kallhoff

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DESCRIPTION OF JOB EVENTS

Amount Pumped		Time/Date	Event	Description	Rate	BBLs	Pressure
Lead mixed bbls	156.3	1200 pm	ARRIVE ON LOCATION	ASSESS LOCATION			
Lead % Excess	25%	110 pm	MIRU	SPOT EQUIPMENT AND RIG UP			
Lead Sacks	729	135 pm	PRE JOB SAFETY MEETING				
		153 pm	PRESSURE TEST	PRESSURE TEST TO 1500 PSI			
		155 pm	cicrulate	60 BBL WATER DYE IN 2ND 10	6	60	110
Tail mixed bbls	26.6	204 pm	LEAD CEMENT	729 SKS MIXED 13.5 PPG 220.9 bbls slurry	6	220.9	200
Tail % Excess	0%	245 pm	TAIL CEMENT	190 SKS MIXED AT 15.2 PPG 43 bbls slurry	6	43	230
Tail Sacks	190	255 pm	SHUT DOWN				
		257 pm	DROP PLUG				
Total Sacks	919	257 pm	DISPLACEMENT	disp 177.1 bbls h2o	6	177.1	670
Water Temp	60	327 pm	BUMP PLUG	lift pressure 720 psi		177.1	1260
bbl Returns	9	332 pm	CHECK FLOATS	1 BBL BACK			
		340 pm	RIG DOWN				
Notes:		400 pm	LEAVE LOCATION				

X _____
CUSTOMER SIGNATURE

X _____
Title

X 5-28-18
Date