



# STACK TALK

## JUNE 2016

The Official News Letter of the Adobe Mountain Railroad  
Phoenix Arizona, Operated by the Maricopa Live Steamers  
Railroad Heritage Preservation Society,

### UP-COMING MEETS

**2017 OPS MEET JANUARY 19,20,21,22**

**2016 FALL MEET OCT. 27,28,29,30**

June is here, and we have put another run season into the books. Summer maintenance work has already started, so be sure to check the whiteboard on the clubhouse wall to see what's coming up, and where you might be able to help out. We have some impressive statistics for the 2<sup>nd</sup> half of the season:



Date	#days	Crews	Runs	Public Ride	
				Passengers	Group
JAN TOTAL	6	29	124	2,349	
FEB TOTAL	5	16	94	1,823	
MAR TOTAL	6	22	83	1,553	
APR TOTAL	4	15	51	904	
MAY TOTAL	2	8	35	660	
2016 Year to date	23	90	387	7,289	

Thank you again to everyone who contributes to the success of our public ride operation. Our public rides are scheduled to resume on Sunday, September 11. Please plan on attending the annual safety briefing, to be given on Saturday, September 10<sup>th</sup>, immediately following the general meeting.

### **Fire Ban**

The summer fire ban went into effect on May 31<sup>st</sup>. Please remember that there should be no open flames in the park, unless they are in a contained area. If you have to use a torch, or are welding, please make sure your sparks are not going to cause any issues.

### **Park Security**

Recently I received a phone call from a member who was concerned that the gate between MLS and Sahuaro Central Railroad Museum was being left unlocked and open. It's an easy shortcut between the two clubs, but please, if you open the gate, take the 30 seconds it takes to close the gate after you have gone through. The security of the property depends on all of us working together to keep our park secure.

I wish all of you a happy summer, and look forward to seeing everyone at the June meeting, and again when we resume operations in the fall.

John Bergt



***June 11, 2016***

***Don't forget the MLS Board Meeting***

***& the MLS General Meeting***

***A lot to discuss***

## THE 2016 ANNUAL TRAIN PARK INSPECTION

By: Ken Bain



On Thursday, May 12, 2016, The Annual Train Park Inspection was conducted by Ms Emily Miller (Maricopa County Parks and Recreation Contract Administrator). Emily was assisted by Ken Bain (Train Park Liaison), Bob Douglas (MLS Treasurer), Joe Schnyder (MLS Board of Directors) and Jerry Oyler (SC President).

The inspection started with the General Area including the inside of Ford Station. The inside of Ford Station including the rest rooms was considered satisfactory and Emily was complimentary about the paving. The overall appearance was rated at 10 on a scale of 1 to 10.

The container storage area was rated as neat, clean and in good maintenance for both internal and external appearance. Emily was able to see the inside of three containers and noted that the stored fuel quantities (5 gallons max) and location (5 feet min. above floor) was in compliance with the rules and there was no evidence of any soil being contaminated.

Bob and Joe had assembled a train at the station and provided a nice ride to Pottsville. At Pottsville Jerry conducted an excellent tour of the museum and operated the 'G' gauge setup. Emily was so impressed that she made a \$5.00 donation to the Sahuaro Central building fund. We then returned to MLS.

This completed the inspection.

Emily made the following written comments about our Train Park;

From her email of 5/25/2016

"Please find attached my inspection report for your wonderful facility! Great job and always a pleasure meeting with you and SCR/AMRS/MLS fellow officers and train enthusiasts".

From her inspection report of 5/12/2016

"Good stewards; excellent partners; strive to keep us informed; excellent to work with; supportive of all park requests; positive comments received from discussions with Club membership".

I feel we have been very fortunate to have someone like Emily Miller as our Contract Administrator. While she supports Parks and Recreation she also works toward practical solutions. I would also like to thank Bob Douglas, Joe Schnyder and Jerry Oyler for participating in this inspection. Between the four of us we were able to answer all of Emily's questions. It was a good inspection!

# STEAM LOCOMOTIVES

## VALVE GEAR

Hello again, time to continue the exploration of the intricacies of valves and valve gear.

Before we get rolling, for those of you who might want to take a dip in the deep end of the pool, here are two books (found on the computer, that you can download for free) that were used in colleges around 1900 when teaching budding mechanical engineers. Yes, in those days there was extensive emphasis on the knowledge of not only the steam engine as a machine, but also the science behind the most powerful heat engine of the era.

The Steam Engine, Ripper;

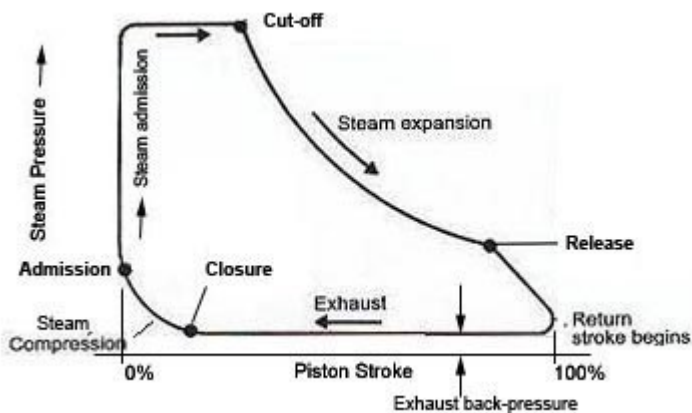
<https://archive.org/details/steamenginetheor00ripp>

Thermodynamics of the Steam Engine, Peabody;

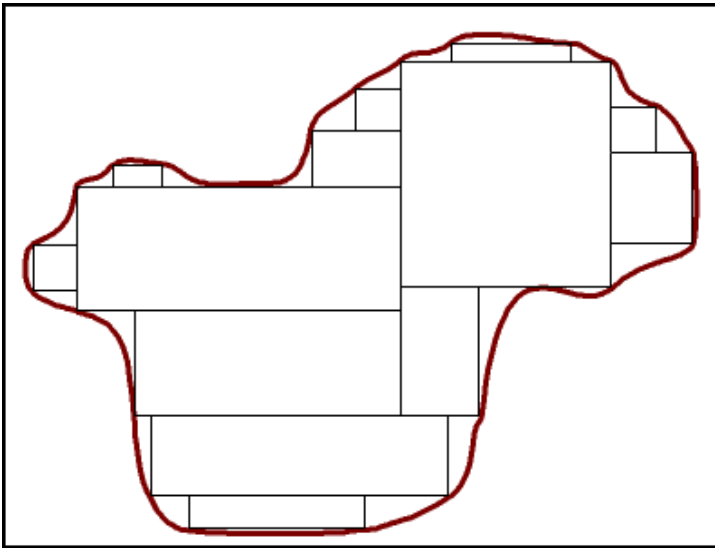
<https://archive.org/details/thermodynamicss06peabgoog>

It should be understood that valve gears are only a mechanism to facilitate the events necessary for a piston to exert effort and those events are shown on the indicator diagram below.

The line drawn by the indicator is referred to as (with a bit of imagination) the “shoe”. The events noted on the “shoe” are all created by the position of the valve relative to the ports communicating with the cylinder,.....so, the area inside the “shoe” then becomes the recorded pressure acting on the piston at any point in the stroke.(whew!!). Averaging the pressures inside the “shoe” is then referred to as the Mean Effective Pressure (MEP), and defined as noted below the diagram.



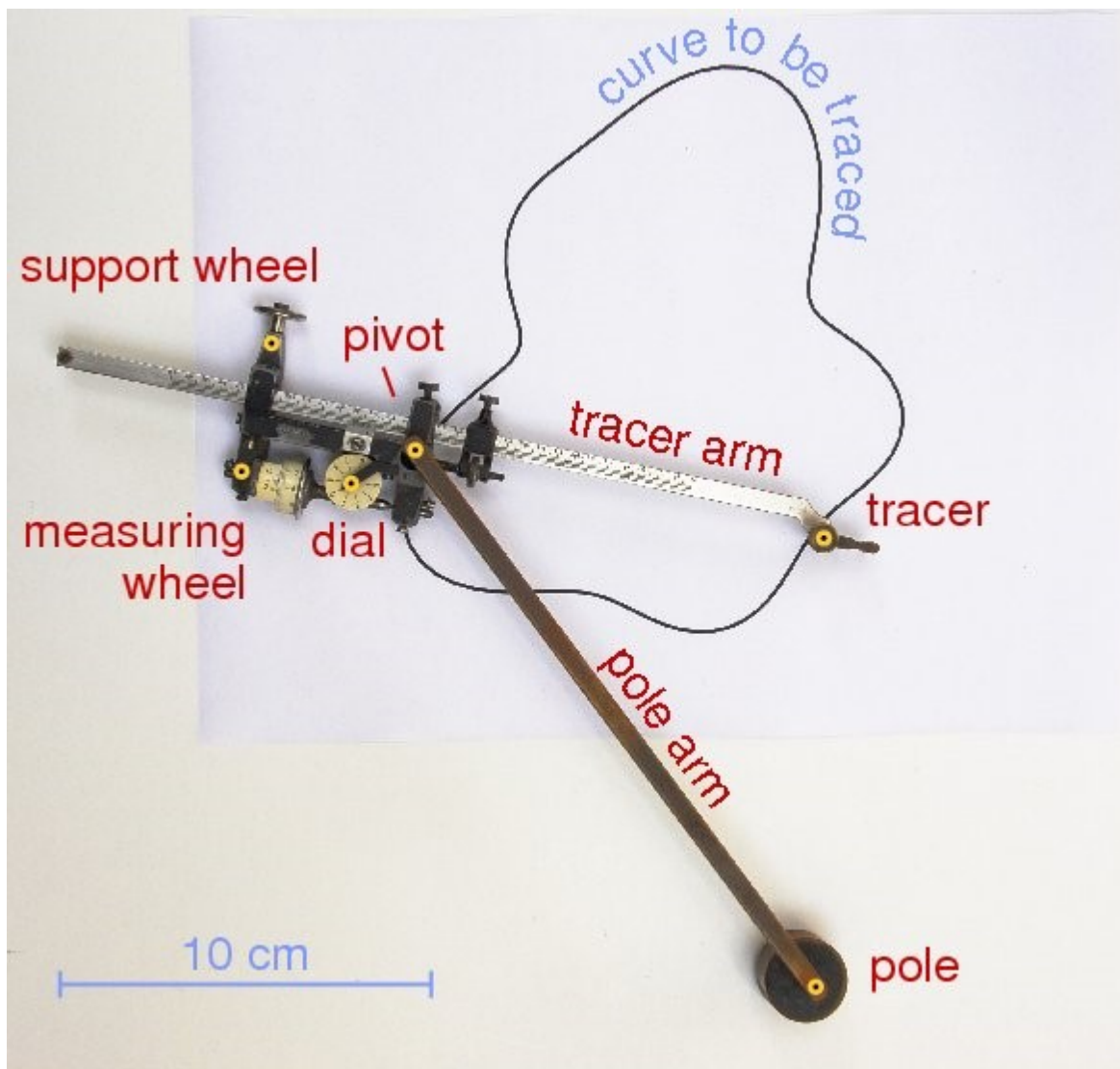
The **mean effective pressure** is a quantity relating to the operation of a reciprocating engine and is a valuable measure of an engine's capacity to do work that is independent of engine displacement. When quoted as an *indicated* mean effective pressure or IMEP, it may be thought of as the average pressure acting on a piston during the different portions of its cycle.



Since the area of the shoe is derived from an irregular shape, the determination of that area becomes a bit of a problem as show by the drawing above. Interestingly, this has been addressed by the invention of the planimeter as defined and explained below.

A planimeter is a table-top instrument for measuring areas, usually the areas of irregular regions on a map or photograph. They were once common, but have now largely been replaced by digital tools.

The following picture gives some idea of the setup. The **pole arm** rotates freely around the **pole**, which is fixed on the table. The **tracer arm** rotates around the **pivot**, which is where it joins the polar arm. You trace a curve in the clockwise direction with the **tracer**, and as you do so the **measuring wheel** rolls along, and the total distance it rolls is accumulated on the **dial**. The **support wheel** keeps the thing from flopping over. At the end, you read off a number from the dial, and after multiplication by a factor depending only on the particular configuration of the planimeter, you get the area inside the curve.



Understanding the indicator diagram and what it tells us concerning the valve events relative to the piston position in the cylinder has been an ongoing effort from almost the very beginning of the use of the reciprocating steam engine as applied to any form of power. Even today the Mean Effective Pressure (MEP) is used in the analysis of other types of reciprocating engines.

Again for those who wish to delve into the darker areas of the academic world on this issue, the following is one of the better works to review.

<https://books.google.com/books?id=Pk5MAAAAMAAJ&printsec=frontcover&dq=steam+engine+indicator+++++low&hl=en&sa=X&ved=0ahUKEwiTv46QnvvMAhUGHGGMKHS8gBj4Q6AEIKzAA#v=onepage&q=steam%20engine%20indicator%20%20%20%20%20low&f=false>

Everything we will discuss about valves and valve gear will ultimately have to be evaluated through the use of the indicator/planimeter. Without these two tools the “whole enchilada” is reduced to fumbling in the dark !

Until next time, take care,

Dave Griner

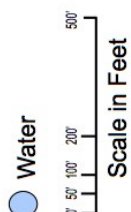
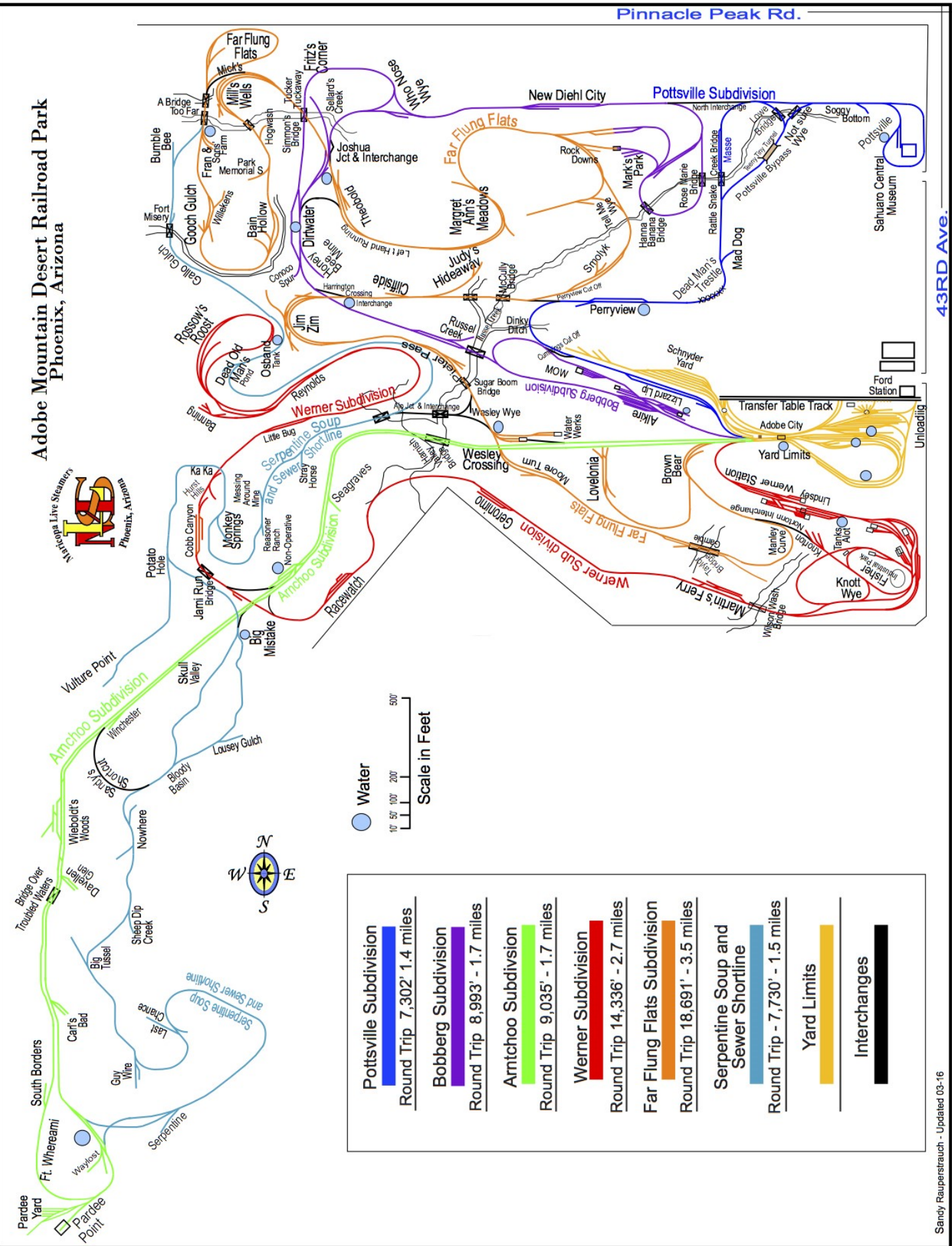


***Engineer cards expired on May 31***

***Time to take the test on line at***

***Maricopalivesteamers.com***

# Adobe Mountain Desert Railroad Park Phoenix, Arizona



<b>Pottsville Subdivision</b>	
Round Trip 7,302' - 1.4 miles	
<b>Bobberg Subdivision</b>	
Round Trip 8,993' - 1.7 miles	
<b>Arntchoo Subdivision</b>	
Round Trip 9,035' - 1.7 miles	
<b>Werner Subdivision</b>	
Round Trip 14,336' - 2.7 miles	
<b>Far Flung Flats Subdivision</b>	
Round Trip 18,691' - 3.5 miles	
<b>Serpentine Soup and Sewer Shortline</b>	
Round Trip - 7,730' - 1.5 miles	
<b>Yard Limits</b>	
<b>Interchanges</b>	

Pinnacle Peak Rd.

43RD AVE.