



## **The Passing Track**

May- June 2015

Newsletter of the Rogue Valley Model Railroad Club

PO Box 1362—Medford, OR 97501

Home page is <http://rvmrc.net>

### **New Way to Run Trains on Public Run Sundays**

At the April meeting it was decided to try a different way of running trains on Run Sundays. The second Sunday of the month would be "Anything goes Sunday"

Any consist, cars, railroad Prototype or fantasy, as long as the equipment meets standards to run on Sunday. The fourth Sunday of the month is "Prototype Sunday"

Prototype consists (steam or diesel), cars from layout or prototype rolling stock, and real railroads (no fantasy or economical equipment). A long train will be traveling in one direction and all other trains will be traveling in the other direction. The short trains must fit into Derby siding, which will hold about 20 cars. As we are running in two directions at scale speed, trains should be operated by seasoned operators.

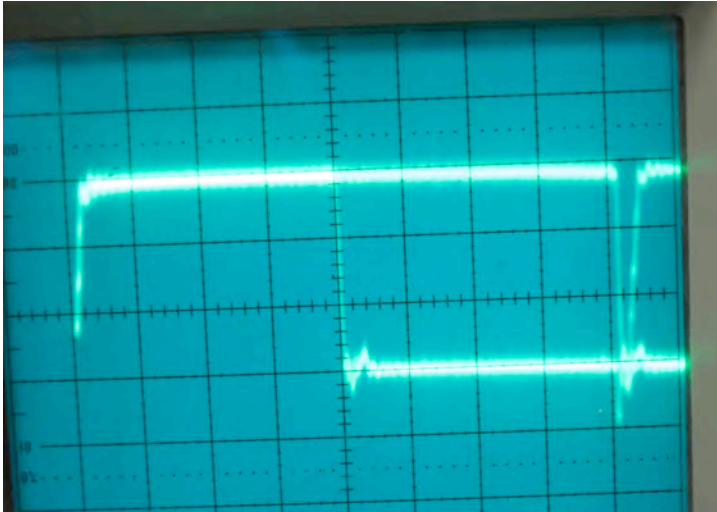
We will start with one long train to see what happens maybe try two trains in the future.

### **DCC Bus and Decoder Interactions**

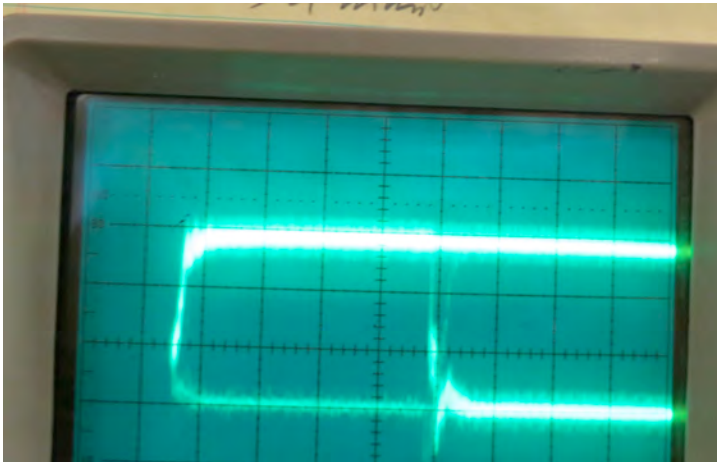
In March one of our members, Dave Carr, received his long awaited Alco 636 diesels. They were Bowser units with Loksound decoders. After running around the club layout several times he noted that if he went above throttle setting 55, the ability to command the lead unit decreased noticeably. Further experimenting showed that above throttle setting 60 he lost complete control of the unit. This occurred in the Summit and Butte Falls sections of the layout. Other diesels did not suffer this problem. To add to the mystery, the problem only occurred in the two power districts. Using a borrowed oscilloscope we looked at the signal on the track and noticed spikes and a distortion of the square wave signal used to convey the commands to the decoders. The signal degraded from a reasonable square wave to highly distorted shape as the throttle setting was increased. At the same time the height and frequency of the spikes increased. Using a multimeter which was modified to measure peak voltages, many of the spikes were higher than

20-30 volts. At these voltages, the spikes could damage the decoders in the locomotives. When other locomotives, with different decoders were run over the same power districts, the scope traces showed some distortion and some spikes but nothing as severe as with the Alcos.

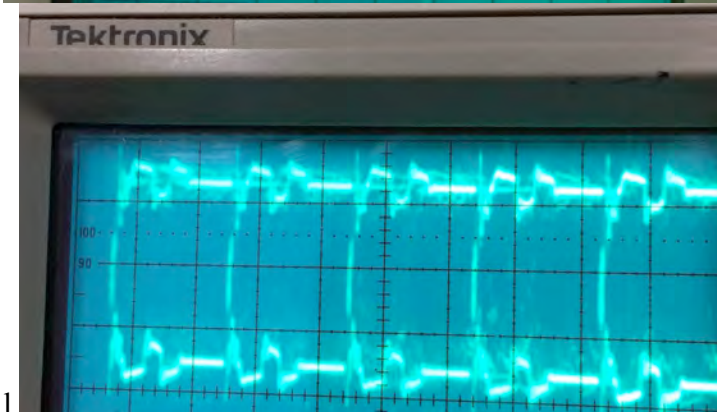
We initially suspected the Loksound decoders; however, during an operating session held during this same time period, a steam locomotive with a loksound decoder experienced no problems at all and in fact seemed to cause less distortion than the other locomotives.



*Summit quiet (unoccupied) trace. Both '0' and '1' pulses shown superimposed '0' pulse is twice as wide as '1' pulse. (note negative undershoot at transitions. Height is about 1/3 of DCC signal.)*



*Summit Occupied Note the increased negative amplitude of the spikes at the transition . Also the 'fuzz' around the main traces is larger due to decoder injected noise ;*



*Throttle at speed setting 60 Note the distorted waveform. Control is lost under these conditions*

After contacting Bowser and Loksound, to discuss the matter, a second set of locomotives, with a different run of Loksound decoders was sent to Dave. We tested them and they did not show the same behavior as the Alcos. Clearly there was something going on between the decoders and those two sections of the layout. After further emails back and forth, Dave Heap from Australia joined the investigation. Two factors came to light. Loksound decoders have a lot of capability in tuning the motor performance and the associated back-emf. Also, the European market requires more filtering to reduce interference and rf emissions. Dave Heap commented that in some cases he had worked on, the filters could be part of the problem. So we removed the filters on the mother board in the Alco diesels. (the filters are not part of the decoder per-se, but are included on the circuit board to which the decoder is mounted,) With the filters removed, the problem went away. There was no major distortions of the signal above throttle setting 60 and the voltage spiking was less often and at lower voltages. Problem solved?? The problem is not solved. We have a work-around to get us by. We have to understand why the Summit and Butte Falls segments are causing the problem and then correct the problems.

So what lessons can we take away from this? Large layouts with long runs of wire from the booster to the end of the power district are prone to ringing (distortion of the wave form). The spiking comes from the surge in current whenever there is a short or a break in the conductivity between the wheels and track. Typically this shows up as a spark. The best way to minimize the spikes is to remove dead spots in the rails and use a liquid conductive material to clean the rails. [radio contact cleaner or WD40] The longer the wire run, the larger the chance for trouble due to ringing. In effect the two wires that feed the power to the rails act like a tuning fork and can 'ring' at certain frequencies. This causes a distortion of the square wave signal on the tracks which carries the digital information to the decoders from the command station. Twisting of the rail bus wires, snubbers, and other measures can reduce the impact of the ringing but the longer the wire runs the higher the chance of trouble. Also, the wiring can interact with the interference filters placed on the decoder 'mother' board. Just like the wire runs which have a resonant frequency, so do the filters. If the two are close in frequency the distortion can become quite serious. In many cases removal of the filters eliminates or significantly reduces the ringing.

Another interesting fact that came out of this exercise was that the decoders and mother boards of the different ready to run models are not necessarily manufactured by Loksound. They provide a design and bill of materials and the factory builds the final product. The quality of the parts they select can have a significant influence on the behavior of the electronics. This may be true for other decoder makers as well. Similar locomotives with the 'same' decoder, which were made by different factories may perform quite differently. Something to keep in mind when two locomotives which are 'similar' don't act that way.

One of the challenges of this whole issue is to know when you have a problem. We don't have an oscilloscope. Therefore we can not monitor the distortions of the rail bus. To measure the peak voltage on the bus you need a meter which will measure the peak voltage (+). Fortunately, one can be made by adding a few components to a digital multimeter. A peak voltage meter is now available at the club and should be used when checking out new locomotives on the layout. Just because an engine works on a home layout, is no guarantee that there won't be a problem at the club. A log should be kept showing the locomotive number and the level or height of the spikes

when the locomotive is operating at full throttle. The voltage spike test should become one of the standard checks we do on any locomotive that is going to be operated on the club layout. Locomotives which generate spikes in excess of 25 Volts should be banned from the layout since they could damage the decoders on other locomotives. Most likely, these locomotives can be 'adjusted' (i.e. remove filters, etc.) to improve their bad behavior.

## **New Members**

The club attracted several new members this winter/spring. We would like to welcome Allen Parks, Donald Rausch, Joel Naegele, Chris Olsen and Lester Dougherty to our ranks. We look forward to seeing you at the ops sessions, open houses and Saturday morning gatherings.

## **Training Sessions**

The training sessions got off to a great start and then hit a wall called reality. The schedule failed to take into account the 'other' activities which compete for time in the spring and summer months. Lack of people to teach and in some cases lack of students caused us to take a break and resume classes in October. We will restart the series in October with a session on programming DCC decoders. More details to follow.

## **How's your Speed Perception?**

The speedometer has arrived. One of the goals the club wanted to achieve was more realistic speeds for our operations. Most locomotives don't have built in speedometers, the controlling factor is our perception of how fast we are going. So the issue becomes training / calibrating our perception so that it matches reality. To start this off we are going to have a scale speed 'activity / contest'. Each member would attempt to operate a locomotive at a set of speeds (10, 20, 30, 40, 50 mph) and then write down the actual speed they achieved. It will be interesting to see how well we understand what the scale speeds really are, This is the fun part of the exercise. Even if we possess a teenager's sense of fast and slow we can calibrate our eye as well as our throttle settings to operate our locomotives at the proper speeds. So one of the 'standards' we would have to meet prior to operating a locomotive on the layout (along with coupler height, weight, wheel gauge, etc.) would be the throttle settings for a locomotive corresponding to different speed limits on the layout. For future operating sessions, engineers would calibrate their locomotives' speed settings to the different speed limits on the layout (prior to operating). This would allow those with less than perfect speed perception to operate at the correct speeds and not have to rely on their own senses.

The speedometer will be available at the start of the operating sessions to calibrate the visiting power. It would be interesting for them to do an initial 'test' to see how well their own scale speedometer is operating. They should write there performance on the log sheet.

To make the test more uniform for everyone, the engine used for their initial test would be a club or test-only unit which had not been calibrated (so there is no known relationship

between throttle setting and scale speed.) Remember the purpose of the test is to see how well our own scale speedometer is calibrated. I have a couple of atlas RS units we could use. It will be interesting to see how well the members' internal scale speedometer is calibrated. A log sheet will be available for members to record their performance.

After the 'test' the engineer could calibrate his locomotive and record the throttle settings which correspond to the different speed limits on the layout. The speedometer 'test' sheets and speedometer are at the club. I calibrated the club speedometer against the one I have built into my layout at home. Over a speed range of 3 - 60 scale mph, the two systems agreed to within 1 mph (above 10 mph) and a couple tenths, below 10 mph. [ The club speedometer was not calibrated for the teenager speed ranges of 60 mph - warp 1!] *speed readout is limited to two digits!!*

To use this new feature properly on the club layout, we need to make people use the speed limit table in the P&E Timetable (on the club web site) It would also be useful to post the speed limits on the different sections of track, inside yards and inter-yard segments .

### Mystery Caboose Types

The Passing Track article on the Caboosees at the Red Caboose Motel in Strasburg, PA, also challenged the reader to identify which cabooses were painted for a railroad which never had that type of caboose. One clue to solving this puzzle is that it is unlikely that equipment scrapped by a western rail line would make it that far east. So that means only eastern roads might have a good match. That eliminates the Burlington, Union Pacific, California Western. The Canadian Pacific did not have anything that looked like caboose B. Their style was a high offset cupola. Caboose B appears to have been covered with some sort of sheathing. The roof line of the Cupola should be a clue to its true origin. So the motel made the correct choice half the time. If you have more information or corrections, please contact me.



A Wrong (N. E. Style)



B Wrong (??)



C Ok (Erie Caboose)



D Wrong (PRR N5a/b)



E Wrong (May be old Erie style)



F Ok (N. E. style)



G Ok (NYC Bay window)



H Ok (PRR N6a or N6b)

### FYI

This year's National Model Railroad Association's Convention will be held in Portland August 23-29. It is very likely that the club will be on display the day or two before and after the convention so that people driving to/from the convention can stop and inspect our fine layout. Unfortunately, we are a bit too far from Portland to be on a convention layout tour.

### Railroad Timecards 2015

**May 9 – Amtrak Train Days** is kicking off at Chicago Union Station on May 9th, and then will hit the rails, traveling to over 20 locations across the country May through October. Info: <http://www.amtraktraindays.com/> Amtrak is building on their success with "National Train Day" created back in 2008 – see press release <http://www.amtrak.com/ccurl/67/615/Amtrak-Train-Days-Launch-ATK-15-012.pdf>

**May 16 – Spring NMRA-PNR 1<sup>st</sup> Division Mini-Meet** – Coos County Fairgrounds, 7760 4<sup>th</sup> Street, Myrtle Point, Ore. Doors open at 9 AM; program 10 AM start up. Clinics, “people’s choice” model contest, door prizes, and local layout at the fairgrounds will be operating. Open to both NMRA members and non-members. Lunch (pizza and drink - \$5) will be available at the meeting. Info:

<http://pnr.nmra.org/1div/BrakemansRag/BrakemansRagApr2015.pdf>



**Aug 23 - 29, 2015 – 2015 NMRA National Convention**, Portland, Oregon. Double Tree by Hilton Hotel, Portland, Ore. More info at <http://www.nmra2015portland.org/>

**Aug 28 – 30, 2015 – National Train Show**, held in conjunction with the convention, at the Portland Expo Center.

**Sep 19 – 20 - Eastern Cascades Model Railroad Club**, Open house at 21520 Modoc Lane Bend, Ore. The ECRR is HO scale layout and the outdoors branch of the club, the Central Oregon Area Live Steamers (COALS), has built a 1½ inch scale (1:8) railroad, now with over one mile of track on 20 acres. Info: Phone 541-317-1545 and <http://www.ecmrr.org/>

**Oct 7 -11 – Southern Pacific Historical & Technical Society Annual Convention “150 Years of Southern Pacific”** in Sacramento, Calif. The Society's Annual Convention will celebrate the 150 year anniversary of Southern Pacific's rich legacy since the corporation's founding in 1865. The Double Tree Hotel in Sacramento will host this anniversary convention to accommodate historical presentations, over 30 vendors, a model contest, old timer's panel, and much more. Info: <http://www.sphts.org/convention/>

**Nov 28-29 – Rogue Valley Railroad Show**, Medford Armory, 1701 S. Pacific Hwy. Model railroad displays, exhibits, swap meet, door prizes, raffles and more. Saturday 10 – 5 and Sunday 10 – 4. Info: RVRR Show, PO Box 8065, Medford OR 97501 or Bruce [iwcr@charter.net](mailto:iwcr@charter.net)

**Dec 5 – Railroad Show and Swap Meet** by the Willamette Valley Model Railroad, Polk County Fairgrounds, Rickreall, Ore. 9:30 – 2:30. Info: Judy 503-581-6071 or [macinnej@msn.com](mailto:macinnej@msn.com) and check out <http://wvmrm.webs.com/> .

This famous photo was taken moments after the completion of North America’s first transcontinental rail line. On May 10, 1869, Leland Stanford, president of the Central Pacific Railroad Company & Thomas Clark Durant, Union Pacific Railroad Company vice president, drove the last spike at Promontory, Utah, linking the eastern railroad system to California. [http://amhistory.si.edu/onthemove/exhibition/exhibition\\_1\\_3.html](http://amhistory.si.edu/onthemove/exhibition/exhibition_1_3.html)  
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*Editor: Ron Harten*  
*Email [sprucerr@earthlink.net](mailto:sprucerr@earthlink.net)*