



Model Railroad Hobbyist |

DCC IMPULSES

column

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Not quite a chainsaw

As I hinted in last month's column, things are topsy-turvy in my world just now. Linda and I have lived in the same subdivision (robson.com/communities/pebblecreek) for over twenty years. We were in our late 40s when we moved into this 55+ community on an age-waiver. There was one floor plan that we liked when we first visited. We couldn't figure out what to do with the living room or formal dining room in that plan, but we loved the great room. So, we built different model.

In the intervening years, we have seen various things that folks have done with our beloved floor plan. Earlier this year, a house just down the street from us with that floor plan was offered at a very attractive price. So, we purchased it last spring.

What to do with the 15 x 15 foot living room? Wall it off and make it into my train room - much better than the 12 x 10 area that I had [4] just up the street. The dining room was also walled off and now is our office, with a nice east-facing bay window. I'm sitting there writing this column now.

Fairly soon after the closing, I moved a lot of the Rocky Mountain Pacific (RMP) Fn3 garden railroad to the new house [1 and 3]. I ripped up the track, packed the locos and cars and moved them down the street on my 2-wheel hand-truck. They took up residence in the new garage [3].

We spent this summer overcoming 20 years of benign neglect in the "new" house and are just now getting moved in. One of the last moves was to remove the benchwork from the old train room [4 and 5], which was accomplished yesterday. Soon, we will have the "old" house ready to list for sale.

1. The Rocky Mountain Pacific (RMP) railroad as shown at an October 2015 open house. Things weren't done to the point of running trains back then, but I was able to have a static display for our round-robin garden club. *Bruce Petrarca photo*



Planning new layouts

Once the “new” house was purchased, I began thinking of how I wanted to build my new garden layout and my new indoor one. In this column, I’ll walk you through my thoughts as I prepare for two new layouts.

The first question was one of gauge / scale. The outdoor will remain Fn3 (garden scale - 3-foot gauge - 1:20.3 scale).

The indoor is up for grabs. My choices are to continue the 1962 version of the Santa Maria Valley Railroad (SMVRR) in HO gauge or to move to an indoor version of my RMP in On30. The RMP is a Depression Era generic Southwest Colorado narrow gauge with a logo that resembles a well known one [2]. Perhaps the indoor version would feature more central Colorado locale, so the Gilpin Tram might have an appearance.

2. Rocky Mountain Pacific loco that I designed.



3. The RMP equipment, structures and track moved to storage in the new garage. *Bruce Petrarca photo*



The next decision was one of how to control the new layouts. Both had been traditional DCC with power and command through the track. Given new technologies, I decided to rethink all things here.

Nope, I didn't have to chainsaw anything, since nothing was really complete. However, I did get most of my NMRA Electrical and Civil Engineering achievement awards on these two layouts. The layouts were ripped out by their roots. Kinda the same thing, in the end. Gonna miss them.

Indoor gauge / scale

So, the question of what to build indoors raised its head for me to consider.

When I started planning the prior indoor layout, about 15 years ago, it was a very quick thought process. I didn't want something as small as N-gauge and I didn't have room enough for O-gauge and Sn3 didn't fit my budget. That left HO.

4. HO benchwork with backdrop in progress for indoor HO layout - planned to be Santa Maria Valley (California) Railroad (see the prototype photos above the backdrop panels). *Bruce Petrarca photo*



However, between then and now, Bachmann created a market in On30 (1:48 scale which models 30 inch, or 2-½ foot, gauge on track of the same gauge as HO). Yup, On30 is not really prototypically correct for many, if any, railroads. But it is convenient. There are lots of locos and cars and some track with dimensionally correct ties available at very attractive prices. And it runs like a dream.

In the interim, I have begun regular operations on an O-standard-gauge and On30 mixed layout. I have been having a ball at these sessions and really learning to love the On30 scale. Also six of my eight cars for the NMRA Cars achievement award were built in On30.

So, I am now working on alternative track plans in HO or On30 for the indoor layout. Nothing that I picked up at the National Narrow Gauge convention in August swung me totally to On30, but it did make a strong impression. More thinking is obviously required.

5. Indoor layout room with cabinets, TV mount and backdrop Masonite removed. Next, the track lights come down. *Bruce Petrarca photo*



Command system for the garden

I have pretty much settled on the CVP AirWire system for the garden layout. The power will come from Power-On-Board (POB) battery power. POB sounds so much better for someone of my age than “dead” rail. The AirWire system is DCC delivered by the radio, as I discussed in my three-part column series on DCC wireless operation. It started earlier this year with the March column. This was chosen for several reasons that were discussed there. A primary one being that our club uses the same system, so there is a knowledge base and some back-up equipment available. So, no matter what I do, part of my layouts will still be DCC.

Command system for indoors

Now these decisions become trickier for the inside layout. Trickier, because they are somewhat gauge related.

If I stay with HO, I don't think I can achieve my operating goals (3 hour operation sessions) with onboard batteries, at least not based on current technology in a single loco. The 1962 SMVRR roster was a single light Mikado steamer, the first-ever U-6B diesel and some 70-ton GE diesels [6].

6. GE 70 ton loco #70 switching solo on SMVRR in October 2006. Bruce Petrarca photo

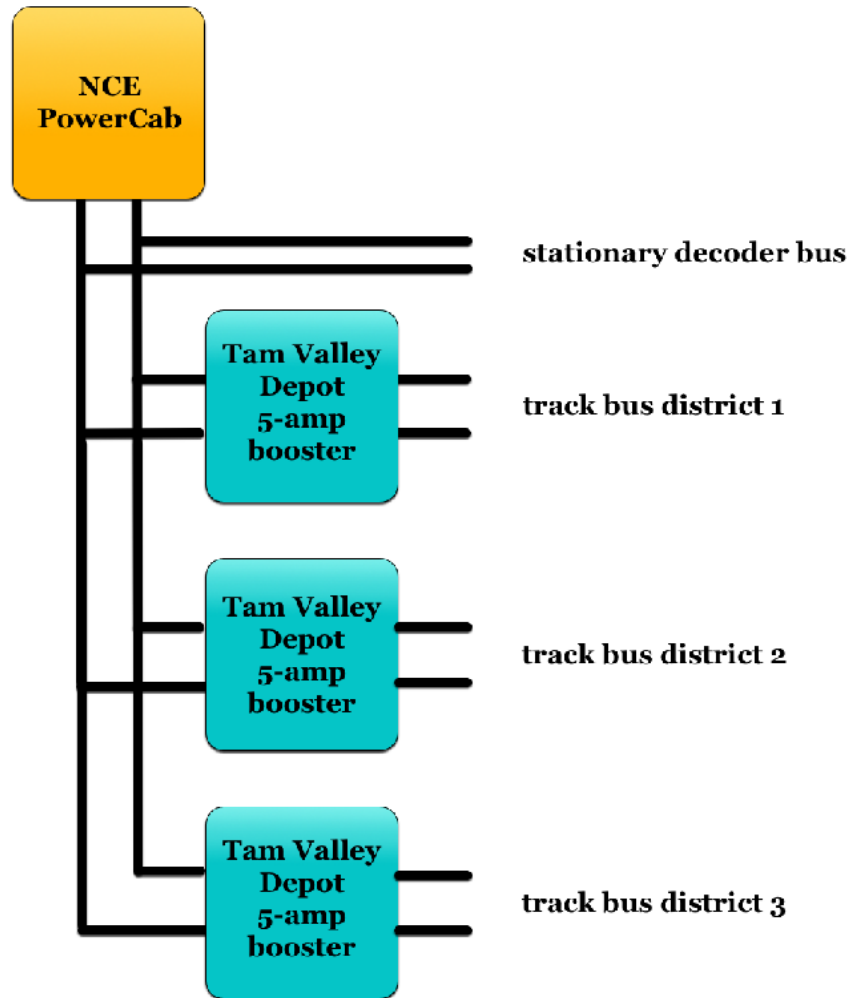


Even though the SMVRR frequently ran double or triple headers with these small diesels, getting a decoder, radio, speaker and battery inside would be a real challenge, even using all of the space in two locos.

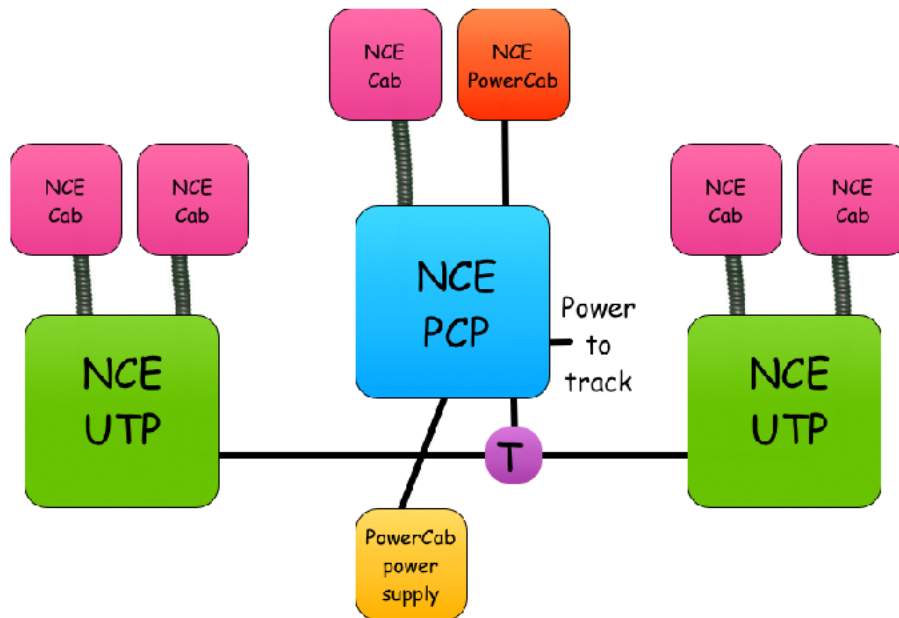
This tends to vote for continuing the status quo for HO. DCC on the track, using a NCE PowerCab and three Tam Valley Depot boosters [7]. This layout topography was discussed in my August 2015 column. The cab bus wiring to allow extra cabs to connect to the PowerCab is shown in [8].

However, On30 opens up lots of POB scenarios. Later I'll provide a description of my thought process based on On30 locos with battery power and direct-radio control. But first, let's review control and power options.

7. Using a NCE PowerCab and Tam Valley Depot boosters to provide three 5-amp districts without the use of circuit breakers. Actually this version provides more power for less money than a five-amp system with three circuit breakers. *Bruce Petrarca diagram*



8. Cab bus diagram to allow multiple points for connection of NCE cabs to the system shown in [7]. The PowerCab will not support as many additional cabs as shown in this figure, typically three of the five shown. *Bruce Petrarca diagram*



Through-the-track control and power

There are two broad categories of control systems beyond the ages-old DC (or AC) these days. Digital Command Control (DCC) and everything else. Yes, this is a DCC column, but I'm not being an elitist with that statement.

DCC is the only system that has independent standards to assist in compatibility between manufacturers. The original DCC patents were assigned to the NMRA by the inventor, Bernd Lenz. The NMRA codified them into standards (S-9.1 through S-9.3 at nmra.org/index-nmra-standards-and-recommended-practices).

You will notice I didn't say, "guarantee", because there are many things that are not covered by the standards. Folks tend to think that standards imply total compatibility. Not so. There are lots of things that are not specified so that various manufacturers can have some personal differences. Also, unless

the product has a NMRA conformance warrant, there is no guarantee that the product meets these standards. For many reasons, these warrants are becoming increasingly scarce.

With all that doom and gloom aside, what the DCC standards do is insulate you against obsolescence created by a manufacturer exiting the market. For example, Wangrow was one of the earliest manufacturers of DCC equipment. When Wangrow ceased operations, NCE stepped in and took over support of the Wangrow systems. Even without NCE's aid, the purchasers of Wangrow products would have had decoders and other compatible products available from various vendors. They just wouldn't have had the repair support and accessories, such as cabs, that NCE provided.

9. Dynatrol cab. *Dynatrol photo*



One of the best known control systems of the last millennium continues today. Dynatrol was released in the 1970s and is still being supported with

compatible products today (classicdynatrol.com). That said, since it is not a recognized standard, nothing that Dynatrol has done in the last 40+ years is sacrosanct. If they cease operations tomorrow, you, as a Dynatrol customer, have no ongoing support.

Another non-DCC system comes from Mike's Train House. They chose to make their Digital Control System (mthtrains.com/productline/DCS) similar to, but different from, DCC. They say, it is compatible with DCC, whatever that means. The early DCS systems were not very DCC friendly. Recent improvements make them better friends, but even siblings fight from time to time. Since I haven't worked with DCS, I cannot make any more exacting statements. Again, this system is limited to one manufacturer. I'm sure more folks have heard of Mike's Train House than PSI, who make Dynatrol.

10. Mike's Train House DCS system. MTH photo



Power on board (POB) options

The wheel to rail contact has been the cause of electrical issues since the beginning of power through the rails. With DCC, we're sending both power and commands through the rails. That makes this frailty more obvious. By storing power within the locomotive and sending commands by radio, more reliable operation can be achieved.

The ultimate electric power on board solution is 7-1/2 inch gauge ride-on locomotives powered by electric motors and golf cart batteries [9]. Emerging battery technologies allow us to fit this concept into smaller models. In many ways, On30 is the sweet spot, size-wise. Most of the rolling stock has enough room but does not require huge amounts of power.

11. Ultimate power on board (POB): 7-1/2 inch gauge ride-on locomotives. I'm the brakeman in this photo from Maricopa Live Steamers' January 2013 meet. Yes, we were having fun, even if we hadn't notified our faces. It was late afternoon and the sun was bright. That's my story and I'm sticking to it. Dick Vogler photo



I've given a lot of ink (or is it electrons?) to covering this in the last few months, so I'll just do a quick review.

The chart in [12] shows the name of the system, who manufactures it, and what protocol and radio system it uses. As I mentioned earlier, DCC is the only multi-manufacturer system covered. All three of the 900 MHz systems use the same or similar frequencies. Thus, they may interfere with each other or may play well together or not bother each other. If you are planning to use one system in close proximity to another, you'll do well to check out the interference issue ahead of time.

12. Various over-the-air control systems for model railroads. *Bruce Petrarca chart*

System	Manufacturer	Protocol	Radio
AirWire	CVP	DCC	900 MHz
BlueRail	BlueRail	Proprietary	BlueTooth
Dead Rail System	Tam Valley Depot*	DCC	900 MHz
DelTang	DT Control Systems	Proprietary	Proprietary 2.4 GHz
RailPro	Ring Engineering	Proprietary	Proprietary
S-Cab	Stanton	DCC	900 MHz

* The breaking news is that, while Tam Valley Depot developed the DRS system, they are no longer selling it. There was a big splash on their web site in late October about a them discontinuing the line. As I was writing this column, I learned from Pete Steinmetz that he is working to fold DRS sales and support into his Dead Rail Installs business. By the time you are reading this column, you may be able to find and order the DRS products on Pete's website (deadrailinstalls.com).

I've discussed all of the above systems in my columns this year, except DelTang. So, I recommend you learn more, if you are considering this system, by watching a video that my friend, MMR Miles Hale, made with Trainmasters TV (trainmasters.tv/video-player/tmtv-2016-04-act-i). There are concepts that Miles embraces in this video that I do not support, such as the use of unprotected cells, but it does show how one can get a lot into a very small On30 loco and still have room for cab details.

So, I can go with HO and keep my DCC system or I can go with On30 and keep my DCC system or move to POB and radio control. Perhaps I'll add an addendum to a few of the columns coming up about my thought process as it comes together. What'cha think?

Okay, there is a bit of background on the decision process as it is unfolding in my life just now. I always learn something from seeing what other folks consider and think and how they go about the process. I hope you are learning a bit as I grapple with my ideas.

Please share your ideas with us all. I'd love to hear what you think and see in my thought process. Just click on the Reader Feedback icon at the beginning or the end of the column. While you are there, I encourage you to rate the column. "Awesome" is always appreciated. Thanks.

Until next month, I wish you green boards in all your endeavors.