Small layouts can be fun

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Peter Vassallo cleverly breathes new life into running trains on a smaller layout ...

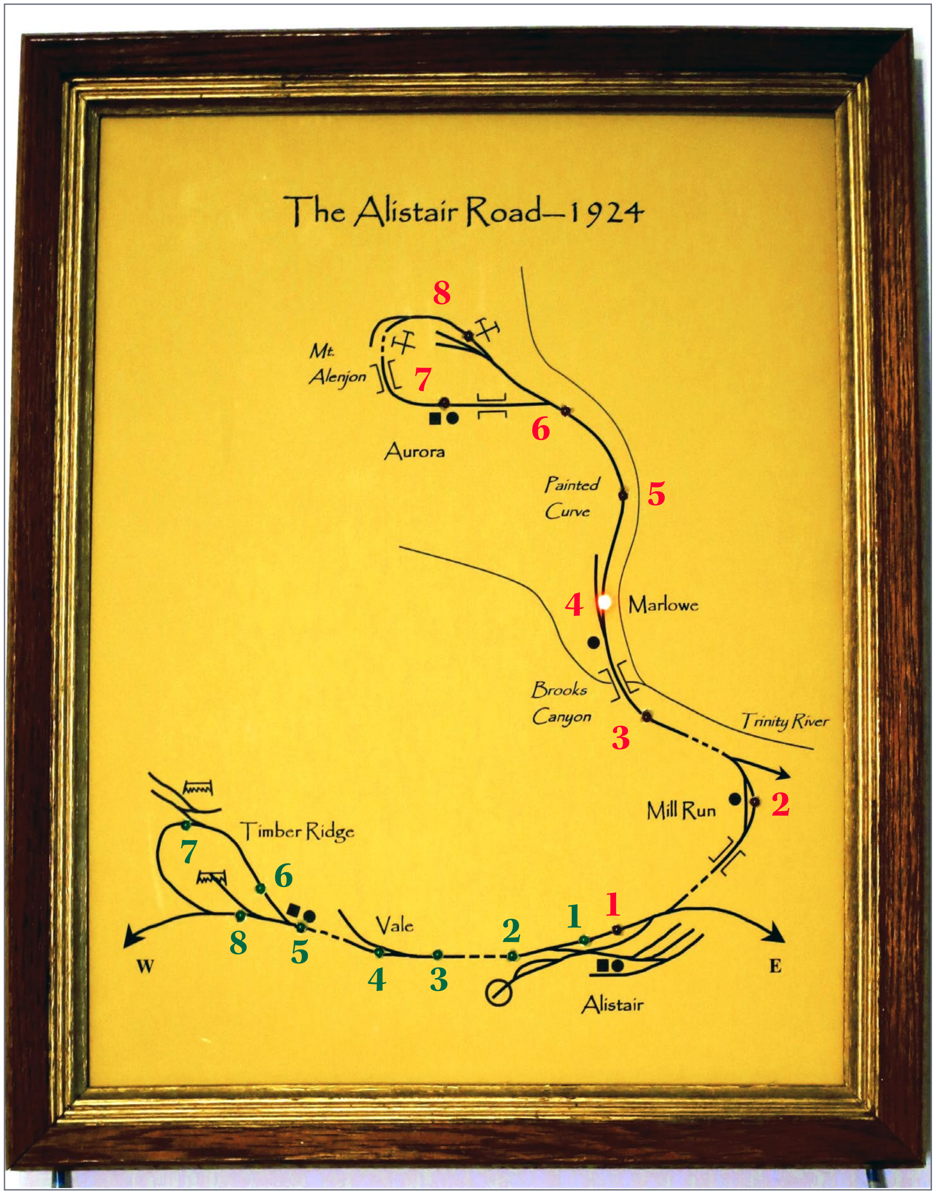
For many model railroaders, operation is an integral part of the hobby. And for good reason – after all the hard work of building a layout, it's a pleasure to run it in an engaging way and share it with others.

Many operations schemes are possible to suit particular layouts as well as the people who run them. Some like sophisticated

1. Overall view of the author's HOn3 apartment layout. Left throttle controls Timber Ridge turn, middle throttle controls Alistair yard and right throttle controls Aurora turn. Near the left and right throttles are rotary switches that control lights on the system map visible on the back wall.

schemes involving signals, dispatchers, train scheduling with fast clocks, switch lists, etc.

Others – myself included – prefer a more casual approach that doesn't require much paperwork. In fact, while running my narrow gauge trains over the years, I find myself enjoying just taking a few cars out for a spin around the layout, from yard to towns and back. In doing this, I run laps around the loops to lengthen the mainline and provide a sense of distance between stops.



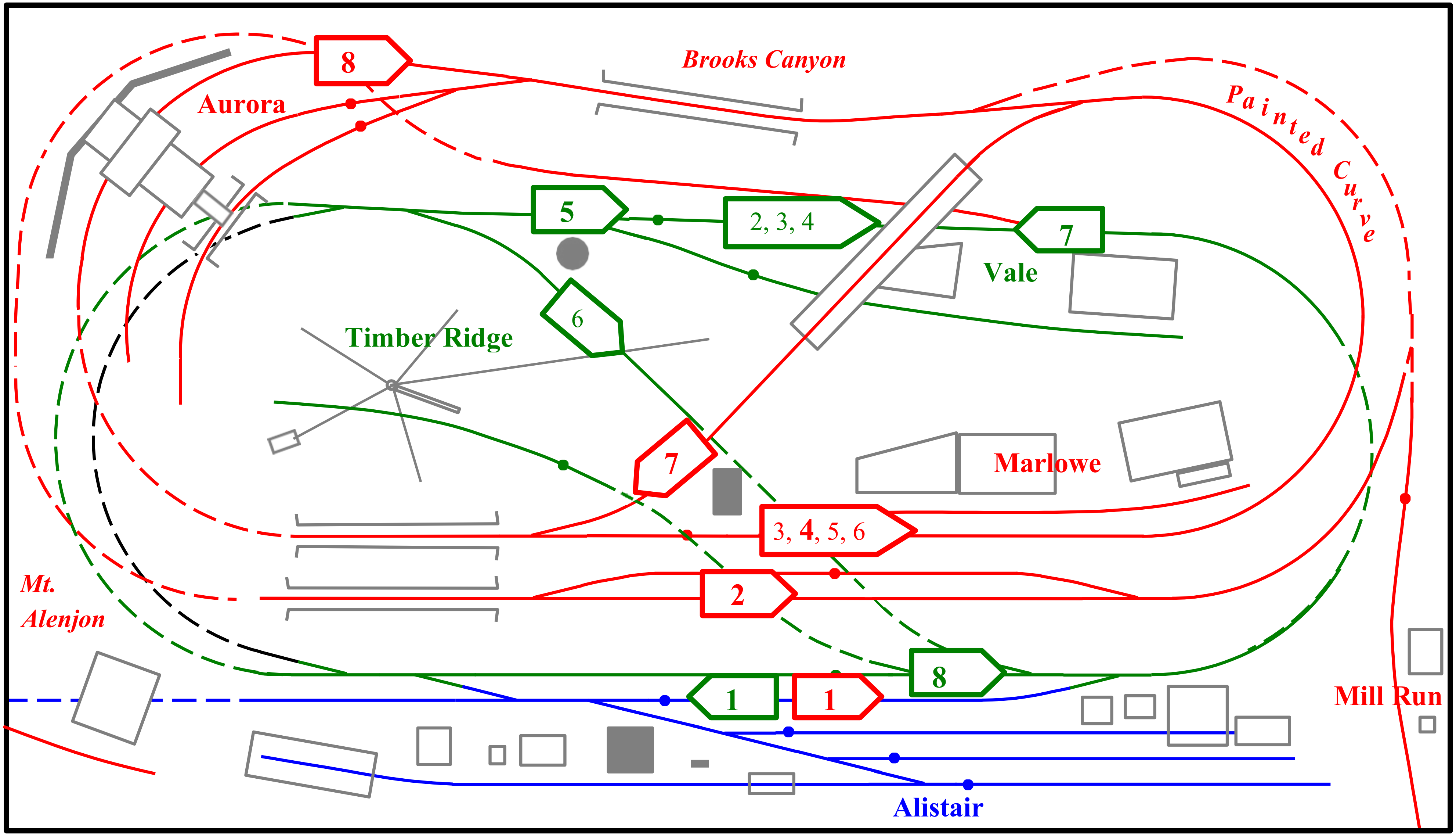
2. System map of the Alistair Road, with sequence numbers for north and west routes overlaid. At this moment, the lights indicate a train is stopped at Marlowe.

It occurred to me that I could break the bounds of the layout circle by adding a system map to track the progress of my trains. In this approach, rather than mentally count laps to approximate distance, distance would be physically indicated on a system map placed in view of the operators. A rotary switch located near the throttle controls would be used to activate the position indicators on the system map.

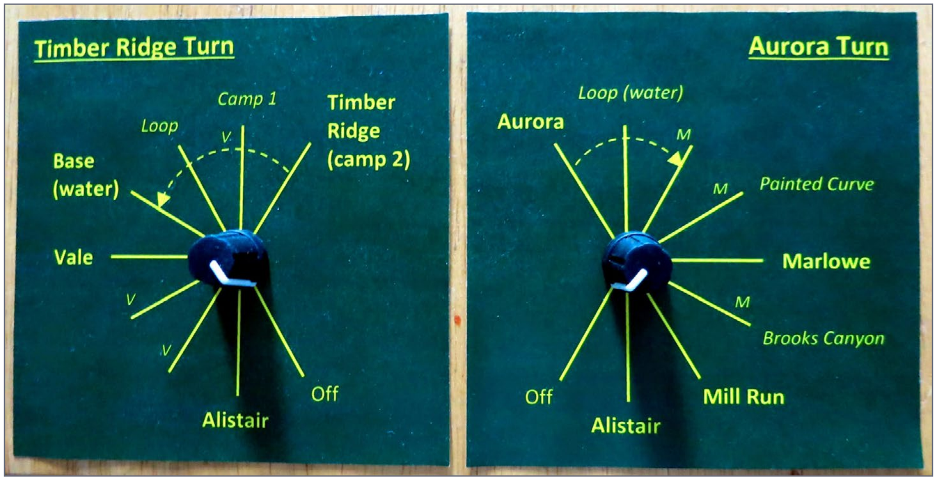
Some background on my layout is necessary to understand how the system works. As seen in [2], there are two main routes from the Alistair yard, one running west to Timber Ridge, and the other running north to Aurora.

The lower loop on the layout [3] simulates the east-west route while the upper loop simulates north-south. Trains for each route operate as turns: the trains leaving the yard go out to the reverse loops and back, switching towns along the way.

As I run various trains, I turn the rotary switches near the throttles [4] to indicate the relative locations of the trains. Taken together, [2] and [3] shows how this works on the layout. When the trains take the return loops, the process reverses as the trains make their way back to Alistair.



3. Track plan routes for outbound portions of Aurora (red) and Timber Ridge (green) turns. Numbered positions correspond to locations on system map [2] activated using the rotary switches [4] when the train reaches each position on the layout. Return trip reverses positions. Note that bold numbers indicate train stops. Solid gray structures indicate water tanks.



4. Rotary switch panels for operator route tracking.

Part	Quantity	Vendor	Total Price
16 x 20 inch frame with 3/16 inch hardboard backing	1	As desired	~20.00
Rotary switch panels, 4 inch square	2	Standard printer	N/A
Route board graphics	1	Staples poster (16 x 20 in)	$10.00
Rotary switch, 11 position	2	allelectronics.com, RSW-39	$2.90
Knob	2	allelectronics.com, KNB-269	$1.30
Ten wire control cable, 22 gage, 10 ft long	2	allelectronics.com, 10CS22	$12.40
No. 22 wire, 25 feet	1	allelectronics.com, 22RD-25	$2.70
Red LED, 12VDC	10	allelectronics.com, LED-12R	$4.50
Green LED, 12VDC	10	allelectronics.com, LED-12G	$4.50

Table 1. Project list of materials

Building the System Map

See [Table 1] for a list of the materials I used for this layout. I purchased the electronic components from All Electronics (www.allelectronics.com), which is an inexpensive source of electronic equipment.

In making this list, I found the most expensive item to be the frame and backing board, although in my case I found a perfect frame for free that someone had discarded in my apartment house. Talk about lucky! Once I had the frame, I drew the system map in Word and printed it to a PDF file at the right size to fit the frame.

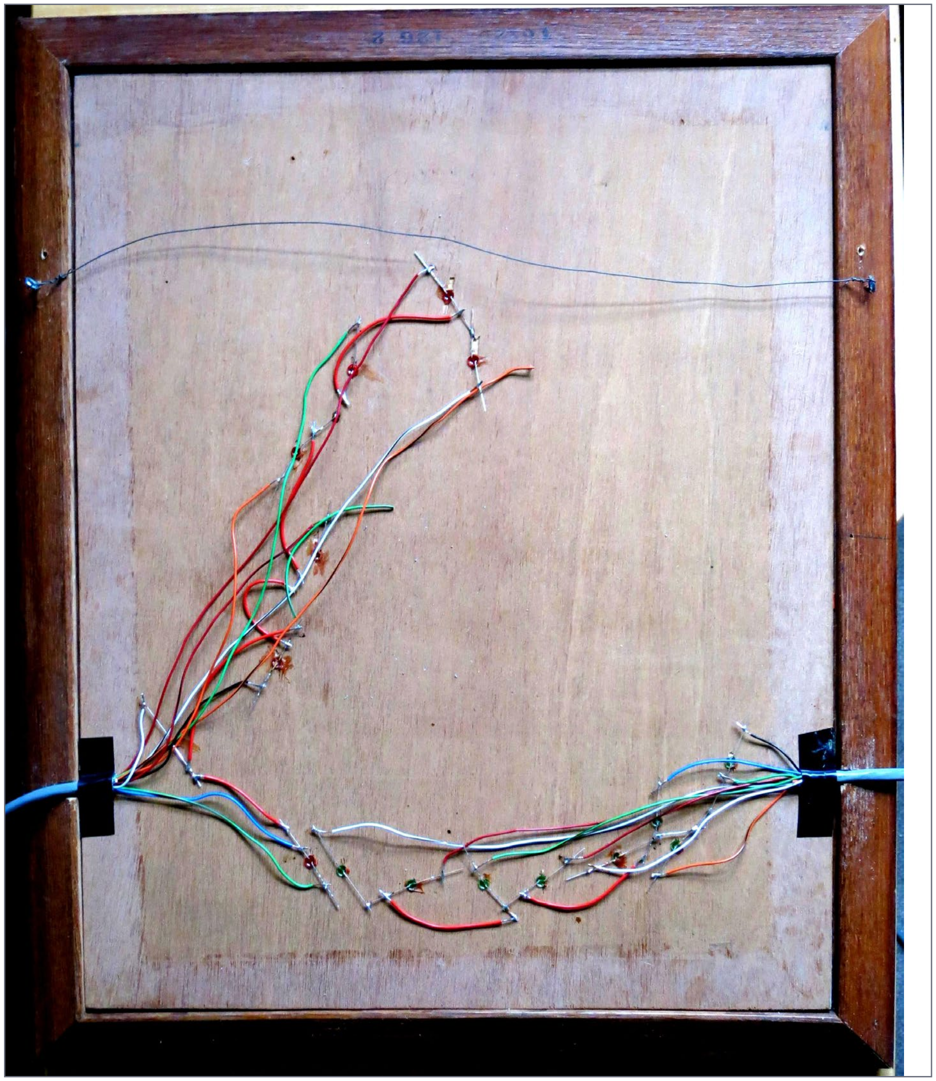
It took some time to draw the map in a style that looked good to me. I included text for towns and points of interest as well as symbols for water, fuel, and mining and logging operations [2].

For a color scheme, I chose a gold background with black graphics to accent the colors of my layout. I took the PDF file to my local Staples store and had them print it onto poster paper and cut it to size.

Back home, I attached the poster to the backing board using Walthers Goo. I then drilled holes through the poster and backing board at the appropriate locations to accept the LED lights.

I dabbed Goo on each light and pushed it through the backing board from behind with the leads for each light splayed out against the board.

I soldered the negative (anode) leads together where I could and used short sections of wire to connect the more distant negative leads together. I did this for each of the two routes, each containing eight lights [5].



5. Backside of system map framing board. Short red wires connect anodes of LEDs for the common negative polarity wire, while individual wires from the control cables connect to the positive cathodes of particular LEDs. The wires at the opposite end of the control cables connect to the rotary switches and to a DC power supply.

With a Dremel tool, I carefully cut and peeled back the outer casing of the 10-wire control cables to expose 12-18 inches of the individual wires inside. I soldered each of these wires to the positive (cathode) leads of the LED lights along the backing board for each of the two routes.

I exposed a few inches of the wires on the opposite ends of the cables to attach to the rotary switches. The connections were, of course, coordinated between the rotational position of the switch and the LED lights along the routes. I could find only 11 position rotary switches from www.allelectronics.com, so I used one of the extra positions as an off switch and did not use the last two positions.

I cut notches in the sides of the frame to accept the control cables and glued and taped the cables in position. I then hung the frame on the wall behind the layout and snaked the rotary switches under the layout to the front control panel. I drilled holes in the control panel to accept the rotary switches with the small graphics boards set in place under the control knobs.

Lastly, I connected the two positive wires from the rotary switches and the two negative wires from the control cables to my DC power supply, the same one I use to power my Tortoise switch motors.

The LEDs I purchased have built-in resistors to operate up to 12 volts. My DC power supply is an old 8.5-volt DC charger; the LEDS shine brightly at this voltage.

Actually, the green looks brighter than the red. This is because the eye is more sensitive to green, which is at the center of the visible spectrum. Better intensity matches would be obtained with green-yellow or red-blue LED pairings.

Layout Operations

With the system map in place, it's time to have some fun. To help a guest operator, I've written general instructions for each route, including arrivals and departures, switching duties and water/fuel stops [6].

I put the general instructions into a four-inch-square plastic holder. Later, I slip handwritten notes inside (visible from the back) to define the car movements.

As an example, the notes for the Aurora Turn might read: *Aurora: deliver 2 empty ore cars, pick up 2 loaded ore cars; Marlowe: deliver boxcar, pick up reefer.*

When writing these notes, I make sure the deliveries are in the yard and the pick ups are at their industries. This is best done on the fly; in other words, operating the trains as extras.

Aurora Turn

- Assemble train, depart Alistair
- Arrive at Mill Run, take water
- Switch Mill Run as required, then depart
- Arrive at Marlowe, take water, then depart
- Arrive at Loop, take water and fuel, then depart
- Arrive at Mine 1, switch as required, then depart
- Arrive at Marlowe, switch as required, then depart
- Arrive at Mill Run, take water, then depart
- Arrive at Alistair, break up train

Timber Ridge Turn

- Assemble train, depart Alistair
- Pass Vale
- Arrive at Base, take water and fuel, then depart
- Take Loop
- Arrive at Camp 1, "switch" as required, then depart
- Arrive at Camp 2, switch as required, then depart
- Arrive at Base, take water, then depart
- Arrive at Vale, switch as required, then depart
- Arrive at Alistair, break up train

6. General conductor's instructions for Aurora and Timber Ridge turns. These instructions correspond with indications on the rotary switch panels [4].

Since the local freights originate in the yard, it's best to have a yardmaster defining the train orders. The engineer (or conductor, if you prefer) switches the location controls as the trains are run.

7. The morning unfolds as No. 32 pulls up to the water tank in Alistair, preparing for the day's first run. It will take about ten minutes to fill the tender, then another ten minutes to couple onto the cars in the yard and depart for the trip to Aurora.

I usually operate by myself and perform both engineer and conductor duties (not to mention yardmaster duties). If another operator visits, I take the role of conductor and operate the system map as the other operator (as engineer) drives the train.

With a dedicated yardmaster, they find the system map a convenient way to track the progress of each train and gauge how much time they have before any train returns to the yard.

The lights on the system map correspond with towns, landmarks or water/fuel stops along the line. Water and fuel (typically coal) governs the distance a steam engine can travel, as gasoline might govern the range of an automobile. A steam engine will go through its water supply faster than its coal supply, so water tanks at strategic locations must be used to keep the trains moving.

8. Road engine 31 departs Alistair while no. 49 switches the yard. The little diesel began its career as a Grandt Line kit, but was later modified by hollowing out the superstructure and placing it on a Bachmann N scale switcher mechanism. A jeweler's screwdriver was used to expand the wheel spacing to the proper gauge. An idler flat car with N and HOn3 couplers solves the coupler mismatch problem.

Narrow gauge railroads in particular required numerous water tanks as the engines were smaller and had to strain against steeper grades. As an example, the Denver and Rio Grande's route from Durango to Silverton, about 45 miles total, had water tanks spaced about 10 miles apart (five tanks in all).

I've explicitly modeled three water tanks on my railroad: one at Alistair yard, one at Marlowe and one at the base camp in Timber Ridge. I've also implicitly modeled two more: one at Mill Run and the other at Aurora.

9. Marlowe's Paint Works is one of the town's major industries. Tank cars carrying raw chemicals are unloaded using the spout siphon, and crated cans of paint are loaded onto box cars, using the wooden loading dock at the rear of the spur. Down the hill in back (in story terms, 70 miles away) is the freight house at Vale, with a gondola full of pipe ready for unloading. Looming in the background is Painted Curve, a picturesque passage between Aurora and Marlowe.

These implicit water tanks show on the system map at locations miles apart from the modeled tanks. I stop for water at these imaginary tanks at locations on the layout physically close to the Marlowe tank to help foster the illusion that the engine takes on water while stopping there.

Sound is another great way to foster the illusion. I've been running two of my older locomotives as soundless DC models, but I recently purchased a Blackstone C-19 with a Tsunami sound encoder and an MRC Prodigy Explorer DCC controller.

10. Number 33 stops for water at the base camp in Timber Ridge after picking up a string of loaded log cars from Camp 2. A simple water tank like this creates another stop along the line even if it's only a few inches away from another stop (in this case, the town of Vale). The tank is an easy scratchbuilding project, partly because it can be seen only from the back and, as such, no spout detailing is required!

The MRC Explorer works perfectly for small railroads like mine; it cost just $90.00, takes up just 4x5 inches and controls up to four locomotives easily.

When I stop the locomotive for water, I use the "water fill" sound effect to simulate the opening of the tender hatch and the sound of water flowing into the tender.

After about ten seconds, I turn the fill effect off and proceed with a corresponding "whistle" send off.

Water tanks are particularly good to model, as they take up little room on the layout and can serve as separate stops along the line. For example, the small tank at the base camp in Timber Ridge has its own unique stopping point on the system map but sits literally just inches away from the town of Vale.

Just use your imagination to separate them in your mind as you are taking laps and following the lights on the system map.

Other layout elements can correspond with locations on the system map, including geographic features, tunnels and bridges. Some examples of these on my layout include the rock shelf trackage around Painted Curve and the wooden truss bridge over Brooks Canyon.

Again, some imagination is required to only "see" the train passing through these features when the lights on the system map indicate it. The loop circuit at Timber Ridge is longer than at Aurora, mimicking a longer logging route through several camps (green routes 5-6-7-8 in [3]).

Aurora's loop is shorter (representing about 3 miles around Mt. Alenjon), and is simulated using the red route 6-7-8 in [3]. The train stops for "fuel" after taking the switch into this loop (modeled by stopping at red 7 in [3]). Red 7 is physically close to the

11. Engine 31 exits the cut stone portal of tunnel 1 on the westward route to Vale. Life is good for the engineer, driving his train under creamy blue skies through northern California scenery.

12. Engine 32 pauses at Painted Curve with a short freight in tow. The engineer is waiting for the track crew up ahead to clear debris that had fallen during last night's storm. The conductor took advantage of the delay to capture this dramatic photograph.

water tank at Marlowe; as mentioned previously, this helps with the illusion that the engine is taking on water while stopping there.

Trains can be left at any location between sessions, making the system flexible and relaxed. It's so flexible, in fact, that you can skip laps if you choose and just flip the rotary switch forward to the location you want to work as soon as the train gets there.

The key is, *you can see your exact position* on the railroad while working or stopped at a given location. Even without the lights, the system map reminds me that the railroad is not just a few loops of track but rather a complete and imagined system.

Model railroad operations using a system map breathes new life into the much maligned track circle, which is often the heart of

13. A northbound freight crosses the wooden truss bridge in Brooks canyon. The train will stop shortly for water at Marlowe before continuing on the uphill climb to Aurora, where empty ore cars will be exchanged for loads. After taking the turn around Mt. Alenjon, the train will return southbound to Alistair, dropping the box car off at Marlowe on the way.

small layouts. This approach allows those with small layouts to get a concrete sense of travel distance when taking circular laps, adding a whole new dimension of fun to operations.

The approach could be adapted for use with larger point to point layouts, too.

If you wanted to get fancier, signal detection could also be used to automatically increment train position as it progresses along the line.

I'm having a lot more fun running trains on my layout – for those of you with smaller layout, try it, you might like it! ☑

View reader comments

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Peter lives in Albany, NY and works part time as a mechanical engineer. His interests are many, including golf, Yankees baseball, Giants football, Sabres hockey, writing fiction and poetry, country music and dancing and, of course, trains. His favorite prototypes are the narrow gauge lines of old Colorado and California. An earlier feature on his Alistair Road was published in the Sept/Oct 2017 issue of *Narrow Gauge and Shortline Gazette*. ▪