In the spirit of sharing, Master Model Railroader, Chuck Ricketts is creating a series of emails to describe how Jim Elder and he are constructing a sectional layout in the garage. This layout, while a pure fantasy model railroad, is operations oriented. The first email described Chuck's model railroad background with a brief look at some of his previous layouts and why, in his mid-eighties, he is starting a new layout. The second article told the history on Baja Siena (or at least Chuck's version of the history). In the third article, Chuck began to describe the construction of the Baja Siena Railroad and Navigation Company. Articles 4 and 5 covered benchwork and, sub roadbed, and some roadbed. Article 6 covered the roadbed and the track work. In this article, Chuck and Jim discuss track wiring, turnout control and DCC.

# Fantasy Island layout article 7 draft

I want to remind you that we are trying to build this layout as cost-effectively as we can. To that end we are doing some things with wiring that we have not done before. We have a quantity of surplus wire from various projects. Chuck Ricketts

Wiring

Instead of only using black and red wire for the track buses, we are running various colors and making a chart of what colors we used as we go. This is not the "standard" for DCC, but if done carefully and documented it works really well.

Along with using some over the counter terminal blocks, we also made our own terminal strips from a piece of Masonite and 8-32 machine screws and nuts. Note the 'I' and 'O' drawn on each side of the panel to indicate inside and outside wire to the track. Labels make future troubleshooting easy.

Track busses are 14 gauge wire, 26 gauge telephone wire of various colors are used for track feeders to every section of track. Good solid electrical connections of the proper size are critical to good operations.

Track Bus

Terminal strip
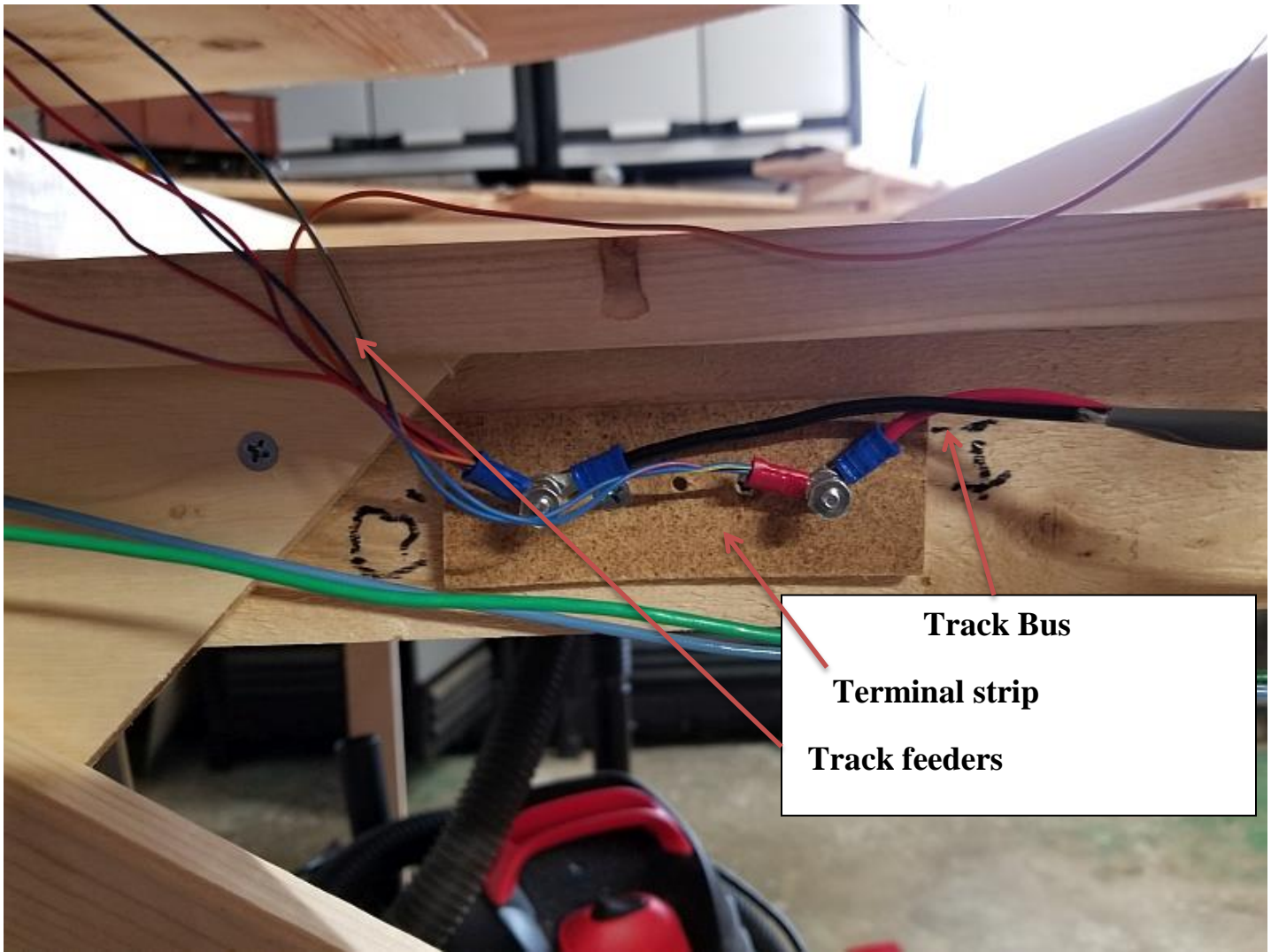
Track feeders

Terminal strips, track busses and track feeders
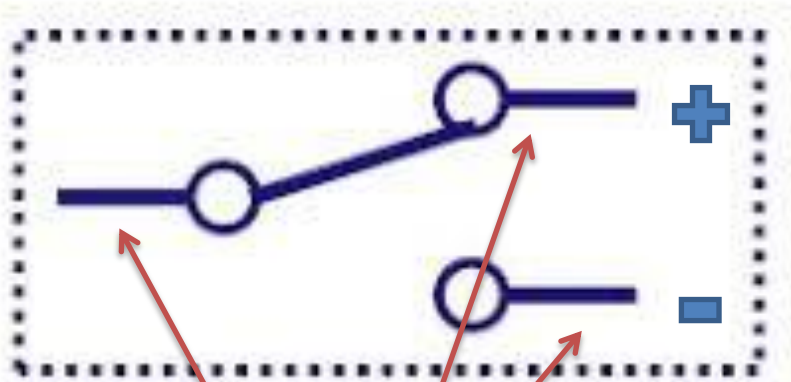
Turnout Control

We used single pole, double throw (S.P.D.T) slide switches as the most cost-effective method to control the manual turnouts. These switches were connected to the turnout bar by short lengths of music wire. The music wire attached to the top of the slide switch control the position of the points, the wiring connections underneath control electrical connections.
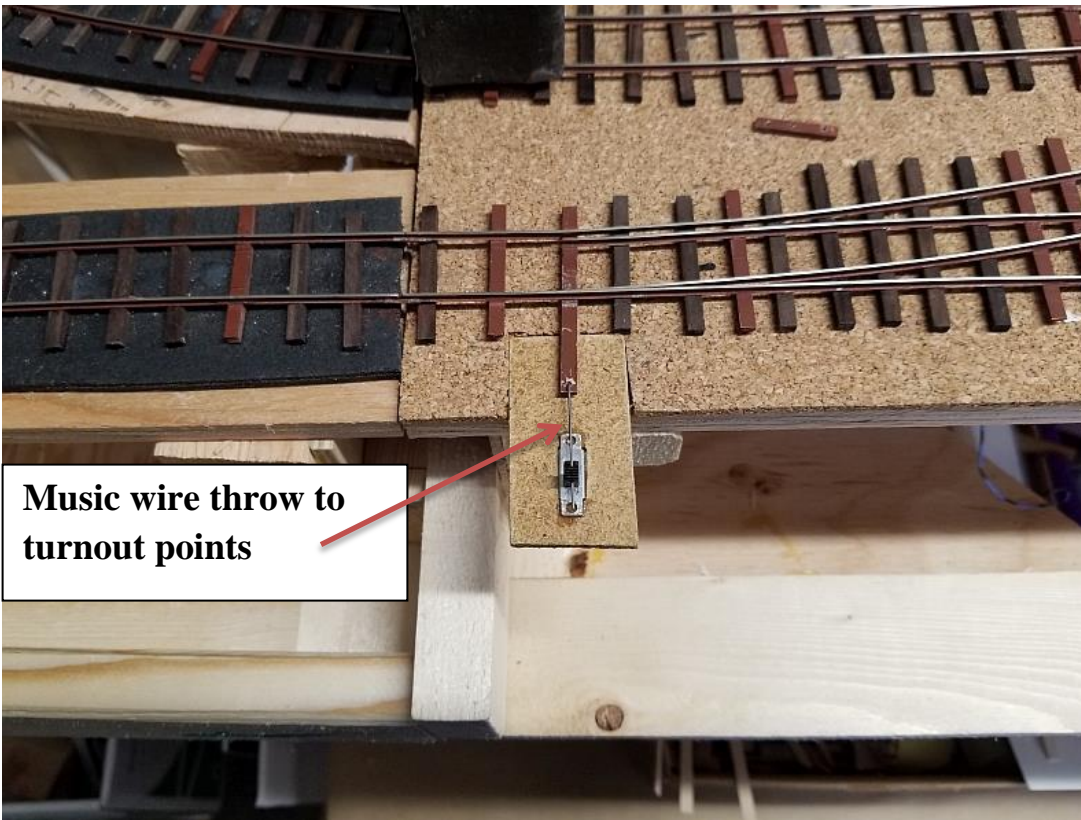
Music wire throw to turnout points
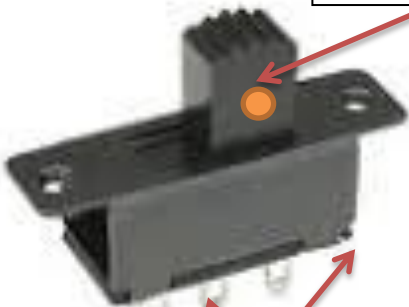
S.P.D.T switch used for controlling manual turnouts.

Underneath the switch, we connected track power to the two outer connections and the frog wire to the center connection. This wiring provides powered frogs for reliable running.

Drill hole here for music wire

To frog (center)

To track power

Outer connections

Center connection

S.P.D.T switch schematic

Wye Turnout Control

While we could have used slide switches to control the wye turnouts, since we have to control the turnouts in the wye from two sides and I prefer pushbuttons, we came up with another solution. On the SS&S I used a printed circuit board from RRCircuits. This board is now only available for 16 circuits and costs more than I wish to spend since were trying to do this layout as inexpensively as possible. I went on the web and searched YouTube where I found a pushbutton circuit using a solid-state latching relay by Alan Bailey. Even at today's prices, equipping a Tortoise turnout control cost less than $5.00 per turnout. The schematic is as follows:

Because we were controlling three turnouts from each side of the layout, Jim used a more complicated schematic with more wires and two LEDs per turnout instead of a bicolor LED. For a wye, bicolor LEDs do not give a user-friendly indication. I will leave it to you to figure out why this is so. (Think about the possible number of routes through a wye.)

We used pushbuttons with two LED lamps for each turnout. I had a stash of yellow LEDs that I purchased from Circuit Specialties in Phoenix, Arizona, some time ago. Price is now $2.09 for a bag of 100. They also have red and green LEDs. On the BS wye control board, we have a yellow LED on each side of the turnout button. When LEDs on the same leg of the wye are lit, that leg is clear (aligned).

Installing DCC

Digitrax parts list

- **DCS100 Command Station**
- **PM42 for power management/short protection**
- **AR1 for automatic reverser/polarity control**
- **UR91 for wireless throttle receiver**
- **UP5 for wired throttle connections (2)**
- **PR3 for DCC to computer interface**

I had kept several throttles as well as a surplus UR5 for wired throttles and UR91 for wireless throttles. We needed another UR5 so I ordered one from Yankee Dabber who had the best price.

Universal Panel, UP5

I had a surplus DCS100 Digitrax command station from the S.S.&S.   Jim attached a shelf under the layout which pulls out to hold the DCC items and power supplies. All track power is routed through a PM42 for short protection to 4 sections of the layout. Jim had a spare AR1 to control the reversing section of the wye. A spare power supply provides control power for the system and the tortoises. Having all the electronics on the pull out shelf makes everything accessible.

Wireless Throttle

Wireless Receive

Power Supply

Command station

Wired Throttle

PM 42
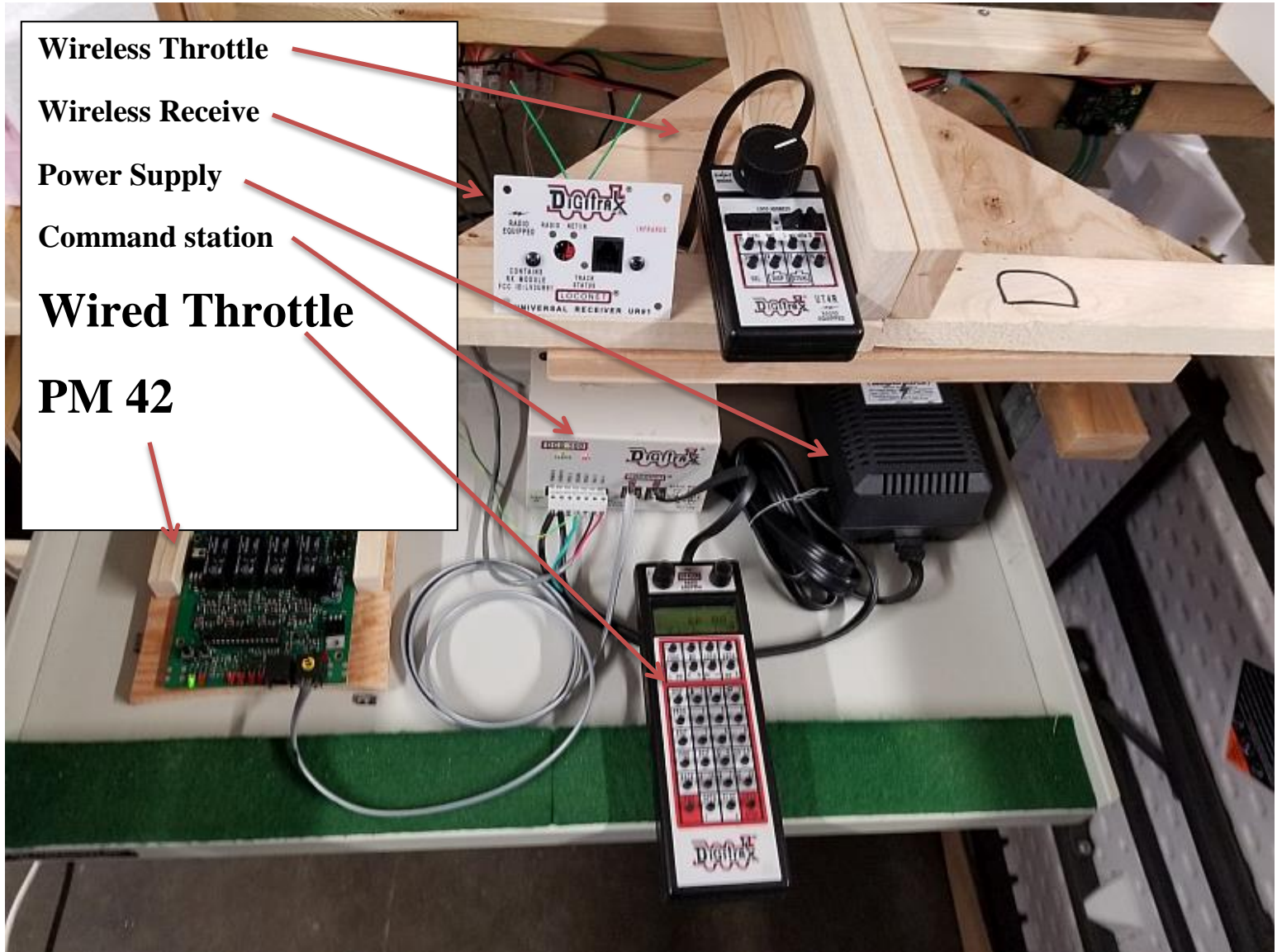
DCC power and distribution center on slide out shelf.

Programming

With everything connected between the basic DCC system and the layout, we added the convenience of a programming track. We set up a spur as a programming track so locomotives could be programmed without removing them from the layout. Insulated rail joiners keep this section separated from the main layout. A D.P.D.T. switch allows us to change the spur of track from normal running (electrically the same as the main layout) to programming, separate from the rest of the layout.

D.P.D.T. Switch to allow the programming spur to be dual-purpose.

Jim's added a second slide out shelf to hold my laptop and Digitrax PR3. The laptop is loaded with JMRI for easy locomotive programming and other features. The PR3 provides the interface between the computer and the DCC.

Digitrax PR3

Changes

Jim came up with a different solution for the "Sea of Cortez". Instead of the complication of mounting "Oberdar" on a wagon so that the barge can connect to the layout, Jim has built a folding platform that can be raised at the end of the layout where the barge connects.

Platform in folded down position.

Platform in upright, extended position. It will be painted to simulate water on the Sea of Cortez as we move into scenery.

The barge sits on the extended "water" area when the barge is "in port". With the shelf folded down, the barge is "out to sea". The barge can then be stored off layout, or a different barge could be brought to port with different interchange cars.

What's Next?

In Fantasy Island - Article 8, Chuck and Jim will discuss the basic landforms, primarily the view blocking walls of rock and the cost-saving methods we are using to construct scenery.