

Newsletter of the Carolina Southern Division 12, Mid-Eastern Region, National Model Railroad Association

Volume 20 Number 7

Division Coming Events

(See <u>CSD Website</u> for further details)

IN KEEPING WITH

COMMUNITY

**EFFORTS AGAINST** 

THE CORONA VIRUS.

ALL DIVISION ACTIVITIES FOR THE

MONTH OF JULY

**HAVE BEEN** 

CANCELLED.

## **Superintendent's Corner**

**July 2020** 

By Alan Hardee

Déjà vu. Another month with little change. I have talked with a few members and it seems the concern is still high for members gathering in groups for a meeting, especially in someone's home. Hopefully, the news will continue to improve this month and we can get together beginning in August. I did see a few members around the Hickory train show last month. The show seemed well attended considering the circumstances.

I hope everyone has a safe July. Remember our independence and freedom. Hopefully we will get a little more freedom back so we can enjoy our great hobby with our great friends. See you soon.



Superintendent Alan Hardee posted a comment on this photo from the NC Transportation Museum's Facebook page on July 3<sup>rd</sup> commemorating this event from eight years ago. It was the only time all 20 Norfolk Southern Heritage locomotives were together at once. Alan said "I was there on that HOTTTTT!!!!! July 4th. I volunteered to help park cars that morning, then enjoyed the event afterwards."

### UPCOMING AREA TRAIN EVENTS

Historic Spencer Shops Train Show Saturday August 29<sup>th</sup> 9:00am – 5:00pm Sunday August 30<sup>th</sup> 12:00 – 5:00pm 1 Samuel Spencer Drive Spencer, NC 28159

#### SCHEDULES FOR OTHER AREA TRAIN EVENTS ARE NOT CLEARLY DEFINED.

MEMBERS WILL BE NOTIFIED OF SCHEDULED EVENTS OF INTEREST WHEN NEW INFORMATION IS RECEIVED.

IN THE MEANTIME, STAY SAFE AND HEALTHY.

## **Editor's Notes**

By Ed Gumphrey

I hope you all enjoyed a healthy and safe observance of July 4<sup>th</sup>, even if events were far more subdued. We still won't have a Division meeting during the month of July, but hopefully things will start to get better.

With the 2020 MER Convention cancelled, some members have changed the focus of their model railroad efforts. The pressure to be ready for hosting layout tours is eased. Ed Smith shifted his attention to other matters on his railroad as he describes in his article this month.

I'm glad that NMRA national officers are continuing their efforts. Of particular note for our Division is Dave Chance receiving a Meritorious Service Award for his work supporting the Achievement Program. Congratulations to Dave.

NMRA-X also continued, and I expect these popular video clinics and tours will continue. Keep an eye on your e-mail for notifications from NMRA.

I gave Scott Perry a month off from his excellent scratchbuilding articles so I could fit in a lengthy article on LCC from Tim Rumph.

Tim finishes up his introduction to LCC with an article about signaling. I have to admit, the first time I read through Tim's discussions, it made my eyes water. But, reading it again, along with digesting the images of screenshots for programming the system, it's starting to make sense. For many of us, it's a challenge to get ourselves to learn something new and high tech. I encourage you to try - It's pretty cool stuff.

As always, I welcome your feedback, criticism and recommendations. But most of all, I welcome your submissions of articles about your model railroading projects. Remember, this is YOUR newsletter. Oh yeah, and don't miss the last page bonus – it's a follow-up to last month's photo of #611. Enjoy!.

### **SUBMISSION GUIDELINES**

I target the 1<sup>st</sup> of each month for publication. Please submit articles for publication by the 27<sup>th</sup> of each month.

The preferred format is MS Word, but I can convert most other formats. For questions and help, email me at <u>editor@carolinasouthern.org</u>

### **DIVISION AND REGIONAL NEWS**

By Ed Gumphrey

The Division continues having to cancel any activities during July. As our Superintendent noted in his monthly comments, hopefully things will be better by August.

There was a train show last month. I didn't attend the show in Hickory, but have heard that it went well. Alan Hardee captured a shot of Gil Brauch, MMR and Larry Paffrath "operating" (with pun intended due to the masks) T-Track at the Hickory show.



As announced last month, the MER Convention for 2020 was cancelled. MER President Kurt Thompson, MMR, added some background information and well-deserved recognition for planning efforts in the latest edition of the MER Local. His remarks start on page six at <u>http://www.mer-nmra.com/MEReLocal\_Files/2020/elocal-v75i04-2020JulAug.pdf</u>

Behind the scenes, there was more recognition. **Congratulations** to CSD member and MER AP Manager Dave Chance who received a Meritorious Service Award from the NMRA for his outstanding service in the Region for the Achievement Program.



You should have received your copy of the latest edition of *NMRA Magazine* by now. Don't miss the article by CSD member Fred Miller, MMR on animated electronic signs for structures. Fred briefly presented samples at last year's "show and tell" meeting. These animated signs can fill a storefront window and really bring it to life. The photo on the right, provided by Fred, is repeated from the April 2019 edition of *The Brass Pounder*. The article in *NMRA Magazine* includes the details for how you can do it too.

Social media postings by Division members continued to decline during June, but there were some interesting pages.



Scott Perry posted my favorite. He recently started his youngest daughter, Katie, on a craftsman kit building project. The two photos from his Facebook post show the talented 10-year-old painting parts of a laser kit and the impressive finished project



NMRA-X continued with clinics and layout tours during June. Their latest was on the 27<sup>th</sup>. I recommend that you check out these virtual events. Some pretty cool stuff. Keep an eye on your email for more announcements from NMRA on more NMRA-X presentations in the future.

While on the subject of future events I offer a couple of reminders. Farthest out, CSD will be hosting the 2022 MER Convention. Neal Anderson, MMR and Convention Chairman, is anxious to put the planning work he's already done to good use.

A little less than a year from now, The Southeastern Region (SER) will be holding their 2021 Convention very close to our Division. Hosted by our neighboring Palmetto Division, the event will be held in Greenville, SC June 10-13, 2021.

# **A CALL FOR CLINICIANS**

Dave Winans, Co-Chairman for the SER 2021 Convention is looking for any CSD members who would be interested in presenting clinics at the convention in June 2021. For those of you who present clinics at RMU and/or had planned on giving clinics during the cancelled 2020 convention, SER would be a great opportunity for you to spread your expertise event further. Contact by e-mail to <u>clinics@SwampRabbitExpress.org</u>

Their website at <u>www.swamprabbitexpress.org</u> is already populated with some interesting information. I'll publish more information about this event as we get closer.



# Greenville, SC June 10-13, 2021

## Information at:

www.swamprabbitexpress.org



## DETOURS



By Ed Smith

As I continue in my quest to complete my double track mainline, I've recently slowed my pace considerably. My goal was to have the main up and running by our convention. Now, due to the cancellation, the sense of urgency has been replaced by relaxed creativity. Now I can take time to smell the roses and work on areas I would have blown by if I was still on a schedule. This article is about one of those areas, Susquehanna, PA.

The Erie R.R. Susquehanna shops were a massive complex nestled between the Susquehanna River and the foothill town of the same name (pic 1). This was the main facility on the Erie for many years, before moving to Hornell, NY. In the era I model, late 1940's, the facility is still vibrant with maintenance shops, car facilities, a multi-track yard, large roundhouse and turntable, and a signature structure on the Erie, the Starrucca House (pic 2). Built in 1863, it was once the largest passenger station in America, 367 feet long. Under one roof, it had corporate offices, passenger waiting areas, a large dining facility, and a hotel for travelers. In the era I model, the hotel was closed due to modern passenger travel, but it still was a functional building. Today, the building remains, but only a vacant shell of what it once was. For that matter, all the buildings are gone except for the Erie water Tower. It is my goal to capture that 1940's essence.



Pic 1: Erie RR Susquehanna Shops



Pic 2: Starrucca House

My depiction of the massive facility will be on my upper level deck located about half way between deck entry and staging (pic 3). I have approximately 36' to work with in a L-shaped configuration, 6' x 30'. This month's article will be about the prep work involved. I decided to lay out the largest facility at the shops, the turntable and roundhouse. I'm using Walthers Cornerstone kits (pic 4). The 130' DCC turntable, modern roundhouse, 3 add-on kits and the machine shop.



Pic 3: Location for the Erie RR Susquehanna Shops on the upper level.



Pic 4: A Collection of Walthers Cornerstone kits are at the heart of this project.

Originally, I was going to truncate the roundhouse. This would allow me to cut off the part that hung out over the fascia and you could view right into the structure. I decided against that for 2 reasons. First, although the interior will have detail, I didn't want to get into super detailing. I was sticking to the good enough approach. Also, Tony Koester did this to his roundhouse on his Nickel Plate layout and I felt like I was plagiarizing if I did it. This decision created a few problems. I had to balloon the fascia out on the upper deck corner to accept the roundhouse and re-route the main to avoid the turntable (pic 5, 6). Prior to this modification, the lower level protruded further into the aisle than the upper level. The changes brought the two more in line with each other, and no access was lost on the lower level.



Pic 5: Joist extensions and a ballooned fascia avoided the need to truncate the roundhouse.



Pic 6: Fortunately, extending the upper level did not hurt access to the lower level.

With this done, I used the supplied template to center the turntable (pic 7). I had to take into consideration the size of the roundhouse (pic 8) and where the upper deck supports would interfere with the turntable hole (pic 9). After I was satisfied with the location, I laid out the turntable, roundhouse, and outside leads (pic 10). Per Walthers instructions, the tracks are spaced on 10° increments.



Pic 7: The Walthers turntable and roundhouse templates were used to locate the turntable.



Pic 8: Floor sections from the roundhouse and three add-on kits show plot the roundhouse footprint.



turntable's center point.

Pic 10: Layout markings in place for the turntable,

Pic 10: Layout markings in place for the turntab roundhouse, and outside track centerlines .

Now, using a 3/8" drill bit, I drilled several pilot holes (pic 11). I used my jig saw to cut out the hole in pieces, so I wouldn't damage the deck supports. 5/16" holes were drilled around the perimeter, per the template, for the guide pins to secure the table on the turntable. Finally, I had to notch the supports to accept the concave bottom of the turntable (pic 12). Also, I moved several of my lower deck light fixtures. Even though I use GFL lamps, I was concerned about heat affecting the turntable mechanism (pic 13).



With everything adjusted to fit, the turntable and roundhouse base were laid out (pic 14). The blue masking tape on the turntable is very important. You need to make sure that no dust or debris gets into the electrical mechanism of the turntable. Using  $\frac{3}{4}$ " blue foam board, the void created by extending the fascia was filled in and secured with caulk (pic 15). I laid out the yard tracks using flex track remnants, switch ties, and switches to get an idea of how many tracks I could install (pic 16). This also gave me an idea of how many switches needed to be built. It looks to be 22. The main line is on  $\frac{1}{4}$ " Homabed glued to  $\frac{1}{2}$ " Homasote. I decided to mount the yard tracks on the Homasote, so I wouldn't have to shim each turntable lead. By doing this the yard lead descends  $\frac{1}{4}$ " (pic 17). This allows the yard to be lower than the main.



Pic 15: Foam board (3/4") was used to fill in the space created by extending the benchwork.



Pic 16: Yard tracks and turntable leads are roughed in using flex track and switch ties.



I plan on scratch building or kit bashing flats that will represent the town of Susquehanna. These will be placed above the facilities on the back drop to represent the foothills. As of now, I have photos of the town taped where they will go (pic 18, 19). To cap off the project, I plan to scratch build the Starrucca House using Hydrocal Brick sheets and adding the freight house and surrounding facilities. Hopefully, this will lead me to an Achievement Certificate in the Prototype Models category of the NMRA Achievement Program.



Well, like I said, I've made a little detour from my plans. But I have the time now and more importantly, the inspiration.



Stay safe in these crazy times and I hope you have a companion like I do in Elway to keep you company (pic 20). Until next time.....

ED



I'll admit that I stole that from the Southern's motto, "Gives a Green Light to Innovations". Signals can add interest to many model railroads. In the case of the Southern's S-Line that I'm modeling, three color automatic block signals were installed on the line in the 1920s, so adding these signals is important to capturing the flavor of the line.

Installing and configuring one signal is fairly straightforward. Most layouts, however, will need more than one. Keeping track of them will require a naming system. I'll use the same one as the prototype. This is taken from a track chart that I have for the line. The signals are designated "Snnn" where the nnn part is the approximate milepost location of the signal to the nearest 1/10 mile. Signals for westbound trains are odd numbered, and eastbound trains have even numbers. The "S" is for the S-Line. Signals for the Asheville, Spartanburg, Columbia W-line use a "W" prefix.



Above is the plan of part of my layout. You can see the signals labeled. You also need to label the track circuits. For those, I'm using a method described in the book <u>Introduction to North American Railway Signaling</u>. In that book track circuits are identified by the signal number of the signals that controls entry to that track with a "T" suffix, for Track circuit. The prototype generally uses two track circuits between each pair of signals, but there's no need for that on my layout. I just pick one of the signals. In this case it's the westbound signal for areas west of Newton and the eastbound signals for east of Newton. This is just the order that I'll be building the layout.

The signal that I'll be looking at in this article is S488. The solid lines on the plan are the main track. Dashed lines are other tracks which are not signaled. Looking at the plan, when track circuit S473T is occupied, signal S488 should be red, or STOP. When S473T is clear, but signal S472 is STOP, signal S488 should be yellow, or APPROACH. Otherwise, S488 should be green, or CLEAR.



Here is the wiring diagram for the S488 signal. It is connected to the H1 row of pins on the Signal LCC in the Newton Spreader section. Since these are LED drivers on the Signal LCC node, no dropping resistors are needed. The connections are as follows:

L	Not connected
R	Red
Υ	Yellow
G	Green
С	Common Anode

The westbound signal, S489, is also connected here. It uses four lights, a three head signal head on the top with a single red light on the bottom. The table below summarizes the Signal LCC-P connections on the BOB-S break-out board.



Signal Pin Connections on Key Side	Signal Pin Connections on non-Key Side	Key Side (Pin #) Markings	Non-Key Side (Line #) Markings
С		Low	8
	L		7
G		С	6
	R		5
Υ		А	-
	Y		+
R		S	4
	G		3
L		R	2
	С		1

With this wiring arrangement, if you find the pair of signals is wired backwards, i.e. the S489 signals is lighting up with the aspects for the S488 signal, you can just turn the plug around on the Signal LCC and everything will be right.

We also need a connection for the track circuit. For this I used a BOD4, which has four current sensing detectors and four general purpose I/O lines. The circuit for this is shown below.



The key to this is the CT (current transformer) coil. The lead for the track section goes through the hole in the CT coil. The DCC signal, which is an AC current, causes a small voltage on the terminals of the CT coil. This is carried to the BOD4 with a twisted pair of wires that I strip out of a CAT-5 cable. The twisted pair eliminated noise from the signal. I run the twisted pair

through the hole in the CT coil, but that is to serve as a strain relief. It has no electrical significance. Note that there can only be one wire going through one CT coil and then through all of the feeders to the track for a single section.

Now we're ready to start configuring the LCC nodes. I'll say this one more time: while I'm showing EventIDs in this column, do not use these EventIDs when working on your layout. Use the ones associated with the nodes that you are using.

There is a new node in this project, so the first thing is to give it a name. This is called the "Newton Spreader" node since that's what I'm calling this section of the layout.

💜 Identification							
Manufacturer: RI Model: Si Mardware Version: re Software Version: re	R-CirKits ignal-LCC w-C w-C2b						
🐦 Segment: Node I	D						
📎 Your name and	description for this n	ode					
Node Name							
Newton Spreader						Refresh	Write
Node Description							
Node Description	e Newton Spreader	Section				Refresh	Write
Node Description	e Newton Spreader	Section				Refresh	Write
Node Description	e Newton Spreader Power Monitor	Section				Refresh	Write
Node Description Node located on the Segment: Node F Message Options None	e Newton Spreader Power Monitor	Section	Write			Refresh	Write
Node Description Node located on the Segment: Node F Message Options None Power OK EventID	e Newton Spreader Power Monitor	Section	Write			Refresh	Write
Node Description Node located on the Segment: Node F Message Options None Power OK EventID 02.01.57.10.00.86.0	e Newton Spreader Power Monitor 12.A0 Refresh	Section       V     Refresh       Write     C	Write opy Pas	ste Search		Refresh	Write
Node Description Node located on the Segment: Node F Message Options None Power OK EventID 02.01.57.10.00.86.0 Power Not OK EventID (may be los	e Newton Spreader Power Monitor 12.A0 Refresh t)	Section       V     Refresh       Write     C	Write opy Pa:	ste Search		Refresh	Write

Now scroll down through the configuration tool and find the section for Masts. Mast 1 is for signal S488, which is the one we're working on, so name it. Under the Mast section are a series of tabs for rules. I like to order my rules starting with the most restrictive, so Rule 1 is STOP. This should look familiar from the short circuit light we did before. The next bit is something new. The section called "Track speed on approach to signal" is set to STOP. The train must be ready to stop here so it doesn't pass a red signal. We'll get more into this in a bit. Lamp 1 is set to #3 H1-R, which matches the wiring diagram above for the red light on the S488 signal. This mast uses only one lamp per rule. A picture of this step is shown on the next page.

Normal V Refresh V					
S488 Refresh Write					
Link Addross					
(P) Track Circuit Link Address. Copy and	d Paste into linked Track Circuit (Read Only)				
02.01.57.10.00.86.01.A0 Refresh	Write Copy Paste Search				
Lamn Fade					
Incandescent V Refresh Write					
Rule	ROLL 1-STOP				
Rule 1 Rule 2 Rule 3 Rule 4 Rule 5	5 Rule 6 Rule 7 Rule 8				
Rule Name					
0-Stop 🔶 🗸 F					
Track Speed	BE PREPARED TO STOP				
Stop V Refres	sh Write				
set aspect					
(C) Event to Set Aspect. Note: Aspects are cleared automatically by the logic.					
02.01.57.10.00.86.01.A8 Refresh	Write Copy Paste Search				
aspect is set					
(P) Send this event when the Aspect is	s set.				
02.01.57.10.00.86.01.A9 Refresh	i Write Copy Paste Search				
aspect cleared (P) Send this event when the Aspect cl	lears.				
02.01.57.10.00.86.01.AA Refresh	Write Copy Paste Search				
Appearance		_			
Individual Aspect Lamps					
Lamp 1 Lamp 2 Lamp 3 Lamp 4					
#3 H1-R Refresh Write	1				
Lamp Phase (A-R) - Elash Rate					
Steady V Refresh	Write				
Appearance Effects	leita				
Cfforte Lamp	nite				
Etterfs Lamn		>			

There are a couple of little things. Above the list of rules, there is a Lamp Fade entry. This is set to Incandescent so that the lamps will gradually turn on and off, like the incandescent lamps used in signals in 1974. Finally, at the bottom of the picture, "Lamp Phase (A-B) Flash Rate" is set to steady. There were no signals with flashing aspects used on the S-Line back then, but it will be useful for grade crossing flashers. We used this on the short circuit light.

Rule 1 Rule 2 Rule 3 Rule 4 Rule 5 Rule 6 Rule 7 Rule 8 Rule Name RULE 2 - APPROACH
Rule Name RULE Z - APPROACH
Track Speed APPROACHING SIGNAL
on approach to signal
Clear/Proceed Write PROCEED
Set aspect (C) Event to Set Aspect. Note: Aspects are cleared automatically by the logic.
02.01.57.10.00.86.01.AB Refresh Write Copy Paste Search
aspect is set
02.01.57.10.00.86.01.AC Refresh Write Copy Paste Search
aspect cleared
(P) Send this event when the Aspect clears.
Appearance
Individual Aspect Lamps
Lamp 1 Lamp 2 Lamp 3 Lamp 4 LAIVIP H1-Y
#2 H1-Y Refresh Write
Lamp Phase (A-B) - Flash Rate
Appearance Effects None  V Refresh Write
Effects Lamp
Unused V Refresh Write
Rule 1 Rule 2 Rule 3 Rule 4 Rule 5 Rule 6 Rule 7 Rule 8 RULE 3 - CLEAR
29-Clear   Refresh Write APPROACHING SIGNAL
on approach to signal PROCEED
Clear/Proceed Refresh Write
set aspect (C) Event to Set Aspect. Note: Aspects are cleared automatically by the logic.
02.01.57.10.00.86.01.AE Refresh Write Copy Paste Search
aspect is set (P) Send this event when the Aspect is set.
U2.01.57.10.00.86.01.AF Kerresn Write Copy Paste Search
aspect cleared
U2.01.57.10.00.86.01.AF     Kerresn     Write     Copy     Paste     Search       aspect cleared     (P) Send this event when the Aspect clears.     02.01.57.10.00.86.01.B0     Refresh     Write     Copy     Paste     Search
U2.01.57.10.00.86.01.AF     Kerresn     Write     Copy     Paste     Search       aspect cleared     (P) Send this event when the Aspect clears.     U2.01.57.10.00.86.01.B0     Refresh     Write     Copy     Paste     Search       Q2.01.57.10.00.86.01.B0     Refresh     Write     Copy     Paste     Search
U2.01.37.10.00.86.01.AF       Kerresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.80       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       LAMP H1-G
aspect cleared (P) Send this event when the Aspect clears. 02.01.57.10.00.86.01.80 Refresh Write Copy Paste Search Appearance Individual Aspect Lamps Lamp 1 Lamp 2 Lamp 3 Lamp 4 Lamp Selection
U2.01.37.10.00.86.01.AF       Kerresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.B0       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 2 Lamp 3 Lamp 4       LAMP H1-G         #1 H1-G       Refresh       Write       Urite       Urite       Urite
U2.01.37.10.00.86.01.AF       kerresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.B0       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 1 Lamp 2 Lamp 3 Lamp 4       LAMP H1-G         #1 H1-G       Refresh       Write       Write       Examp Search         Lamp Phase (A-B) - Flash Rate       Steady       V       Refresh       Write
U2.01.37.10.00.86.01.AF       Kerresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.80       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 1       Lamp 2       Lamp 3       Lamp 4         Lamp Flase (A-B) - Flash Rate       Steady       Xefresh       Write         Appearance Effects       Appearance Effects       Kerresh
02.01.37.10.00.86.01.AF       ketresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.B0       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 1       Lamp 2       Lamp 3       Lamp 4         Lamp Phase (A-B) - Flash Rate       Steady       Refresh       Write         Appearance Effects       None       Refresh       Write
U2.01.37.10.00.86.01.AF       Ketresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.B0       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 21 Lamp 2 Lamp 3 Lamp 4       LAMP H1-G         Lamp Selection       #1 H1-G       Refresh       Write         Lamp Phase (A-B) - Flash Rate       Steady       Refresh       Write         Appearance Effects       None       Refresh       Write         Effects Lamp       Urite       Effects Lamp       Effects
02.01.5/.10.00.86.01.AF       Refresh       Write       Copy       Paste       Search         aspect cleared       (P) Send this event when the Aspect clears.       02.01.57.10.00.86.01.80       Refresh       Write       Copy       Paste       Search         Appearance       Individual Aspect Lamps       LAMP H1-G       Lamp 1 Lamp 2 Lamp 3 Lamp 4       LAMP H1-G         I H1-G       Refresh       Write       Write       Appearance         Appearance (A-B) - Flash Rate       Steady       Refresh       Write         Appearance Effects       None       Refresh       Write         Unused       Refresh       Write       Effects Lamp
v2.01.5/.10.00.86.01.AF Refresh Write Copy Paste Search aspect cleared (P) Send this event when the Aspect clears. 02.01.57.10.00.86.01.80 Refresh Write Copy Paste Search Appearance Individual Aspect Lamps Lamp 1 Lamp 2 Lamp 3 Lamp 4 Lamp Phase (A-B) - Flash Rate Steady ∨ Refresh Write Appearance Effects None ∨ Refresh Write Effects Lamp Unused ∨ Refresh Write

Here are the configurations for the other two rules on S488, APPROACH and CLEAR. Note that on both the track speed approaching the signal is set to CLEAR. The lamps are H1-Y and

H1-G. These lamps don't need to correspond with the signal colors, but it's less confusing (at least to me) if they do. We're not using the H1-L lamp on this signal.

You might want to test the signal and make sure it works at this point. You can send an EventID using JMRI by selecting the "Send Frame" under the LCC pull-down. If you go back to Rule 1, click on the "Copy" button next to the "(C) Event to set aspect" field.

	Rule 1         Rule 2         Rule 3         Rule 4         Rule 5         Rule 6         Rule 7         Rule 8
	Rule Name
	0-Stop V Refresh Write
	Track Speed
	Stop
	Set aspect
	02 01 57 10 00 86 01 48 Refresh Write Conv Pacte Search
	02.01.57.10.00.00.01.A0 Kenesin Winte Copy Faste Search
	aspect is set
	(r) Send this event when the Aspect is set.
	Copy Rule Tevent number
Window Help	
Single Frame: (Raw inp	ut format is [123] 12 34 56)
Send	
	Send sequence of frames: Send packet wait (msec)
1	
2	
4	
Go	
	Send special frame: PASTE
	Send CIM
Send OpenLCB global mes	sage:
	Send Verify Nodes Global Send Verify Node Global with NodeID
Send OpenLCB event mess	sage: Send Request Consumers Send Request Producers Send Event Produced Event ID (8 bytes): 02.01.57.10.00.86.01.A8
Send OpenLCB addressed	message to:
	Send Request Events PRESS SEND
	Send Datagram Contents: 20 61 00 00 00 00 08 Send Datagram Reply
Send OpenLCB Configurati	on Command:
	Memory Address: 000000 Address Space: CDI V
Byte Count: 40 Read	
Write Data:	
	Pacto the event number in LCC Send window to test the signal
P	asie the event number in LCC Send Window to test the Signal.

You can do the same for the yellow and green lamps.



The track circuit is on the Newton node. Configuring the node for the S273T track circuit is the same as what we did last time for the short circuit input. This is on I/O Line 3, make the selections below.

- Line Description: S473T
- Output: No Function
- Input: Active Lo
- Event 1 (Upon this action): Input On.
- Event 2: Input Off

ne Description				
473T		Refresh	Write	
Output Function				
No Function	Refresh Write			
Ignut Exection				
Active Lo 💛 Refresh	Write			
Delay				
Delay time values for blinks, puls	es, debounce.			
Interval 1 Interval 2				
Delay Time (1-60000)				
0	Refresh	Write		
Units				
Milliseconds ∨ Refresh	Write			
Retrigger				
No ∨ Refresh Write				
Event				
Event 1 Event 2 Event 3 Even	it 4 Event 5 Event 6			
Command				
(C) When this event occurs				
02.01.57.10.00.55.00.18	Refresh Write C	Copy Paste	Search	
Action				
the line state will be changed to				
None	Refresh Write			
Event				
Event 1 Event 2 Event 3 Even	t 4 Event 5 Event 6			
Upon this action				
Input On 🗸 🗸 🗸	Refresh Write			
Indicator				
(P) this even on sent				
( ) and even will be bellt	Refresh Write C	opy Paste	Search	
02.01.57.10.00.55.00.1E				
02.01.57.10.00.55.00.1E R Other uses of this Event ID: Newton.Conditionals.Logic(1,547	73 Signal Restricting).Varia	able #1.set true		

Testing the track circuit is even easier. There is a lamp on the BOD4 for each detector. When the lamp is lit, the block is occupied. Just run an engine into the block and the lamp should light up. (The DCC system needs to be on! (2)) Note that the track circuit input is on the Newton node and the signal output is on the Newton Spreader node. This is one of the big advantages on LCC, inputs produced on any node can be consumed on any other node as long as they are on the same LCC network.



We're in the final stretch now. Remember from the beginning, this is the way the signal should operate:

- If block S472T is occupied, S488
   shows STOP
- If block S472T is clear and signal S473 is STOP, S488 shows APPROACH
- If block S472T is clear and signal S473 is APPROACH or CLEAR, S488 shows CLEAR

Now it's time to use the Logic section of the configuration.

8	
υ	ongic 19 Longic 20 Longic 21 Longic 22 Longic 23 Longic 24 Longic 25 Longic 26 Longic 27 Longic 28 Longic 29 Longic 30 Longic 31 Longic 3 onde 8/5489 Ston) Longic 9/5489 Approach/Clear) Longic 10 Longic 11 Longic 12 Longic 13 Longic 14 Longic 15
D	Description
S	
	SET DESCRIPTION
,	anicului
	roup V Refresh Write
۷	/ariabe ≠1
	Tragger
	On Variable Change V Refresh Vrite
	Source
	Use Variable #1's (C) Events ∨ Refresh Write
	Transformed
	Tuck - U
	Stop - Kenean Wilke
	set true
ļ	(C) Event to set variable #1 true.
	02.01.57.10.00.55.00.1E Befresh Write Copy Paste Search
0	Other uses of this Event ID: Newton Bert V(D-1 line(2 5472T) Event(1) Indicator USE EVENTS EPON
i	Newton, Conditionals. Logici (1.5473 Signal Restricting). Variable #1.set true
1	(C) Event to set variable #1 false.
	02.01.57.10.00.55.00.1F Refresh Write Copy Paste Search
C	Other uses of this Event ID:
ł	Newton.Port I/O-1.Line(3,S473T).Event(2).Indicator
ľ	Newton.Conditionals.Logic(1,5473 Signal Restricting).Variable #1.set false
Ļ	ogic operation
١	1 Only Vefresh Write
2	
ľ	Triager
	None V Refresh Write
	Source
	Use Variable #2's (C) Events V Refresh Write

Of course, there is a description, which is "S488 Signal STOP". The logic blocks can be arranged to be strung together. By selecting "Group" it will automatically go the Logic 2 if Logic 1 doesn't do anything. This block decides whether to set the S488 signal to STOP. Each logic block can use two variables. There are a couple of ways to set the variables, and Variable #1 is set to use Events. The events are inserted next. The event 02.01.57.10.00.55.00.1E is the event produced when input 3 on the Newton node becomes true, this is the detector for S273T. This means the block is occupied. 02.01.57.10.00.55.00.1F is the event when that input is turned off, or the block is clear. Finally the logic operation V1 Only means that there's only one variable to consider. We can skip over the Variable 2 section.

Action
when true
Action when Conditional = True
Send then Exit Group V Refresh Write
when false
Action when Conditional = False
Evaluate Next V Refrest Write DELAY SET TO 2
Time Delay before action
Delay Time (1-60000)
2 Refresh Write
Units
Seconds Refresh Write
Retriggerable
No V Refresh Write
Action
A trigger or change will generate the following events
Action 1 Action 2 Action 3 Action 4
Candition
Delayed if True Refresh Write
Action Event
(P) this event will be sent
02.01.57.10.00.86.00.A4 Refresh Write Copy Paste Search
Set S488 signal to STOP.

The Action section says what to do. First, there is "Action when Conditional = True. This is set to Send the Exit Group. In other words, if the S473T track is occupied, the signal is set to STOP and it doesn't matter what else is going on. The Action when Conditional = False determines what to do if S473T is clear. In this case, Evaluate Next makes it move on to Logic 2. I use a delay of 2 seconds. This simulates the time required for the prototype signals to change when a train passes. It is also used to determine the direction the train is moving for some advanced features that I'm not going into here. Action 1 is Delayed if True. If the S473T track is occupied, an event is created. Copy this EventID, which in this case is 02.01.57.10.00.86.00.A4, and paste it into the Event to Set Aspect for Rule 1 (Stop) for mast S488.

Now, if a train enters the S473T section of track, the S488 signal will change to red (STOP). In Logic 2 we determine if the signal S488 should be approach or clear. To do that we need to know what the aspect is for the next signal, S472. The RR-CirKits LCC nodes use Virtual Track Circuits for this purpose. Open the configuration window for the Newton node and copy the link address for the S472 mast.

Mast 1 (Newton T/O Signal Fastbound)	Mast 2 (Newton T/O Signal Westbound
Mast 4 (S472) Mast 5 (Newton Yard Short)	Mast 6 (Clar-Conv Short)
Mast Processing Normal V Refresh Write MAST F	OR \$472
Mast Description S472 Refresh	COPY LINK
Link Address (P) Track Gircuit Link Address. Copy and Paste into linked Track Gircuit (R	ADDRESS
02.01.57.10.00.55.02.00 Refresh Write Copy Paste Driver uses of this Event 10: Newton Spreader.Track Circuits.Circuit(1,S472).Link Address	Search

Now go back to the Newton Spreader node and scroll down to the Segment: Track Circuits section. I'm using Circuit 1 for this. Add the Remote Mast Description and paste the EventID into the Remote Mast Link Address.

🕅 Circuit		ADD D	ESCRIP	IION
ach track circuit r	nay receive opeed info	ormation from one	remote mast.	
Circuit 1 (S472) Remote Mast Des	Circuit 2 Circuit 3 C	ircuit 4 Circuit 5	Circuit 6 Circuit 7 ES472	LINK
S472		ADD	RESS	Write
(C) Remete Must	Link Adaress. Copy fr	om 'Next Most an	d Paste here.	
02.01.57.10.00.5 Other uses of this	5.02.00 Refresh Event up: spect.Mast(4.S472).Li	Write (	Copy Paste	Search

Now go back to the Logic section. I've labeled Logic 2 as S488 Approach and it's configured as shown on the next page.

℃ Logic	
Logic 19 Logic 20 Logic 21 Logic 8 (S489 Stop) Logic 9 Logic 1 (S488 Signal STOP)	Logic 22         Logic 23         Logic 24         Logic 25         Logic 26         Logic 27         Logic 28         Logic 29         Logic 30         Logic 31           (S489 Approach/Clear)         Logic 10         Logic 11         Logic 12         Logic 13         Logic 14         Logic 15         Logic 16         Logic 17           Logic 2 (S488 Approach)         Logic 3         Logic 4         Logic 5 (S489 Stick On)         Logic 6 (S489 Stick Off)
Description	DECONDENSION
S488 Approach	
Function	Mete
Last (Single) V Kerresir	Wite
Variable #1	
I On Variable Change V	fresh Write
Chine Change	
Source	Pafrach Write
	Ville
Charles Speed	Defeeds 100-in
Stop V	Kerresii Wilke
set true (C) Event to set variable #1 to	
(c) Event to set variable #1 d	
00.00.00.00.00.00.00.00	Refresh Write Copy Paste Search
set false	
(C) Event to set variable #1 fa	alse.
00.00.00.00.00.00.00	Refresh Write Copy Paste Search
Logic Operation	
V1 Only 🗸 🗸 🗸 🗸 V1	Refresh Write
Variable #2	
Trigger	
	Logic 2 for S488 Approach (S472).

Enter the description. Function is Last (Single) since this is the end of this logic block. Trigger is On Variable Change and Source is Track Circuit 1 which we've just set up. Track Speed is Stop. When the S472 track speed is STOP, this will be TRUE, and it will be FALSE for any other track speed. The events to set true and false are not used since we're using a track circuit. Logic Operation is V1 Only, and Variable #2 is not used.

when true	
Action when Conditional = True	
Send then Evaluate Next $ imes$ F	Refr <mark>esh Write</mark>
when false	
Action when Conditional = False	
Send then Evaluate Next ${\scriptstyle\bigvee}$ F	
ime Delay before action	TIME DELAY 2 SECS
Delay Time (1-60000)	
2	Refresh Write
Unite	
Seconds V Refresh	Write
	White -
Retriggerable	
No V Refresh Write	
ction	
trigger or change will generate	the following events
Action 1 Action 2 Action 3 Act	ction 4
Condition	
Delayed if True 🛛 🗸 Refree	sh Write
Action Event	
(P) this event will be sent	
02.01.57.10.00.86.00.AC	Refresh Write Conv. Paste Search

In the Logic 2 Action section, both TRUE and FALSE are set as Send then Evaluate Next. Again I've put in a 2 second time delay. Action 1 is Delayed if True. Action 2 is Delayed if False. Paste the EventID for Action 1 into the S488 mast Rule 2 (Approach) and the EventID for Action 2 into the S488 Mast Rule 3 (Clear).

Here is the reaction of the signals as the locomotive passes the S488 signal, goes through the S473T block, passes the S472 signal, and then goes on to Claremont.



Signals Change!

As the locomotive approaches signal S488, it is clear and it may proceed. Note the signal, S473, in background shows approach. That's because signal S489 (facing away from us) shows STOP. As the locomotive passes S488 it drops to STOP and so does S473. This is how things stay as it approaches S472, facing away from us in the distance. Passing S472, signal S488 changes to Approach, because block S473T is now clear but signal S472 is now STOP. As the train moves on, S488 goes back to Clear and we're ready for the next train.

Thank you for coming along on the LCC journey with me. If you'd like to start using LCC on your layout or have any questions, please contact me. I'd be glad to help.

Tim Rumph 910-318-2676 tarumph@gmail.com 718 Canterbury Dr. Lancaster, SC 29720

### **CLOSING PAGE BONUS**



Last month's bonus picture was on the occasion of the "birthday" of the reactivation of N&W #611. Shortly after Joe Skorch's wife took that picture, Joe grabbed this shot of the locomotive going away after it had passed under the overpass. A great shot from an angle we don't usually see. You gotta love the drama of smoke and steam.

**Division Brass** 

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