NMRA 2013 Peachtree Express
Control Panel Editor - B

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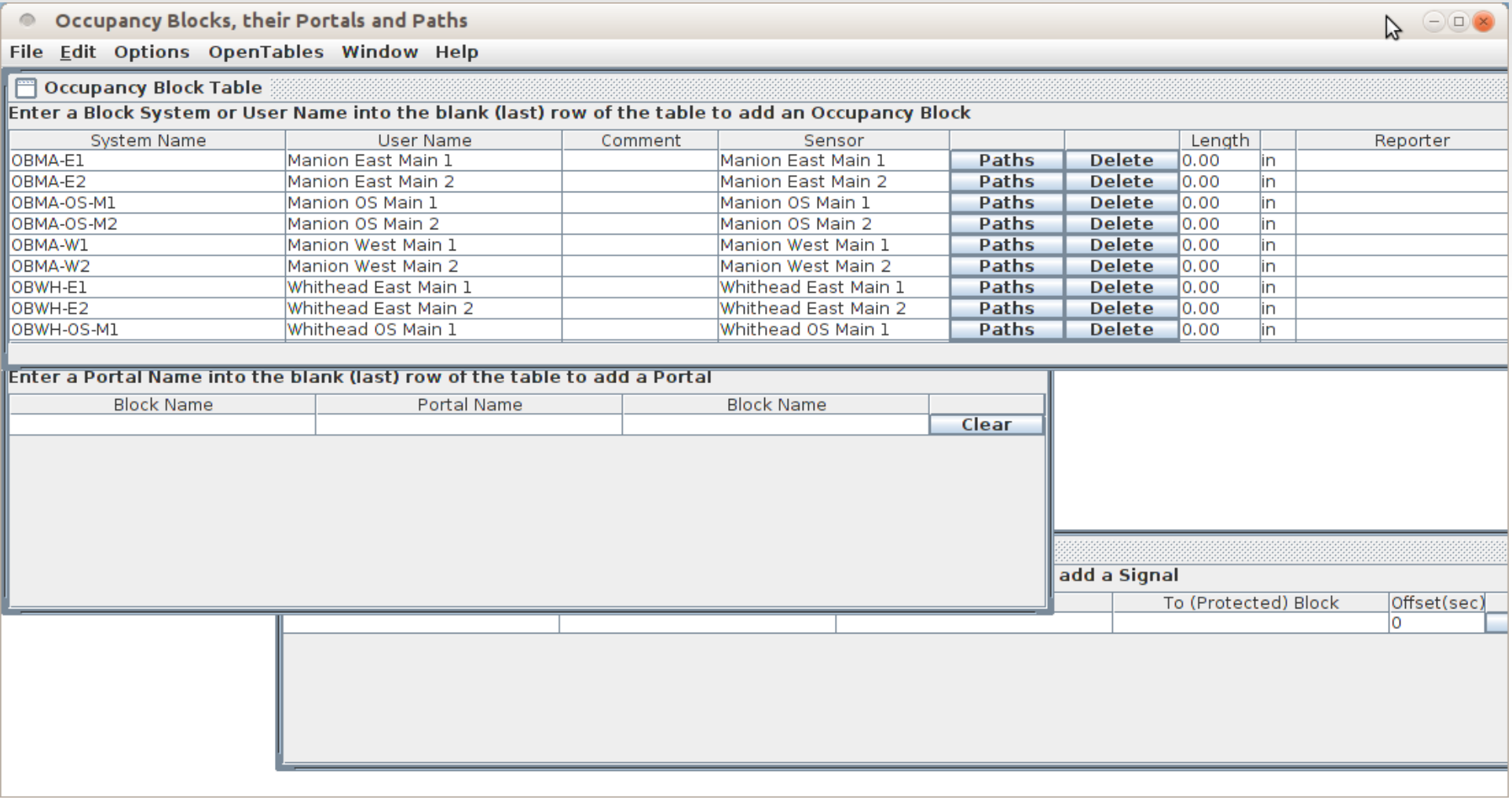
RR-CirKits, Inc.

JMRI Control Panel Editor
for
Automatic Train Running Using Warrants

Items – Portal Table

- The 'Portal Table' is part of the Occupancy Blocks Window.



OBlocks? Portals? Paths?

- In the first half of this clinic we covered some of the basics of creating a panel with the Control Panel Editor. Some review on Blocks:
- Blocks are implemented as JMRI OBlocks, (Occupancy Blocks) which are extensions of JMRI Blocks. They have the following characteristics:
  - An OBlock has from 1 to N Portals, or ways to enter/exit the block.
  - Although an OBlock can be defined without a sensor, i.e. a "Dark Block", it should normally have a sensor. If it has more than one physical sensor, these sensors should be "OR"ed together and trigger a single internal sensor for the block. This may be done electrically or logically by using Logix or layout hardware.
  - An OBlock has from 1 to N paths. A path is a possible route through the block from one portal to another.

OBlocks? Portals? Paths?

- An OBlock has 0 to N turnouts.
- When deciding where to place OBlocks the primary consideration is signaling. Signaling is normally concerned with separating trains from each other. Think about where different trains may be operated without conflicting with one another. These are the likely candidates for different OBlocks.
  - A turnout can only hold a single train, so it is one OBlock.
  - A crossover can hold two separate trains when it is in the normal direction, so it should be two OBlocks, one for each side.
  - A slip switch may have multiple routes, but only one train at a time may use it. It is a single OBlock.
  - A yard ladder may have multiple turnouts, but normally only one train at a time uses it. A single OBlock will suffice.
  - A single track section of approximatly one train length is one OBlock.

OBlocks? Portals? Paths?

- Portals – These are the transition points where one occupancy block (OBlock) ends and the next one begins. This is where signals will normally be placed to govern when trains are allowed to proceed from one section of track into the next.
  - A Portal has exactly two OBlocks. (no more, no less)
  - A portal may have 0 to 2 Signal masts. If a portal has a signal, it faces one of its 2 blocks. A second signal, if it exists, faces the other block. Each signal controls the movement of a train exiting the OBlock it faces and thus the entrance of the train to the next OBlock.
  - Depending on the detection method a portal may be located at the physical gaps located between two blocks that are using current detection, or it may be at the logical 'gaps' in some other detection method.

OBlocks? Portals? Paths?

- Paths – These are the possible routes into and/or through an OBlock. There may only be a single path into a spur track, or there may be a multitude of paths through a complex yard interlocking.
    - A path may include from none, to any number, of turnouts.
    - Each path includes at least one, but no more than two portals.

OBlock & Portal Tables

Occupancy Block Table

Enter a Block System or User Name into the blank (last) row of the table to add an Occupancy Block

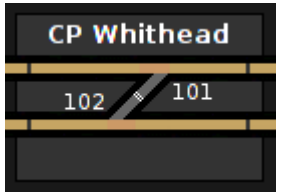
System Name	User Name	Comment	Sensor		
OBMA-W1	Manion West Main 1		Manion West Main 1	Paths	Delete
OBMA-W2	Manion West Main 2		Manion West Main 2	Paths	Delete
OBWH-E1	Whithead East Main 1		Whithead East Main 1	Paths	Delete
OBWH-E2	Whithead East Main 2		Whithead East Main 2	Paths	Delete
OBWH-OS-M1	Whithead OS Main 1		Whithead OS Main 1	Paths	Delete
OBWH-OS-M2	Whithead OS Main 2		Whithead OS Main 2	Paths	Delete
OBWH-W1					
OBWH-W2					

Portal Table

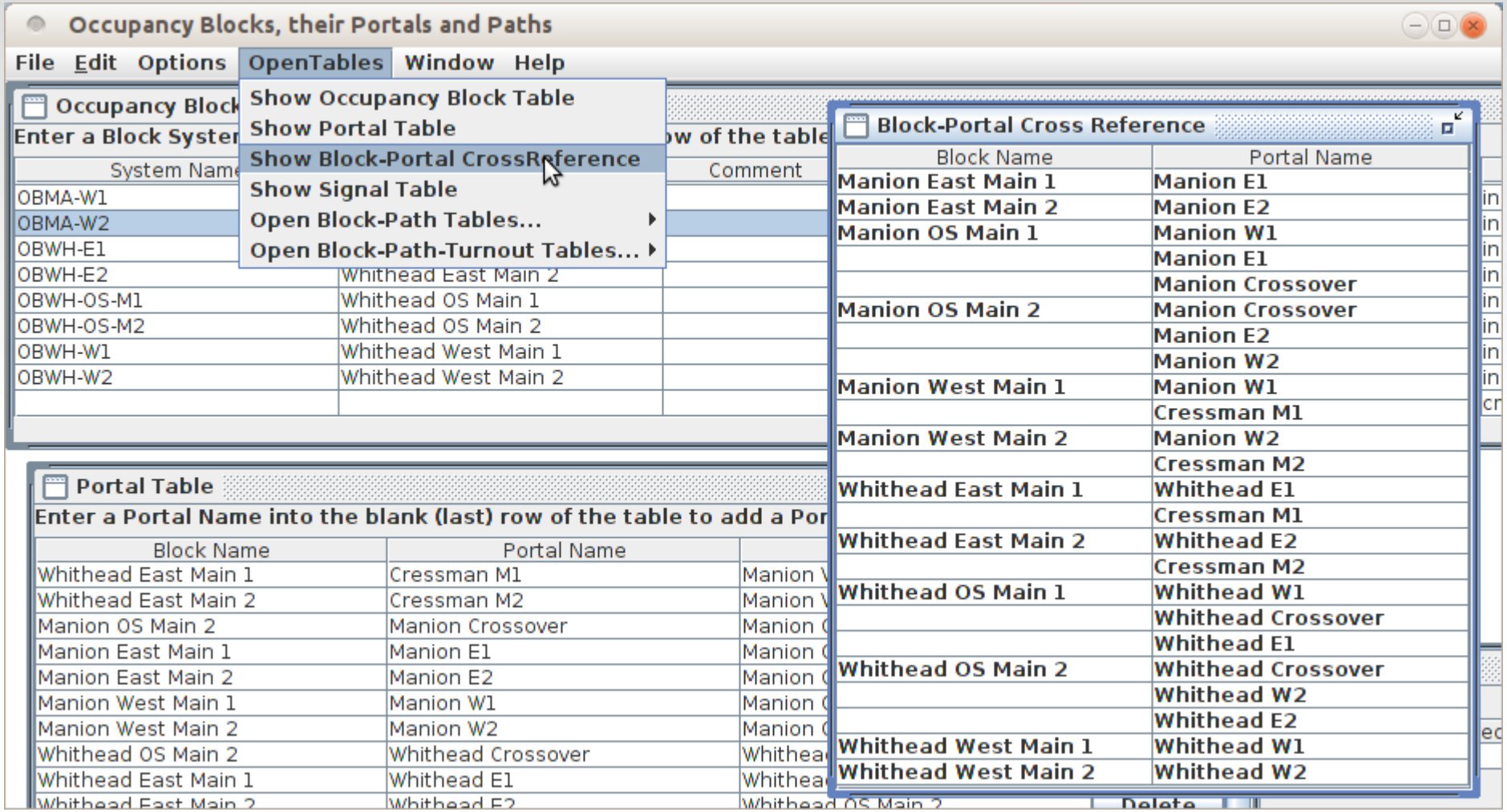
Enter a Portal Name into the blank (last) row of the table to add a Portal

Block Name	Portal Name	Block Name	
Whithead West Main 1	Whithead W1	Whithead OS Main 1	Delete
Whithead OS Main 2	Whithead Crossover	Whithead OS Main 1	Delete
Whithead East Main 1	Whithead E1	Whithead OS Main 1	Delete
Whithead West Main 2	Whithead W2	Whithead OS Main 2	Delete
Whithead East Main 2	Whithead E2	Whithead OS Main 2	Delete
			Clear

- OBlocks, Portals, and Paths are closely interrelated and all appear in one group window. This makes it easy to enter data by selecting entries from the OBlock Table and dragging them directly into the Portal Table. The portal table does not imply any direction. It simply lists the block pairs that join together at each portal in either order. Name each Portal.
  - Here we show the five portals related to the OS at CP Whithead. They correspond to the five gaps shown here.
  - There are five similar portals located at CP Manion, plus two more located at Cressman. Enter them now.



Blocks and Portals



- Select 'OpenTables' and then click on 'Show Block-Port CrossReference' to get a complete list of Block Names and the Portals that you have defined.
- Be sure to save panels as you continue to add data. (don't even ask, just do it)

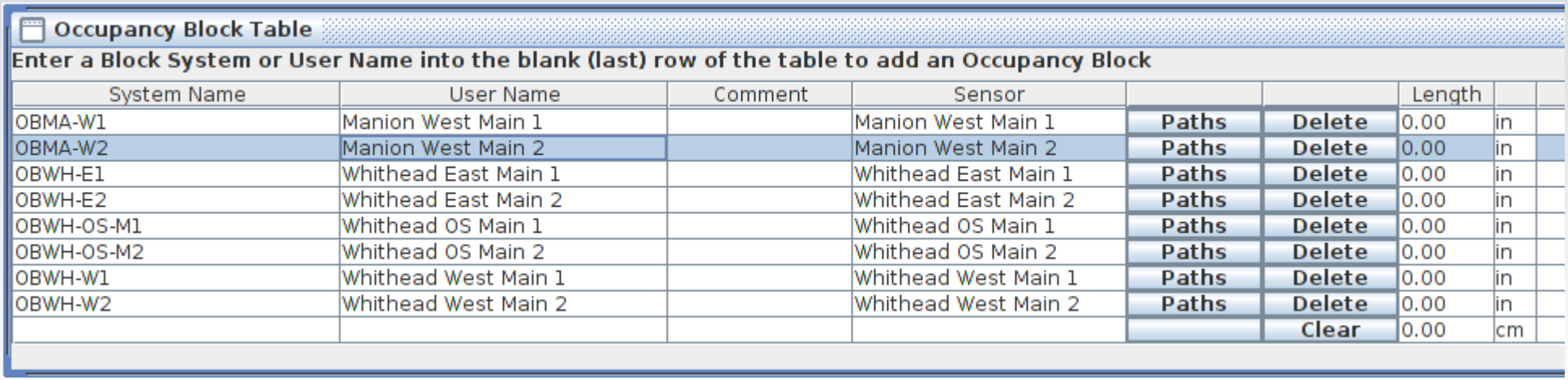
Blocks and Portals

Block-Portal Cross Reference

Block Name	Portal Name
Manion East Main 1	Manion E1
Manion East Main 2	Manion E2
Manion OS Main 1	Manion W1
	Manion E1
	Manion Crossover
Manion OS Main 2	Manion Crossover
	Manion E2
	Manion W2
Manion West Main 1	Manion W1
	Cressman M1
Manion West Main 2	Manion W2
	Cressman M2
Whithead East Main 1	Whithead E1
	Cressman M1
Whithead East Main 2	Whithead E2
	Cressman M2
Whithead OS Main 1	Whithead W1
	Whithead Crossover
	Whithead E1
Whithead OS Main 2	Whithead Crossover
	Whithead W2
	Whithead E2
Whithead West Main 1	Whithead W1
Whithead West Main 2	Whithead W2

- Sidings or off panel blocks will have a single Portal entry. (e.g. Manion East Main 1)
- Single blocks will show two Portals, one for each end. (e.g. Manion West Main 1)
- Interlockings will have three or more references depending on their complexity. (e.g. Manion OS Main 1)

Paths

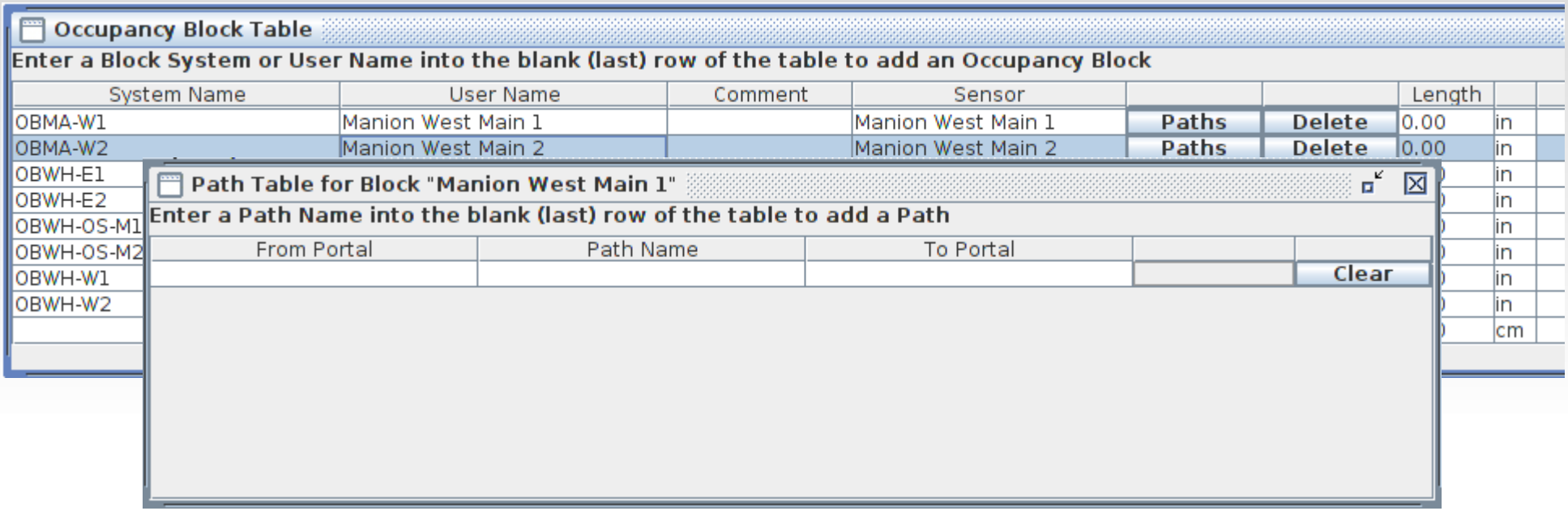

Occupancy Block Table

Enter a Block System or User Name into the blank (last) row of the table to add an Occupancy Block

System Name	User Name	Comment	Sensor			Length	
OBMA-W1	Manion West Main 1		Manion West Main 1	Paths	Delete	0.00	in
OBMA-W2	Manion West Main 2		Manion West Main 2	Paths	Delete	0.00	in
OBWH-E1	Whithead East Main 1		Whithead East Main 1	Paths	Delete	0.00	in
OBWH-E2	Whithead East Main 2		Whithead East Main 2	Paths	Delete	0.00	in
OBWH-OS-M1	Whithead OS Main 1		Whithead OS Main 1	Paths	Delete	0.00	in
OBWH-OS-M2	Whithead OS Main 2		Whithead OS Main 2	Paths	Delete	0.00	in
OBWH-W1	Whithead West Main 1		Whithead West Main 1	Paths	Delete	0.00	in
OBWH-W2	Whithead West Main 2		Whithead West Main 2	Paths	Delete	0.00	in
					Clear	0.00	cm

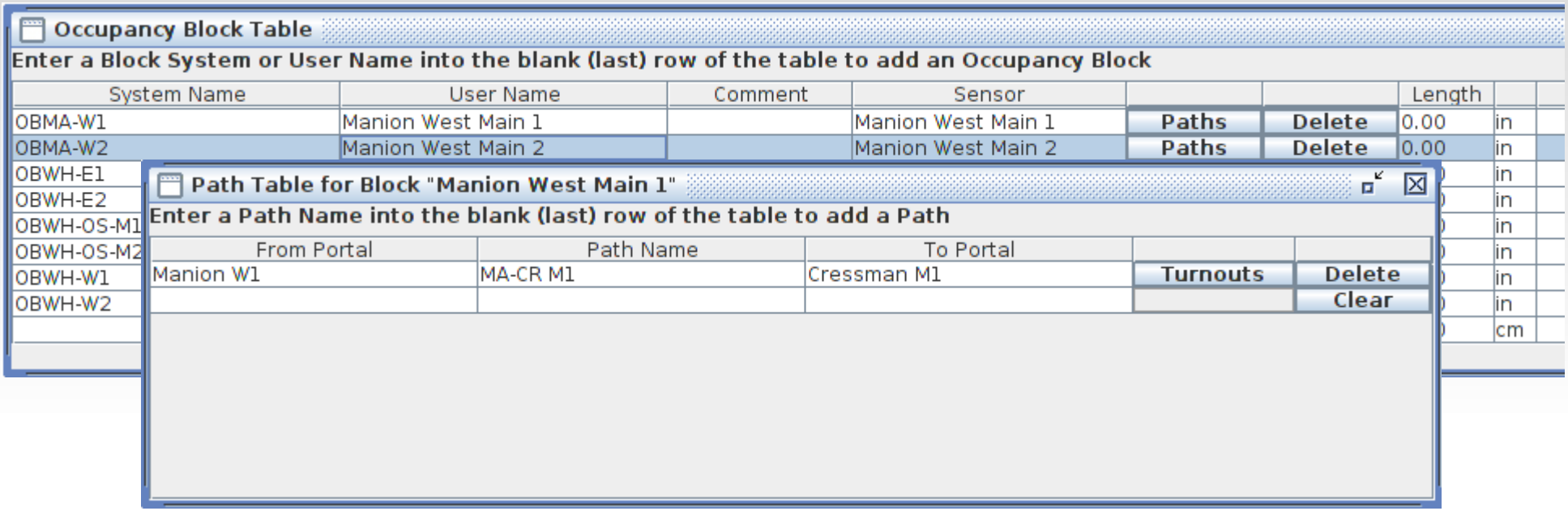
- Paths are possible ways to traverse a block. They are implemented as JMRI OPaths, which are extensions of JMRI Paths. They have the following characteristics:
  - A Path has 0 to N turnouts.
  - A path has at least one (a dead end track) and no more than two portals. (a through track)
- To enter the possible Paths through an OBlock click on the 'Paths' button.

Paths



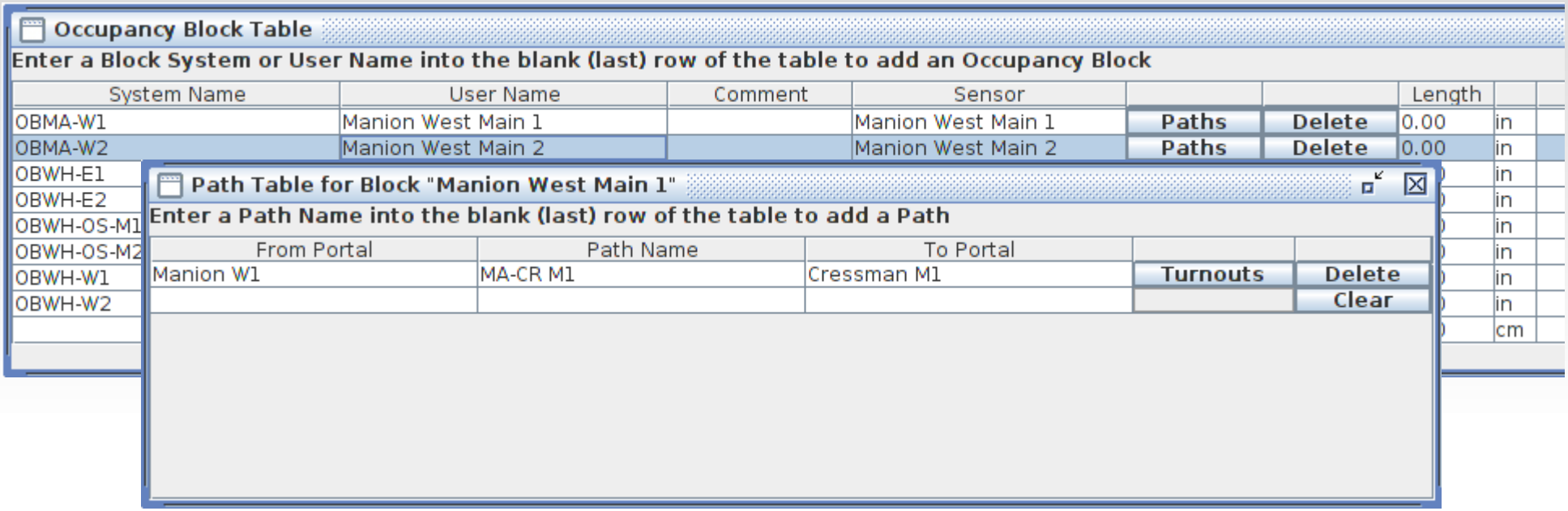
- There is only one way to go through 'Manion West Main 1'. It is from the Portal 'Manion W1' to the Portal 'Cressman M1'. The Block-Portal Cross Reference tells you this information.
- Drag Portal 'Manion W1' to one side and 'Cressman M1' to the other side.

Paths

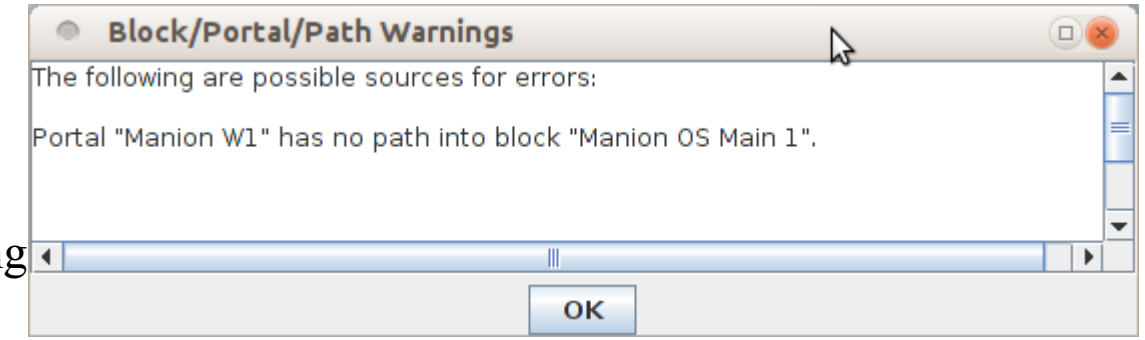


- Give the path a name, e.g. 'MA-CR M1'. (then hit <Enter> to register the new value)
- This path does not include any turnouts.
- Close the window.

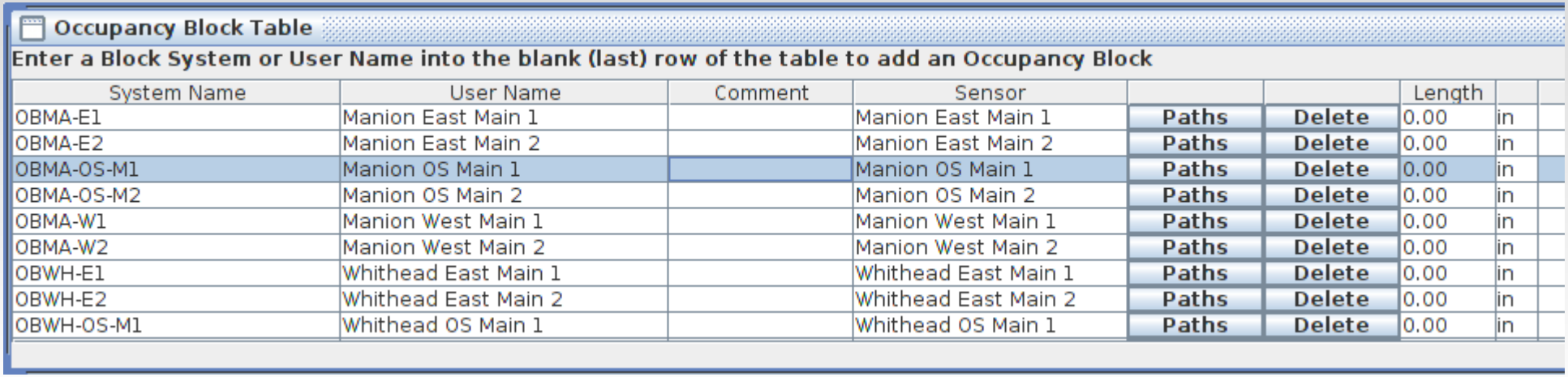
Paths



- Give the path a name, e.g. 'MA-CR M1'. (then hit <Enter> to register the new value)
- This path does not include any turnouts.
- Close the window.
- A warning window pops up.
- JMRI is trying to point out missing items. At the start that is just about everything, so don't worry about them yet.



Paths

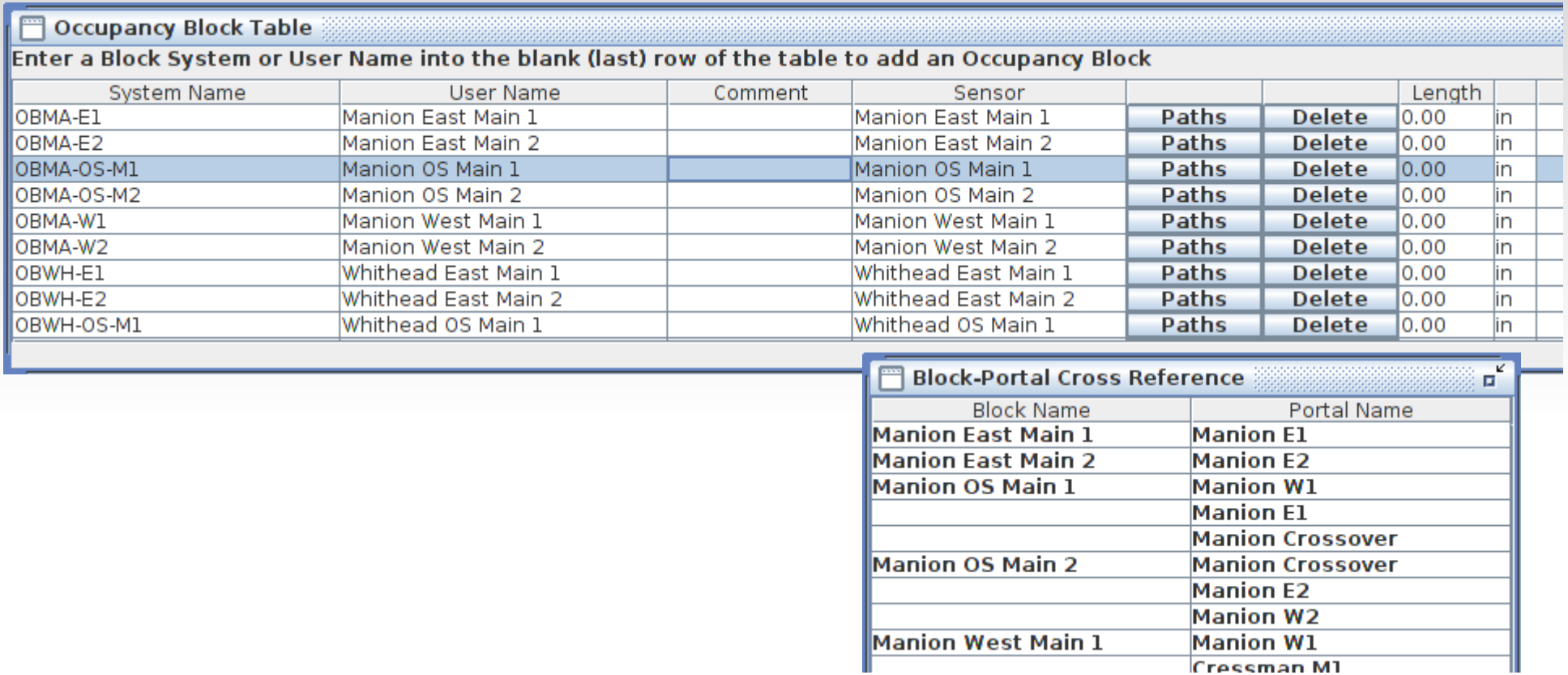

Occupancy Block Table

Enter a Block System or User Name into the blank (last) row of the table to add an Occupancy Block

System Name	User Name	Comment	Sensor			Length	
OBMA-E1	Manion East Main 1		Manion East Main 1	Paths	Delete	0.00	in
OBMA-E2	Manion East Main 2		Manion East Main 2	Paths	Delete	0.00	in
OBMA-OS-M1	Manion OS Main 1		Manion OS Main 1	Paths	Delete	0.00	in
OBMA-OS-M2	Manion OS Main 2		Manion OS Main 2	Paths	Delete	0.00	in
OBMA-W1	Manion West Main 1		Manion West Main 1	Paths	Delete	0.00	in
OBMA-W2	Manion West Main 2		Manion West Main 2	Paths	Delete	0.00	in
OBWH-E1	Whithead East Main 1		Whithead East Main 1	Paths	Delete	0.00	in
OBWH-E2	Whithead East Main 2		Whithead East Main 2	Paths	Delete	0.00	in
OBWH-OS-M1	Whithead OS Main 1		Whithead OS Main 1	Paths	Delete	0.00	in

- Now consider 'Manion OS Main 1'. Because it includes a turnout there can be more than one path through it.

Paths



Occupancy Block Table

Enter a Block System or User Name into the blank (last) row of the table to add an Occupancy Block

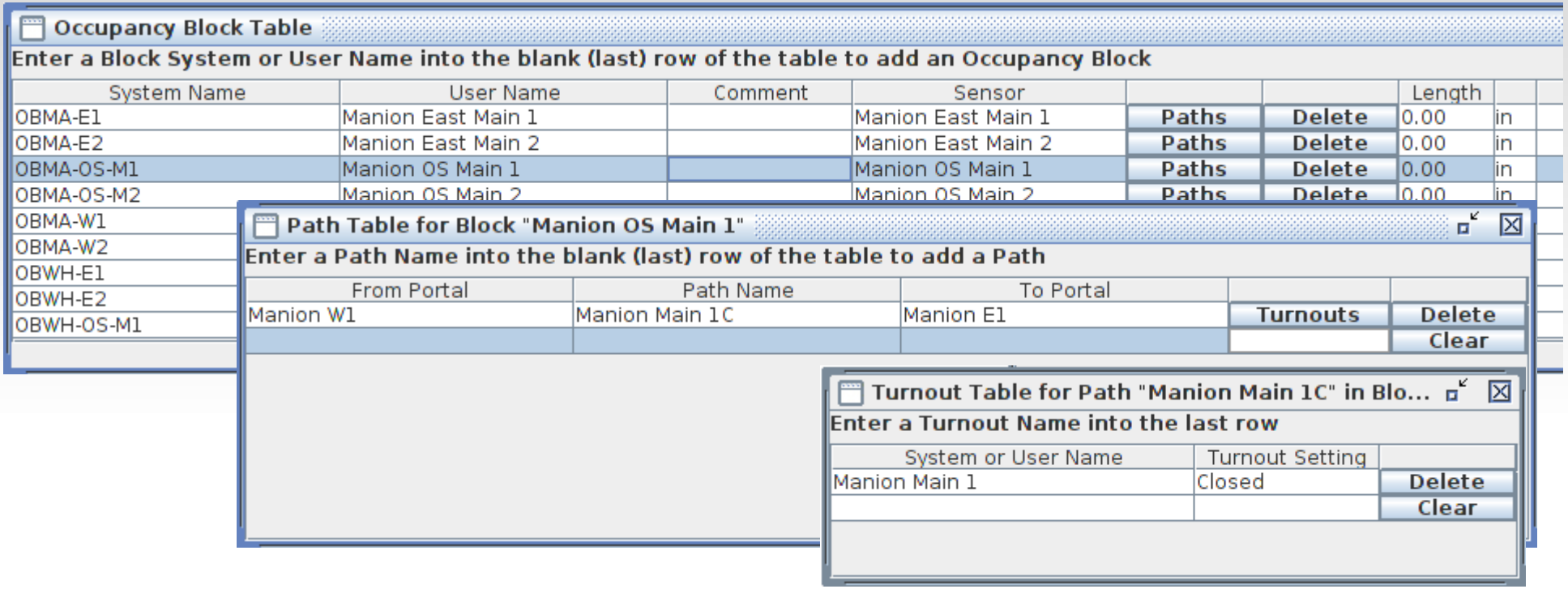
System Name	User Name	Comment	Sensor			Length	
OBMA-E1	Manion East Main 1		Manion East Main 1	Paths	Delete	0.00	in
OBMA-E2	Manion East Main 2		Manion East Main 2	Paths	Delete	0.00	in
OBMA-OS-M1	Manion OS Main 1		Manion OS Main 1	Paths	Delete	0.00	in
OBMA-OS-M2	Manion OS Main 2		Manion OS Main 2	Paths	Delete	0.00	in
OBMA-W1	Manion West Main 1		Manion West Main 1	Paths	Delete	0.00	in
OBMA-W2	Manion West Main 2		Manion West Main 2	Paths	Delete	0.00	in
OBWH-E1	Whithead East Main 1		Whithead East Main 1	Paths	Delete	0.00	in
OBWH-E2	Whithead East Main 2		Whithead East Main 2	Paths	Delete	0.00	in
OBWH-OS-M1	Whithead OS Main 1		Whithead OS Main 1	Paths	Delete	0.00	in

Block-Portal Cross Reference

Block Name	Portal Name
Manion East Main 1	Manion E1
Manion East Main 2	Manion E2
Manion OS Main 1	Manion W1
	Manion E1
	Manion Crossover
Manion OS Main 2	Manion Crossover
	Manion E2
	Manion W2
Manion West Main 1	Manion W1
	Cressman M1

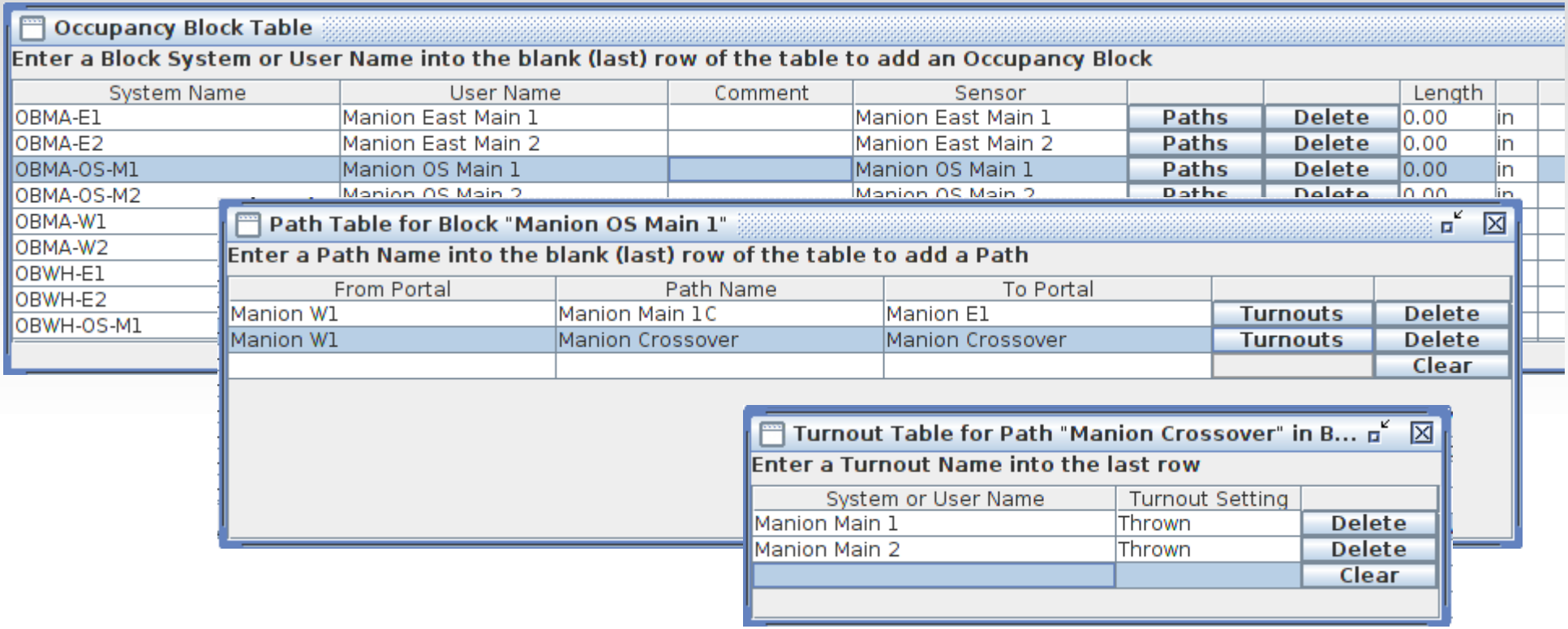
- Now consider 'Manion OS Main 1'. Because it includes a turnout there can be more than one path through it.
- The first path is formed when the turnout is 'Closed' or normal for the main line. It goes from the Portal 'Manion W1' to the Portal 'Manion E1'. It includes a turnout so the 'Turnouts' button is used.

Paths



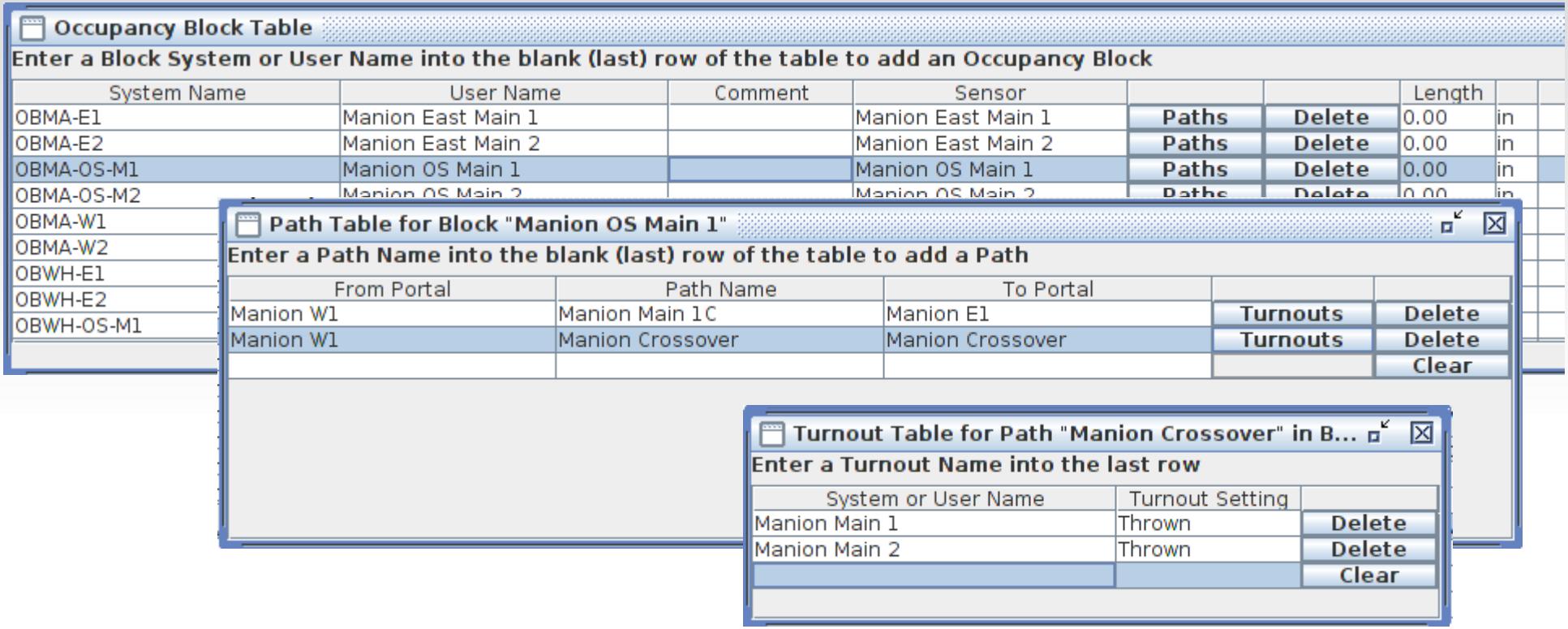
- Enter the turnout System or User Name and the setting that is required for this path. I used 'Manion Main 1', but it could have been 'LT201'. Generally it is better to use user names where possible. That allows the system (hardware) names to be changed with fewer problems. For a complex path through an interlocking multiple turnouts may be involved.
- Enter the other path and its turnout position.

Paths



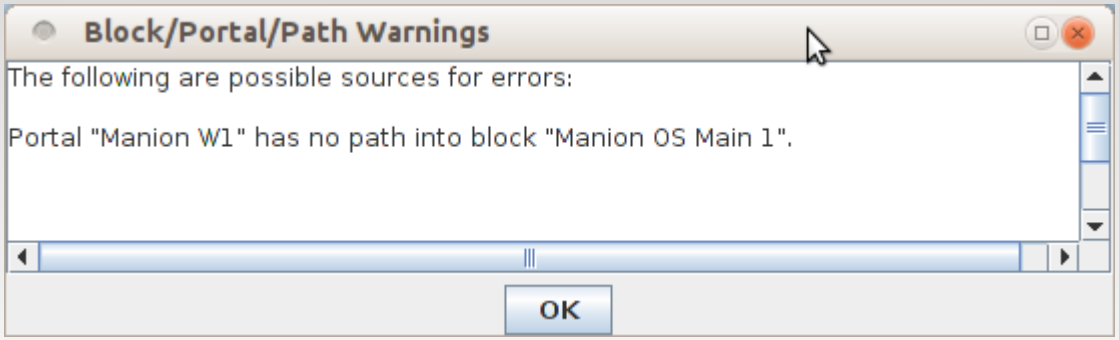
- We have entered the crossover and its turnout position.
- On this demo layout the two turnouts of the crossover have seperate switch machines, so I have included them both in this path.
- Note: To drag and drop from the 'Item Palette' turnout tab into the 'Turnout Table for Path' System or User Name list, the destination box must be highlighted first.

Paths



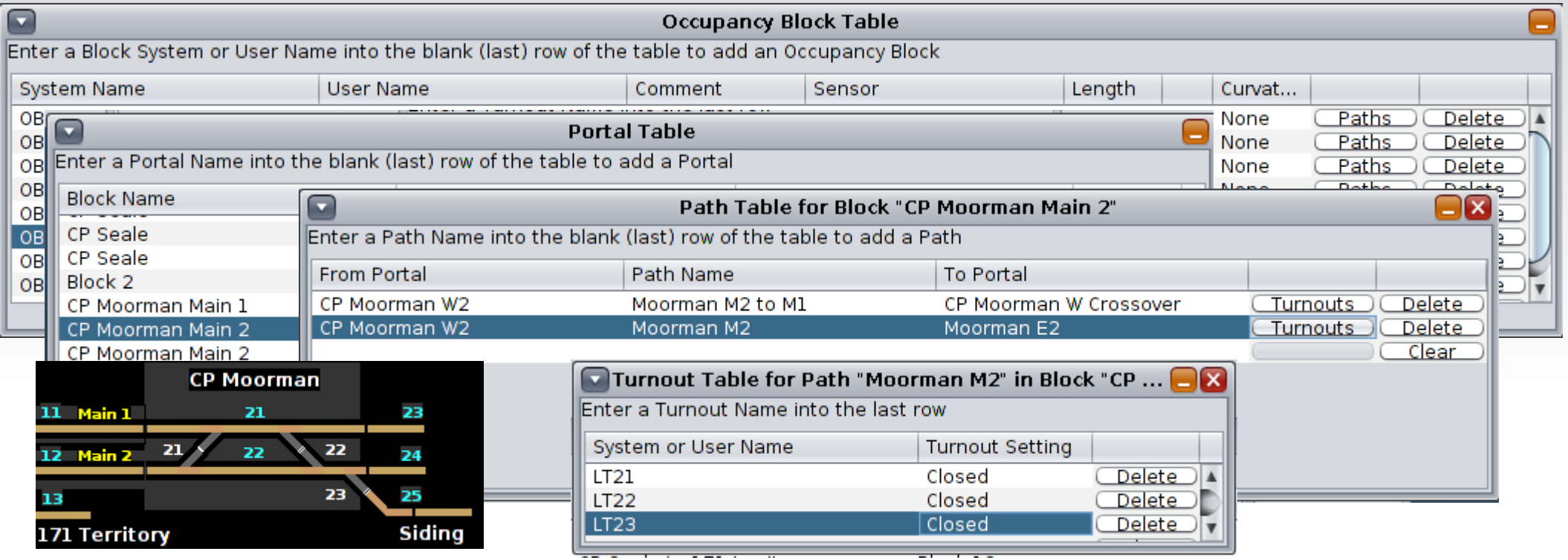
- We have entered the crossover and its turnout position.
- Enter the other path and its required turnout position.

Path Warnings



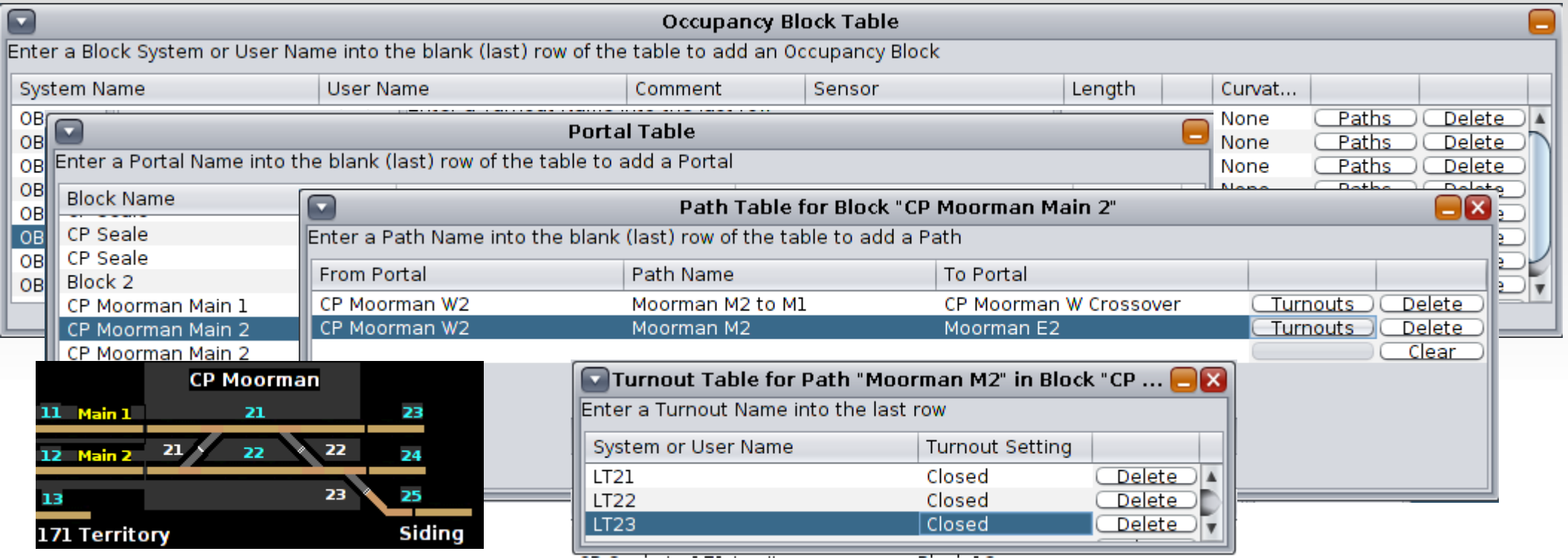
- When you exit each step in the process, the Control Panel Editor evaluates what you have just done and notifies you of any possible errors or omissions that it finds.
- In this case it is just warning us that we have not yet added the path into the OS. As you proceed you can use these warning messages as a guide to show you what path to configure next.
- Early in your entering of data many 'Warning' windows will pop up. As long as I am still entering data I pretty much ignore them. However as you get close to completing the data entry you will need to start paying close attention because they are notifying you of connections that the Editor sees as possible, but are as yet undefined.
- The next few slides will show a different portion of the actual (not demo) layout with a bit more complexity to the interlocking.

Paths



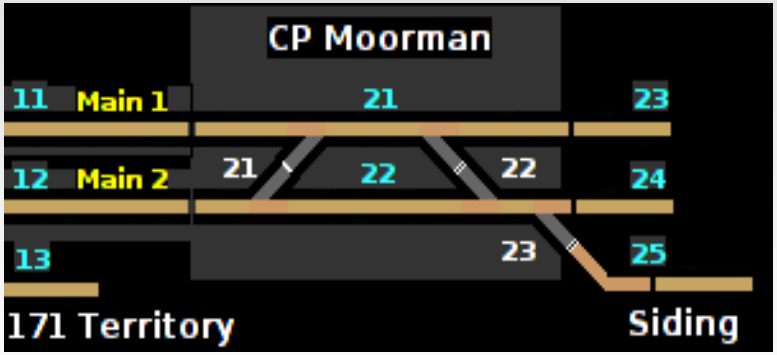
- CP Moorman Main 2 (lower track) has 3 turnouts in its path between the east and west ends. This section of track is divided into two OBlocks, the upper section and the lower section with gaps in the two crossovers. (21 & 22)
- We will also need to add a third Path Table entry for the path from 'CP Moorman W2' to the siding at OBlock 25. It will also include the same 3 turnouts, but LT23 will be 'Thrown'.

Paths



- CP Moorman Main 2 (lower track) has 3 turnouts in its path between the east and west ends. This section of track is divided into two OBlocks, the upper section and the lower section with gaps in the two crossovers. (21 & 22)
- We will also need to add a third Path Table entry for the path from 'CP Moorman W2' to the siding at OBlock 25. It will also include the same 3 turnouts, but LT23 will be 'Thrown'.
- The fourth path is from the East crossover to the siding.

Paths



- When we are done we should have 6 paths through CP Moorman. (theoretically 8 paths)
  - 11 to 23 Main 1
  - 11 to 24 Main 1 to Main 2
  - 11 to 25 Main 1 to Siding
  - 12 to 23 Main 2 to Main 1
  - 12 to 24 Main 2
  - 12 to 25 Main 2 to Siding
- We do not count the two paths that crossover then immediately back while going from 12 to 24 or 12 to 25.

OBlock Lengths

Occupancy Block Table

Enter a Block System or User Name into the blank (last) row of the table to add an Occupancy Block

System Name	User Name	Comment	Sensor			Length		Reporter
OBBU-M1	Butler Main 1		Butler Main 1	Paths	Delete	14.00	in	
OBBU-M2	Butler Main 2		Butler Main 2	Paths	Delete	14.00	in	
OBMA-E1	Manion East Main 1		Manion East Main 1	Paths	Delete	16.00	in	
OBMA-E2	Manion East Main 2		Manion East Main 2	Paths	Delete	16.00	in	
OBMA-OS-M1	Manion OS Main 1		Manion OS Main 1	Paths	Delete	15.00	in	
OBMA-OS-M2	Manion OS Main 2		Manion OS Main 2	Paths	Delete	15.00	in	
OBMA-W1	Manion West Main 1		Manion West Main 1	Paths	Delete	20.00	in	
OBMA-W2	Manion West Main 2		Manion West Main 2	Paths	Delete	20.00	in	
OBSQ-M1	Squires Main 1		Squires Main 1	Paths	Delete	14.00	in	

- Fill in all the OBlock lengths in actual inches or centimeters. This is included for compatibility with JMRI Blocks. It also helps with automated train running to let the automated engineer know how far it is to the next signal.
- You can also enter the maximum speed and curvature information for each OBlock.

Signals

- Signals are used by Warrants to tell if a train is allowed to pass through a portal or must wait.
- For each signal on your layout, make an entry in the Signal Table. These signals will control the actions of any warranted train - changing its speed according to the signal's indication when the train reaches the portal where the signal is placed. That is, each signal 'protects' the blocks beyond the portal. The signal may be either a SignalMast or a SignalHead.
- These signals do not actually need to physically exist on the layout, but they do need to exist and be operational in JMRI.
- The warrant detects the signal aspect when it enters the approach block and, if needed, prepares to change the speed before it reaches the protected block. Any speed change is ramped down to the speed required by the signal. The 'delay time' is the time the warranted train will wait before beginning the speed change.
- Likewise, when the signal indicates a clear or improved speed from a stopped or reduced speed condition, the speed will be ramped up to the allowed or recorded speed.

Signals

- The demo layout uses the new RR-CirKits SignalMan boards configured as Signal Masts to control the signals. We will configure them as NS-2008 signals controlled by NMRA DCC Signal Aspect commands.
- Signal Masts may be created in JMRI by combining together individual signal heads. However for masts that use heads with flashing lamps this can create a lot of traffic on the layout control bus and on the DCC bus, because the flashing is done by turning on and off individual lamps.
- Some basic signal terms:

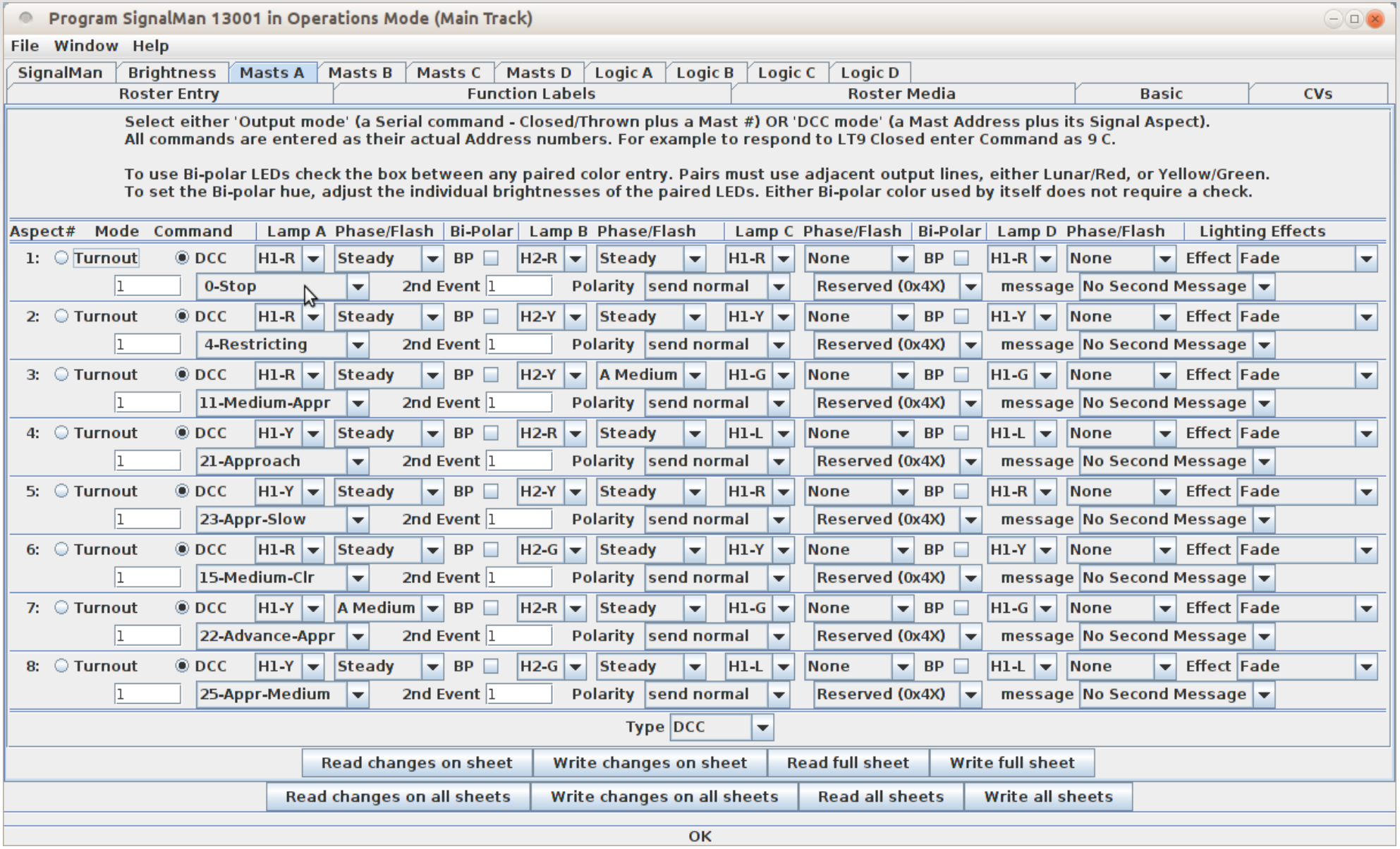
  - Signal Arm or Signal Head - Each individual signal unit. Shows colors, patterns.
  - Rule – The number of each rule as shown in the rule book. E.g. **245A, 281.**

  - Aspect - What it looks like to the observer. E.g. green over red.
  - Name – The rule book title for the aspect. E.g. **CLEAR, STOP, APPROACH SLOW.**
  - Indication – The description of what the train is supposed to do at the signal. E.g. **Proceed, approaching next signal not exceeding Slow Speed.**

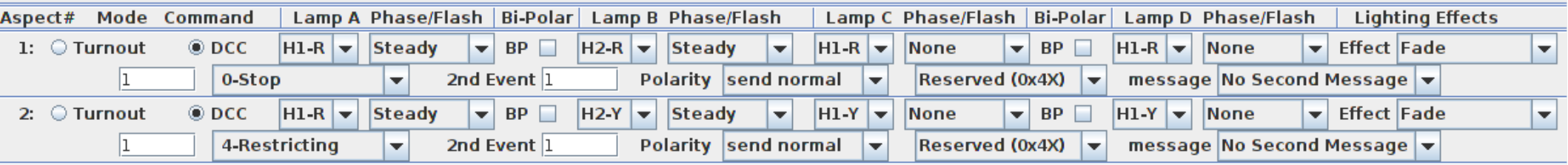
  - Marker - A signal head or arm that does not change color or position.
  - Mast - Used to refer to an entire signal made up of one or more heads.

Signals

- SignalMan Programming – Set up the Mast #, Names and Aspect for each one.



Signals

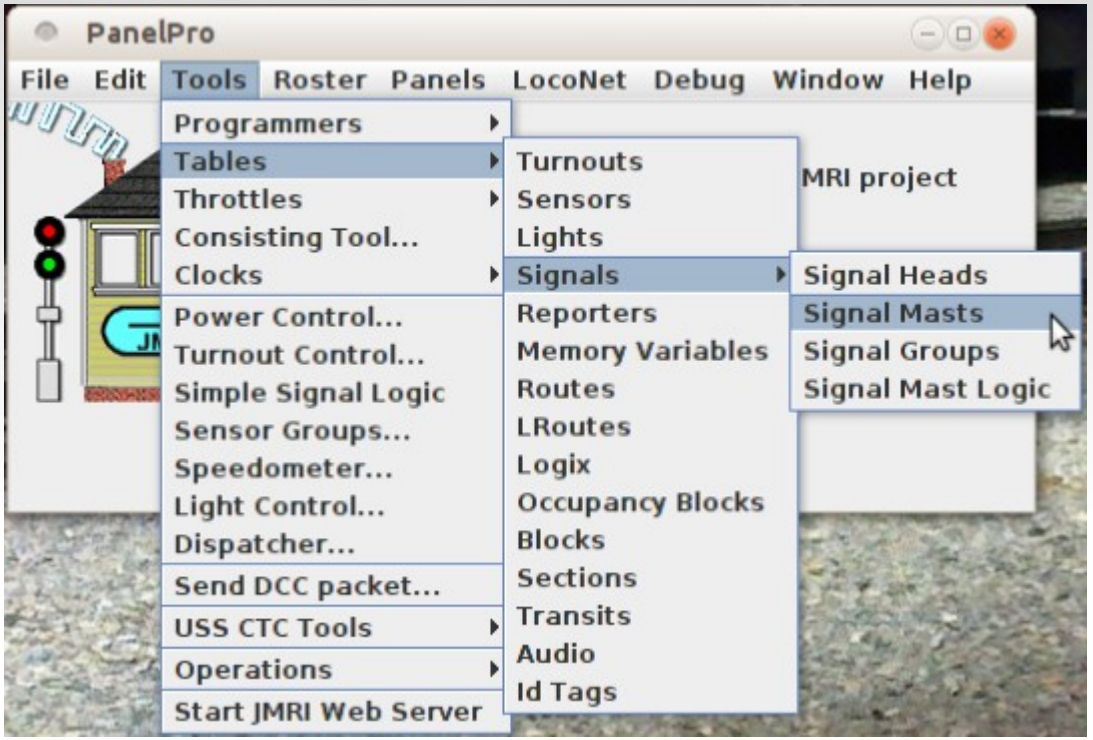


- A quick look at the first two entries shows how it works with the SignalMan.
  - Mode – set to read NMRA DCC mast commands.
  - Mast Number – set to mast #1 for all entries on this mast.
  - Aspect #1 Name – Stop (aspect #0)
  - Lamps – Lamp A is H1-R steadily lit. Lamp B is H2-R steadily lit.

  - Effect – Fade from one appearance to the next.
  - Aspect #2 Name – Restricting (aspect #4)
  - Lamps – Lamp A is H1-R steadily lit. Lamp B is H2-Y steadily lit.

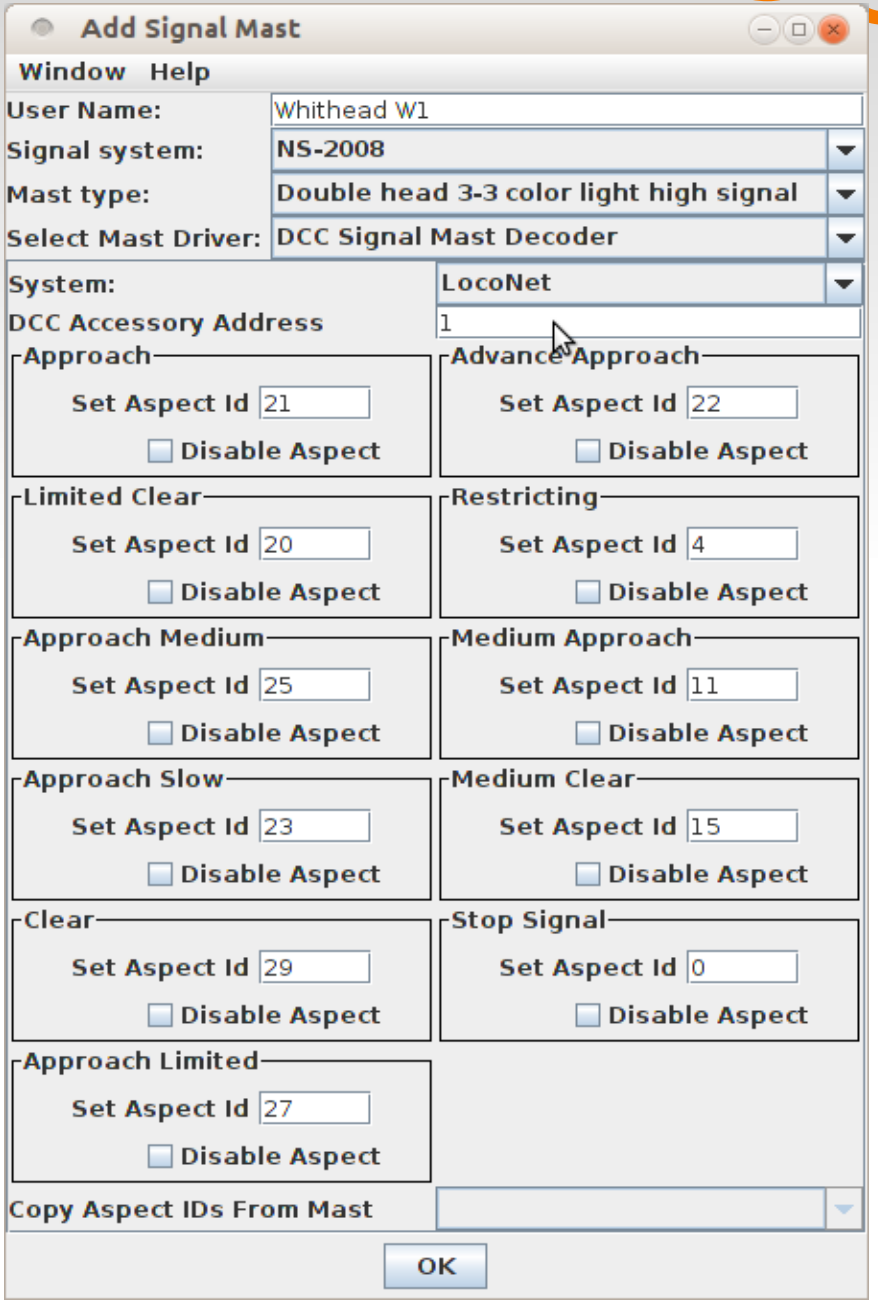
  - Effect – Fade from one appearance to the next.
  - These signals only use two lamps at a time, so Lamp C and Lamp D entries are set to 'None'. Any lamp selections or settings are ignored.

Signals



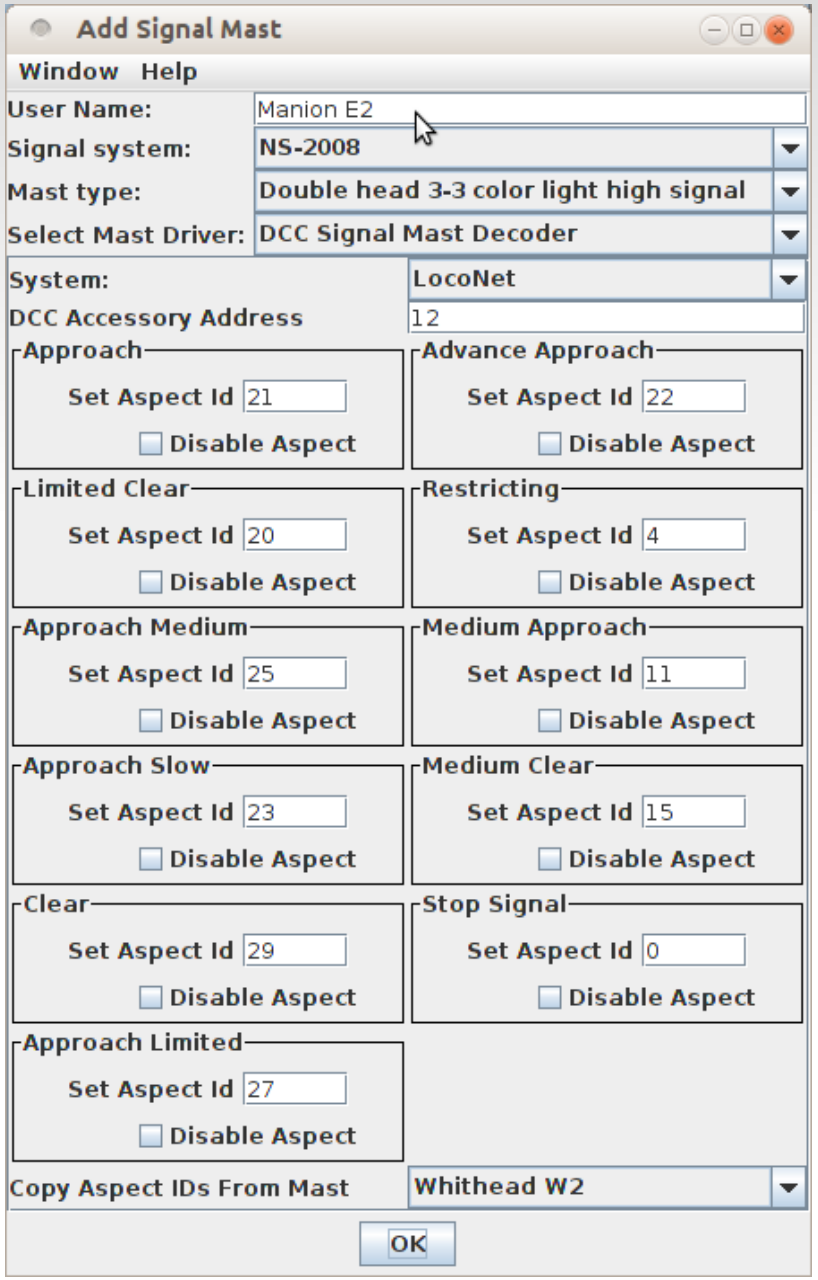
- Once we have the hardware setup then we add the signal masts into JMRI.
  - Select 'Tools – Tables – Signals – Signal Masts' which will open the 'Signal Masts' table.
  - Click on 'Add...' to enter the first new mast.

Signals



- Enter the User Name.
- Select the Signal System.
- Choose a mast type. (in our case 2 head)
- Set the driver hardware. In this case NMRA DCC Signal Mast Decoder.
- This system is LocoNet, but in a multiple interface system you would choose the interface being used to drive the signals.
- Enter the DCC address of the mast. (in this example it is #1)
- Fill in the aspect numbers for each name. In the next release (3.5.1) of JMRI this will be automatic for standardized hardware.
- Once a mast has been entered you can copy its aspect numbers to others.

Signals



- Another quick way to enter multiple similar heads is to simply change the User Name and Accessory address number, then click on OK for each change.
- Once you have made entries for each head be sure to test them out by opening the signal mast table and clicking on the entries in 'Aspect' and selecting different aspect names.

User Name	Aspect
Whithead W2	Approach
Whithead W1	Stop Signal
Whithead E2	Approach
Whithead E1	Clear

- There is enough room for error in this process to make it easier to check as you go along rather than trying to find an error at the end.

Signals

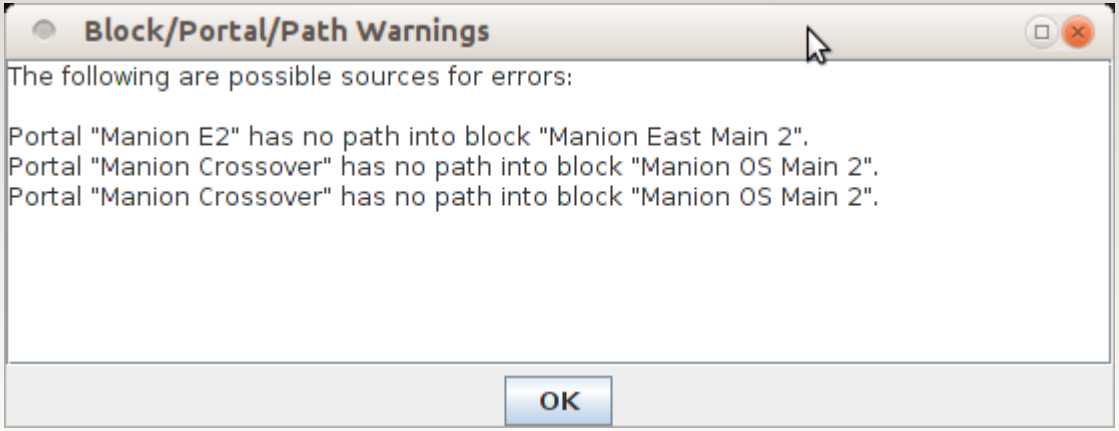
- Once we have operating signals, actual hardware, or virtual signals, it is time to add them to the portals.
- Open the 'Signal Table' portion of 'Occupancy Blocks, their Portals and Paths'. Hopefully your signal names are clear enough to make the job of drag and drop from the item palette easy.
- Note: The 'Signal Name' entry box must be selected before you can drop an item into it.
- Our completed signal table.

Signal Table

Enter a SignalMast or SignalHead Name into the blank (last) row of the table to add a Signal

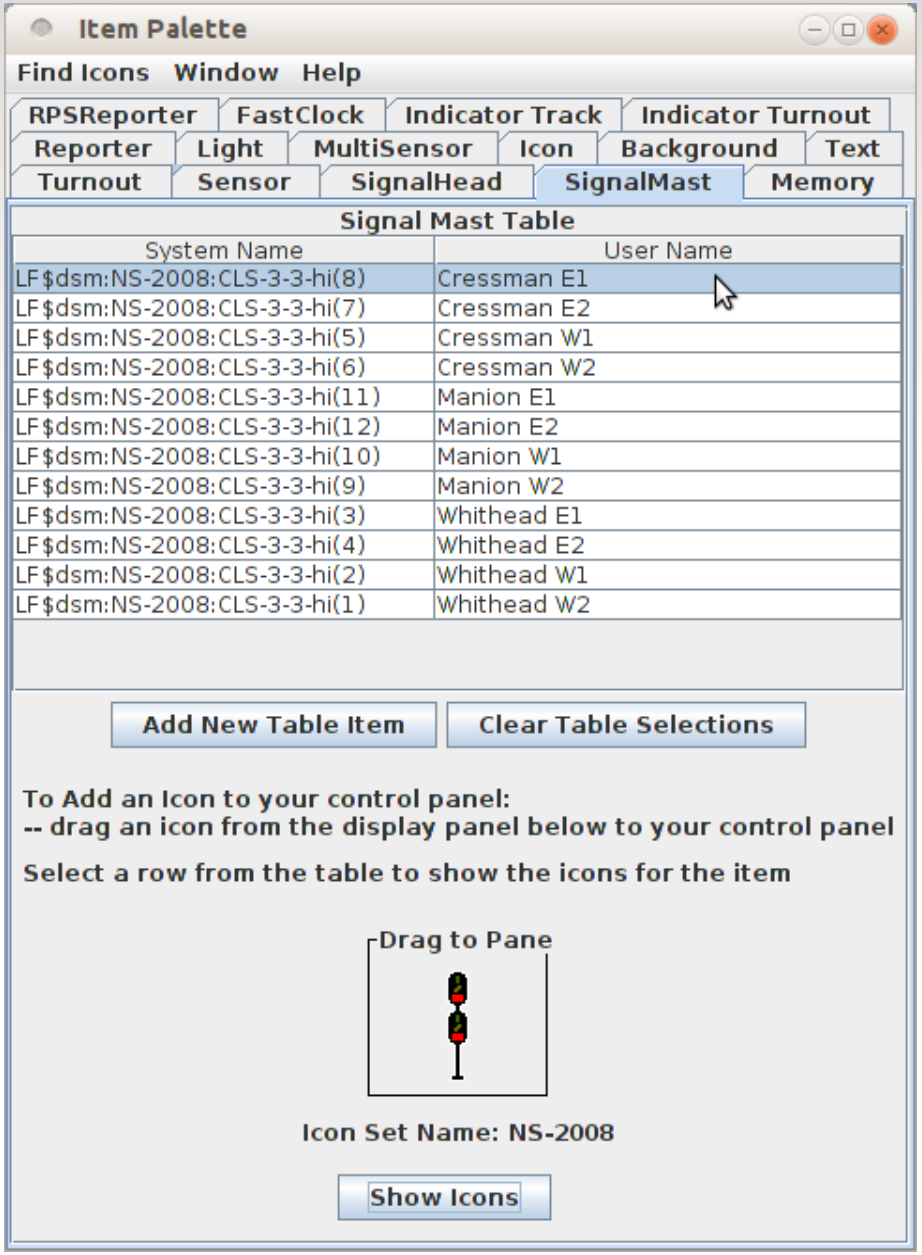
Signal Name	From (Approach) Block	(Through) Portal	To (Protected) Block	Offset(sec)	
Whithead W1	Whithead West Main 1	Whithead W1	Whithead OS Main 1	0	Delete
Whithead W2	Whithead West Main 2	Whithead W2	Whithead OS Main 2	0	Delete
Whithead E1	Whithead East Main 1	Whithead E1	Whithead OS Main 1	0	Delete
Whithead E2	Whithead East Main 2	Whithead E2	Whithead OS Main 2	0	Delete
Manion W1	Manion West Main 1	Manion W1	Manion OS Main 1	0	Delete
Manion W2	Manion West Main 2	Manion W2	Manion OS Main 2	0	Delete
Manion E1	Manion East Main 1	Manion E1	Manion OS Main 1	0	Delete
Manion E2	Manion East Main 2	Manion E2	Manion OS Main 2	0	Delete
Cressman W1	Whithead East Main 1	Cressman M1	Manion West Main 1	0	Delete
Cressman W2	Whithead East Main 2	Cressman M2	Manion West Main 2	0	Delete
Cressman E1	Manion West Main 1	Cressman M1	Whithead East Main 1	0	Delete
Cressman E2	Manion West Main 2	Cressman M2	Whithead East Main 2	0	Delete
				0	Clear

Error Warnings



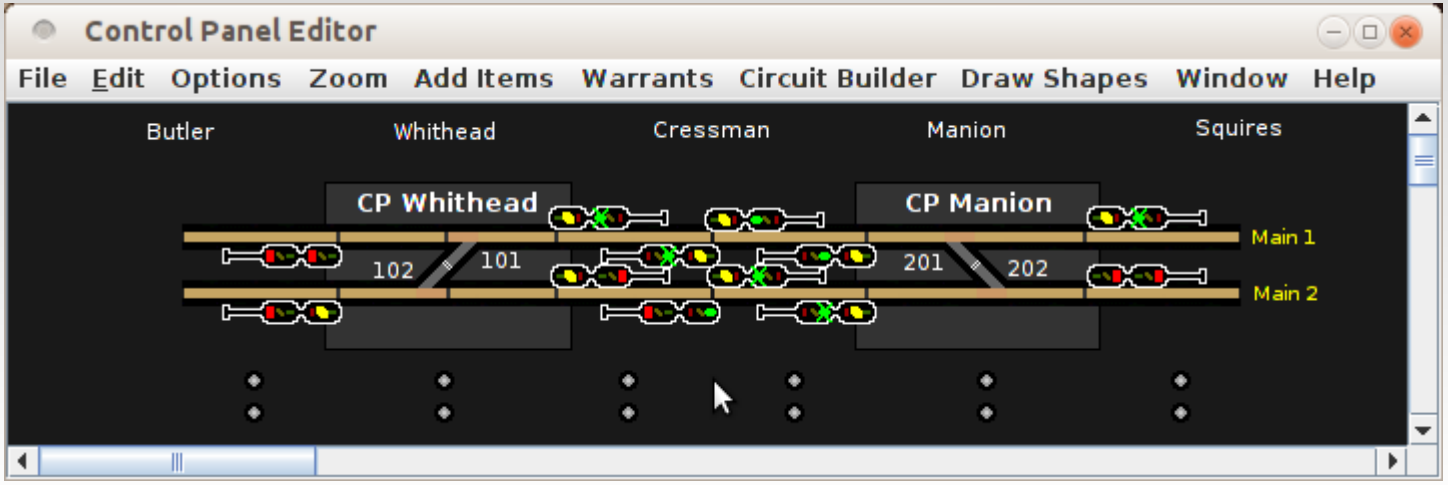
- When we open or close the 'Occupancy Blocks' window it prompts us with what it detects as possible errors.
- After locating and correcting the missing entries you can close the window and open it again to see if the errors are gone.

Add Signals to our Panel

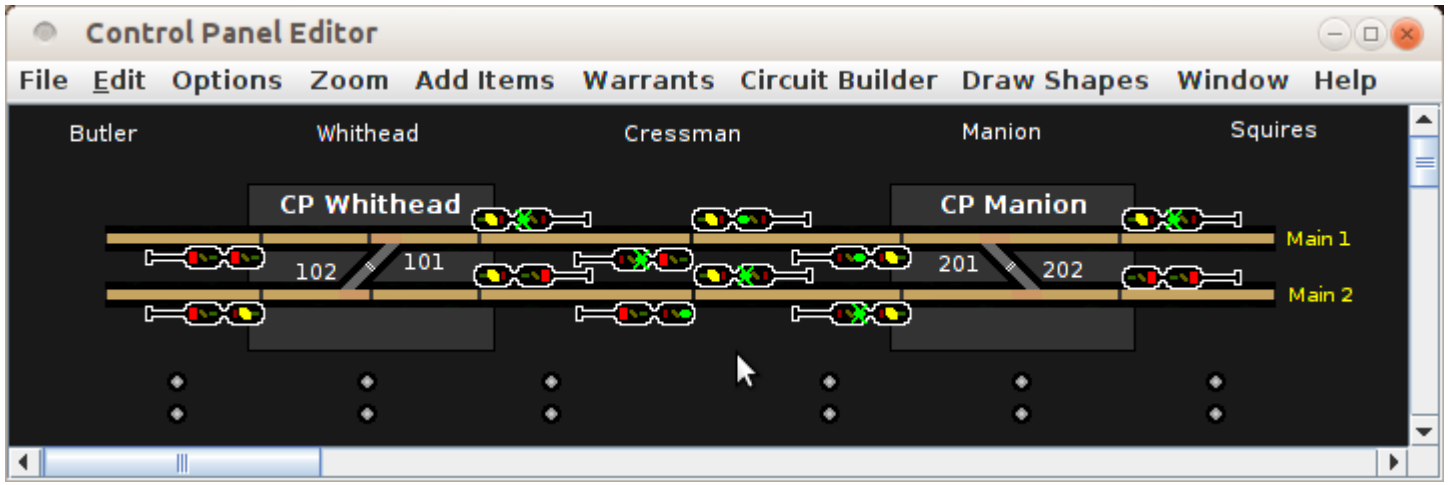


- When we created the NS-2008 signal masts we actually created, not only the signal control information, but also active images that we can place on a panel if we so desire.
- Strictly speaking this is not prototypical, but we modelers do like to see them both on the layout and on our panels.
- To place signals open the Item Palette, highlight the signal, then drag the image to your panel. It may appear as a red 'X'. If so click on it to make the signal appear.
- Likely the signal will not be facing the way you need it to. Right click to open the menu, then choose 'Rotate'. 90 and 270 degrees are helpful.

Add Signals to our Panel



- Here is what our panel looks like with signal masts applied. Things are pretty crowded around Cressman.
- 5 minutes later, by using the Control Panel Editor group move plus duplicating some track images, we now have this diagram.

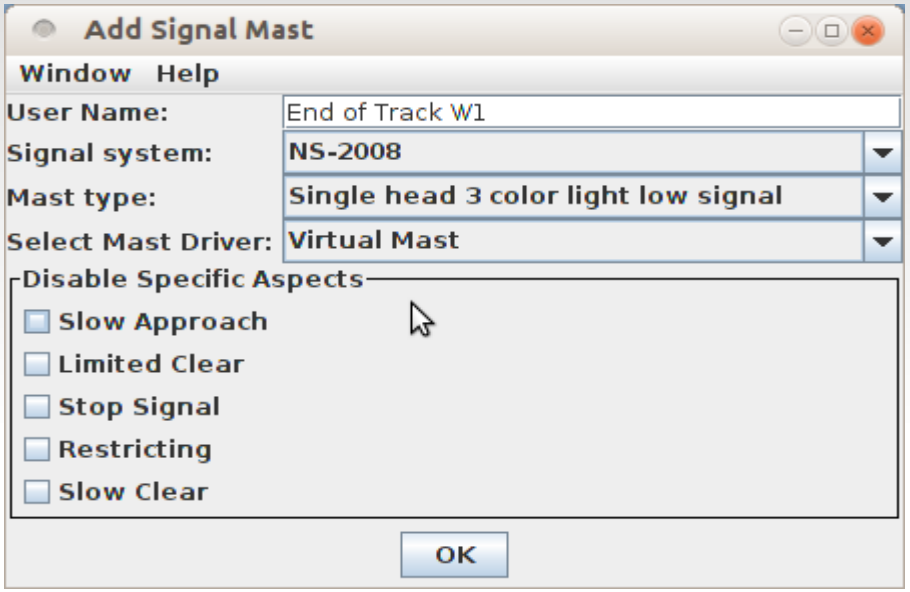


Tying it all together

- We now have a panel that controls our signals, indicates occupancy, and throws turnouts. However something is still missing, the connection of the signal logic.
- Using Logix or scripting to control these signal masts would be a daunting task. It is possible, and many JMRI users have accomplished it. However when you specified NS-2008 rules, that is what you have. The signal set already knows all the rules for controlling them prototypically. All we need to do is connect the signals to the layout, and to each other.
- The portals and paths are for train control. That signal table tells the train controller what signal to watch at each portal.
- The signal mast logic informs each mast about what it watches. This will include blocks, turnouts, and other signals further down the line.
- For this demo layout we will also need to place some dummy end of track signals to keep our trains from hitting the bumpers.

Tying it all together

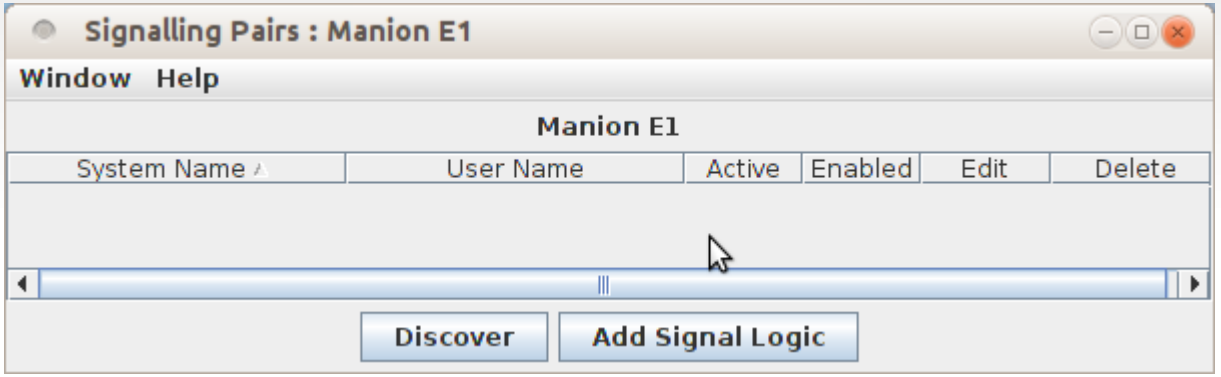
- I had trouble with the end of track signals. I finally used a 3 light dwarf.



- We use a 'Virtual Mast' because there is no actual signal at this point.
- We need four of them and will just duplicate it for all four places where the track dead ends. Just change the name each time.
- The issue was how to make sure it was always set to 'Stop Signal'. I solved that by adding signal mast logic that watches the ISCLOCKRUNNING sensor. It probably would be better to make another sensor to watch in case someone stops the clock.

Tying it all together

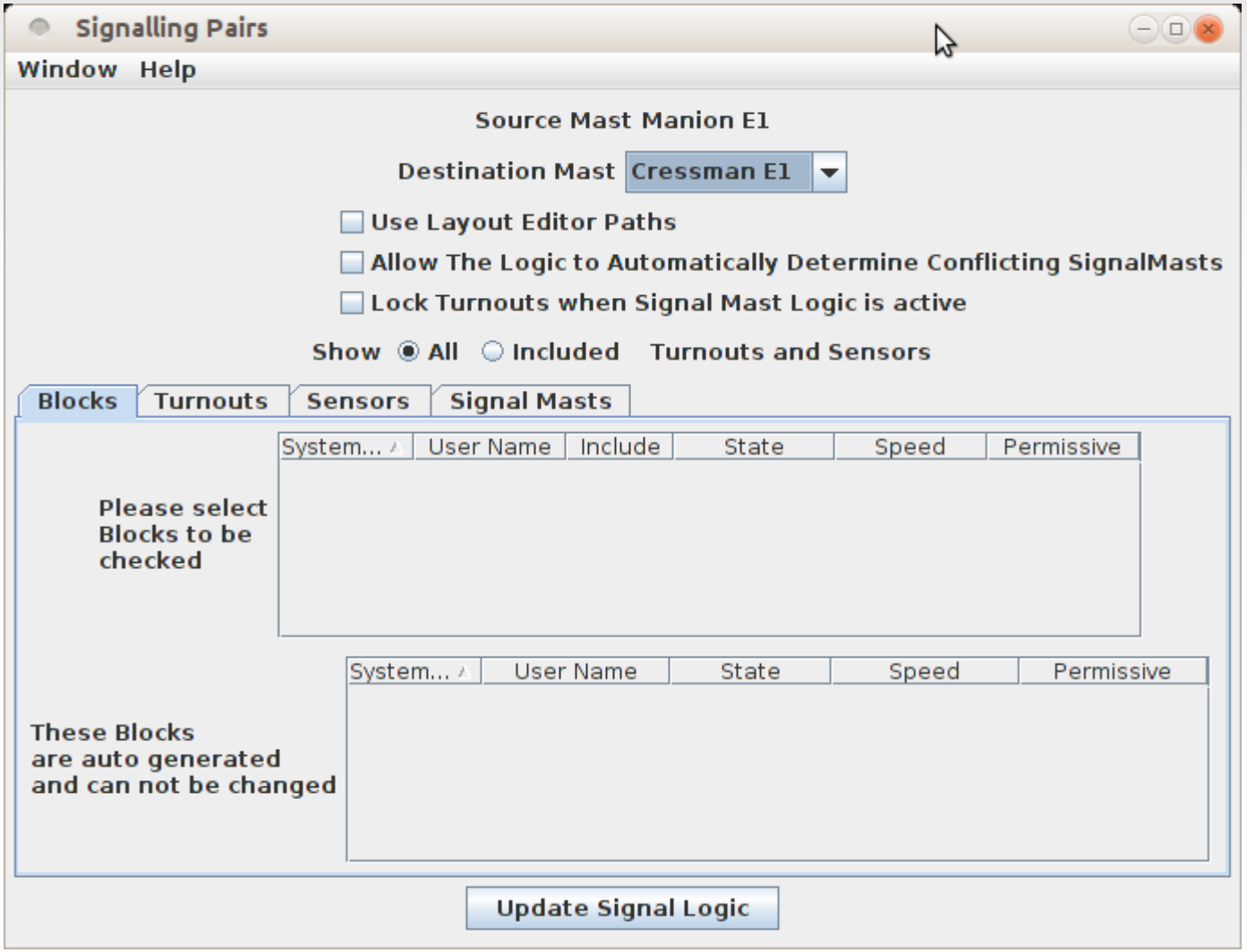
- To add the connections to our signal logic we can either right click on the signal's image, then select 'Signal Mast Logic:' or else you can open the 'Signal Masts' table and click on the 'Edit Logic' button for each mast.
- In either case a 'Signaling Pairs:' window will open.



- The Control Panel Editor does not currently do Automatic Block Routing, so the 'Discover' button is not useful to us. Click on the 'Add Signal Logic' button and we will add each signal pair manually.
- We will create a signal pair for each possible route from this signal to another signal further down the track. The 'next' signal in any pair is determined by the turnout positions (if any) along the path from this signal to the next.

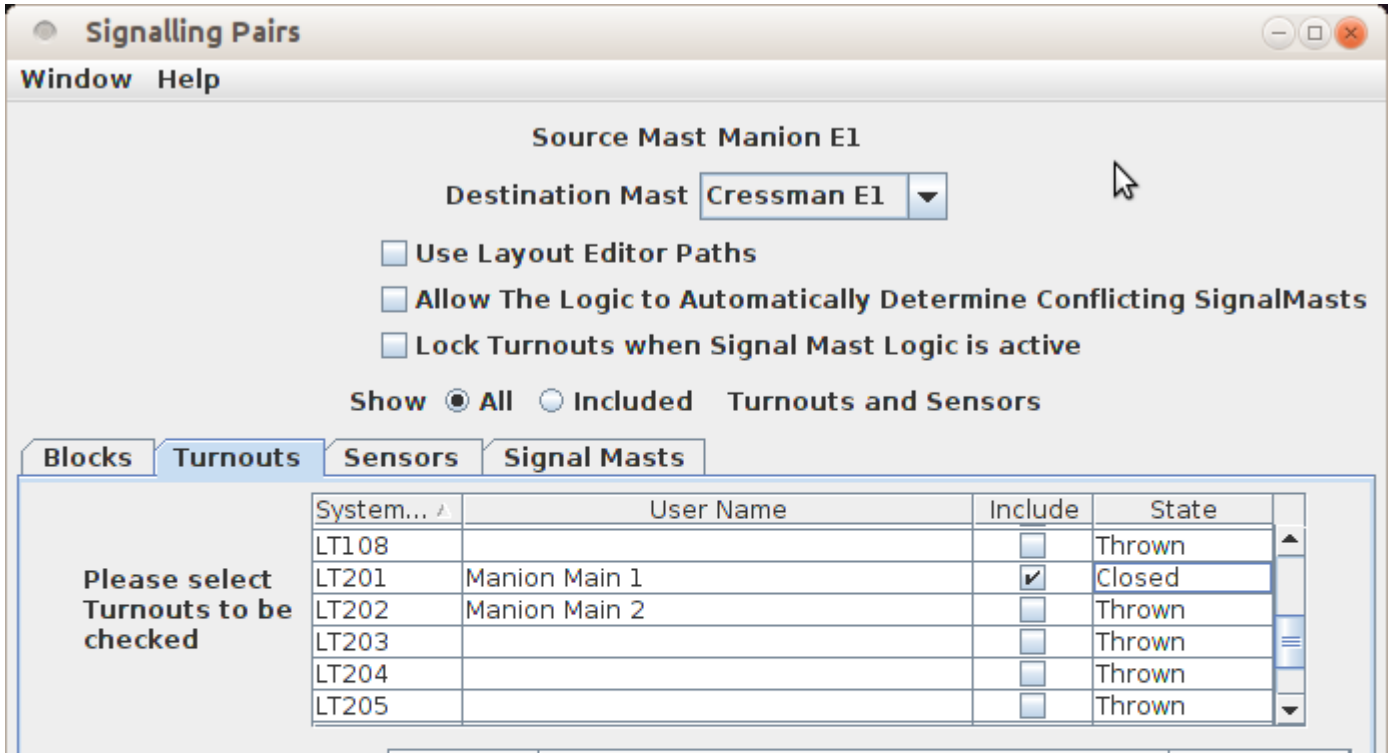
Tying it all together

- First select the destination (next along the route) mast for this pair. In this case even though we pass a turnout, there is just a single option, Cressman E1.



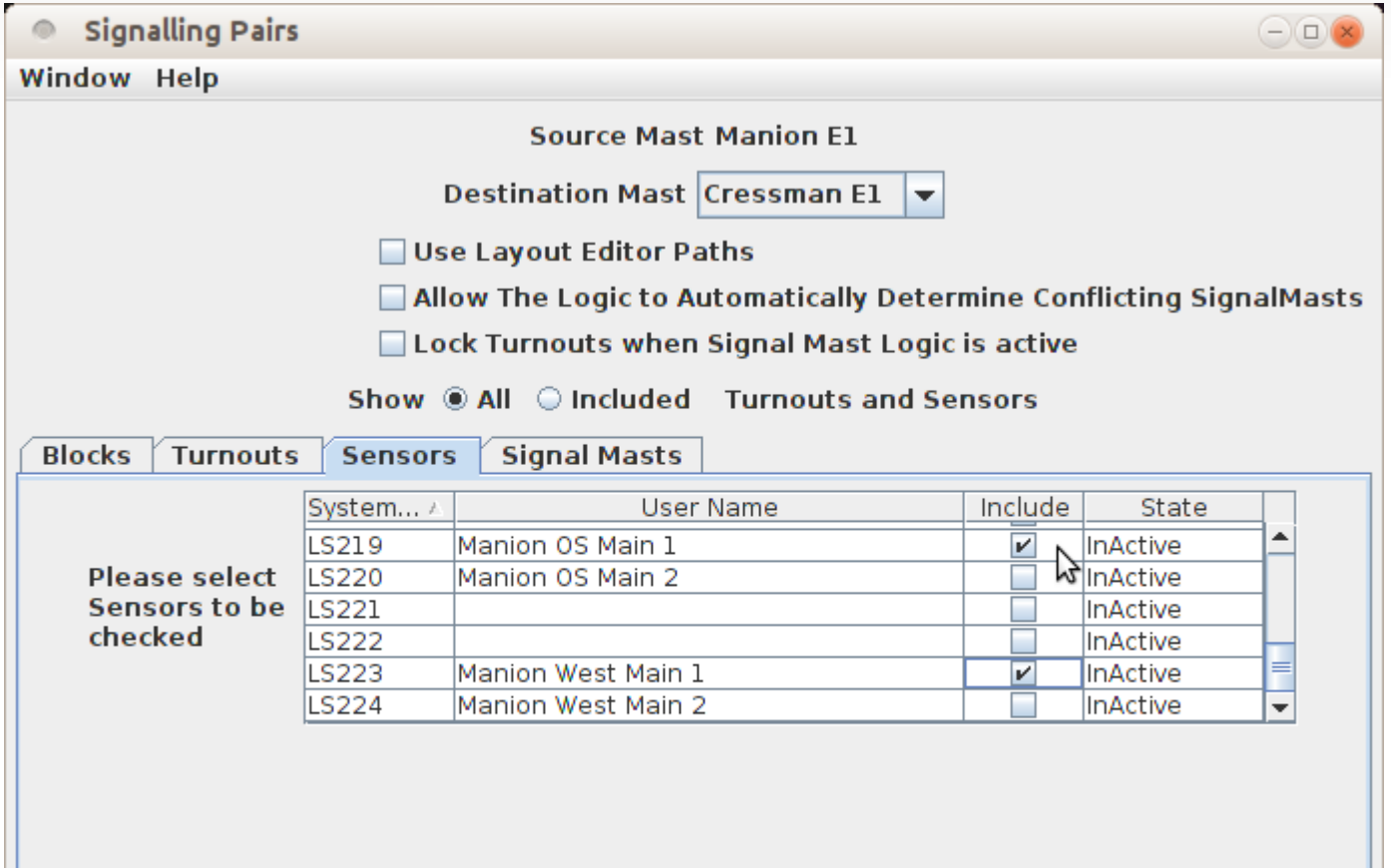
Tying it all together

- Open the 'Turnouts' tab. That will give you a list to select from. In this example the only turnout along the route is 'Manion Main 1'. Check the 'Include' box and set the state to the position that allows the train to follow the route to the next signal in the pair.
- The 'Included' radio button is useful once the selections have been made and you are trouble shooting, because it hides all the clutter and shows just the items of interest.



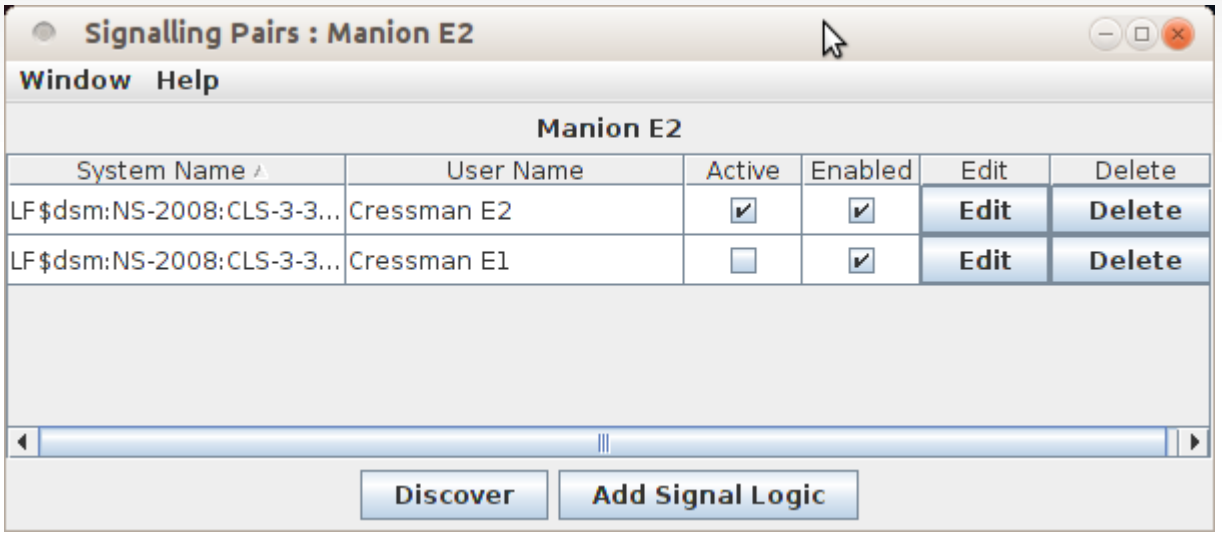
Tying it all together

- In like manner include all the sensors and their required states that the train passes between this source mast and the destination. Click 'Update Signal Logic' to complete the entry.
- The 'Signal Masts' tab is only used for other conflicting signals that are not a part of this pair. One example might be a level crossing with another line. Its signals would need to be set to 'Stop' before this route could be cleared.



Tying it all together

- The 'Manion E2' signal mast protects two possible routes, one straight through to the 'Cressman E2' signal, and the second via the crossover to the 'Cressman E1' signal.
- For this signal we will add two different signal pairs, one for each possible route. The 'Active' box contains a check mark for the currently active route.



- We include both turnouts.

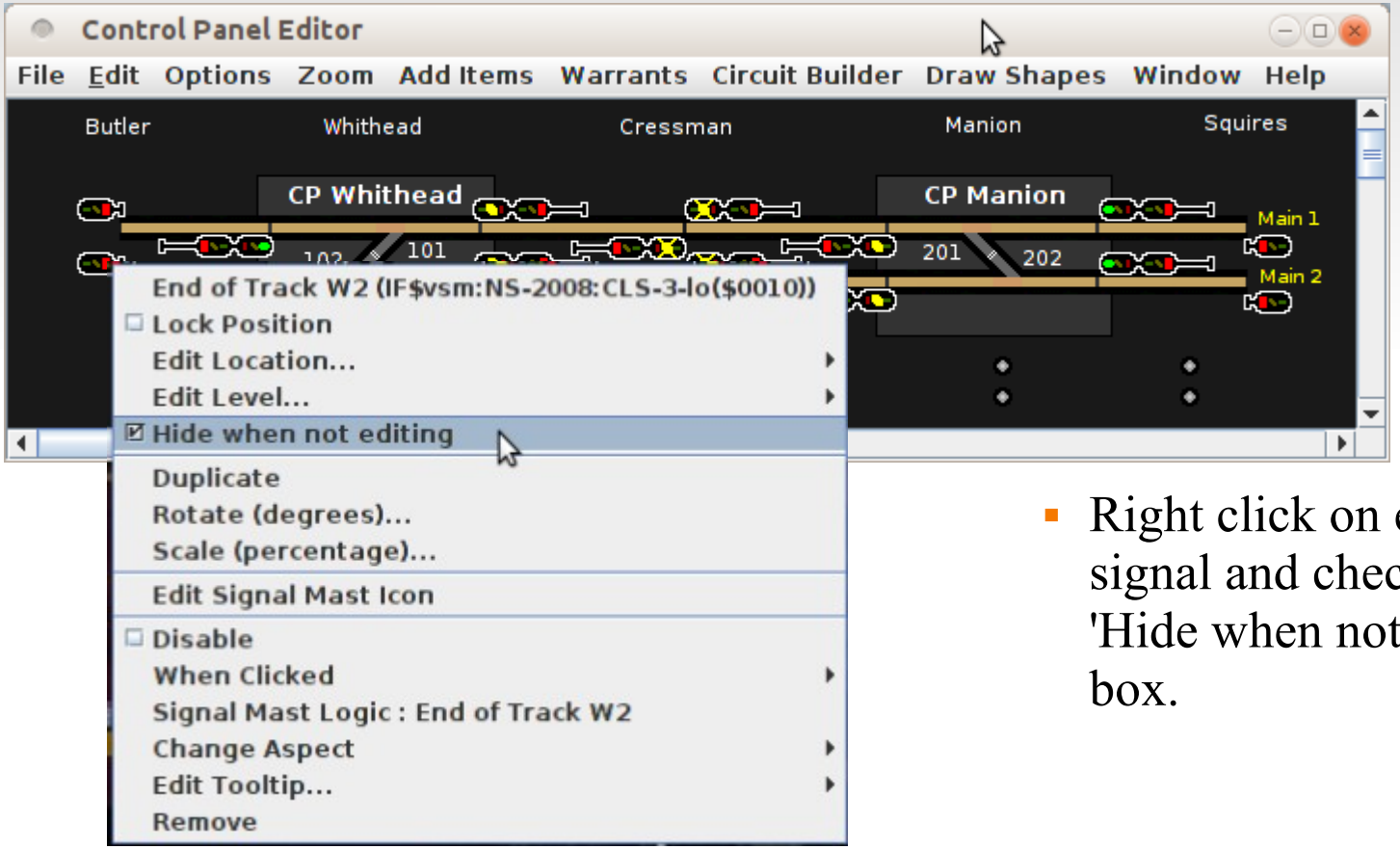
System...	User Name	Include	State
LT201	Manion Main 1	✔	Thrown
LT202	Manion Main 2	✔	Thrown

- We include all three sensors.

System...	User Name	Include	State
LS219	Manion OS Main 1	✔	InActive
LS220	Manion OS Main 2	✔	InActive
LS223	Manion West Main 1	✔	InActive

Tying it all together

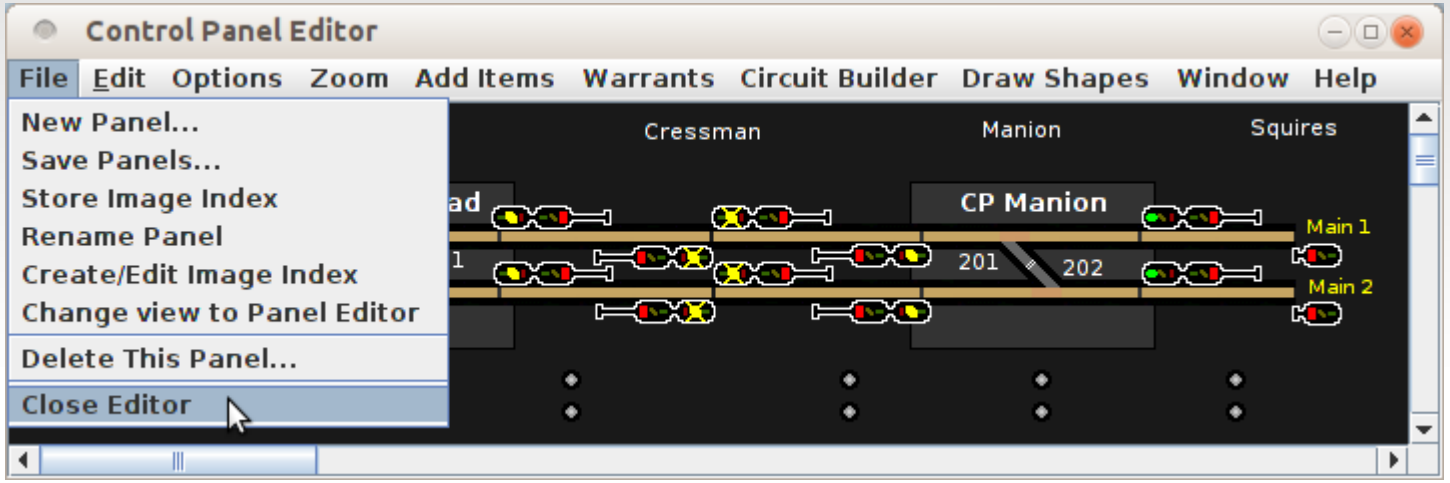
- Here we see the latest version of our panel. We can do one cosmetic trick by setting the end of track signals to not show when we are not in edit mode.



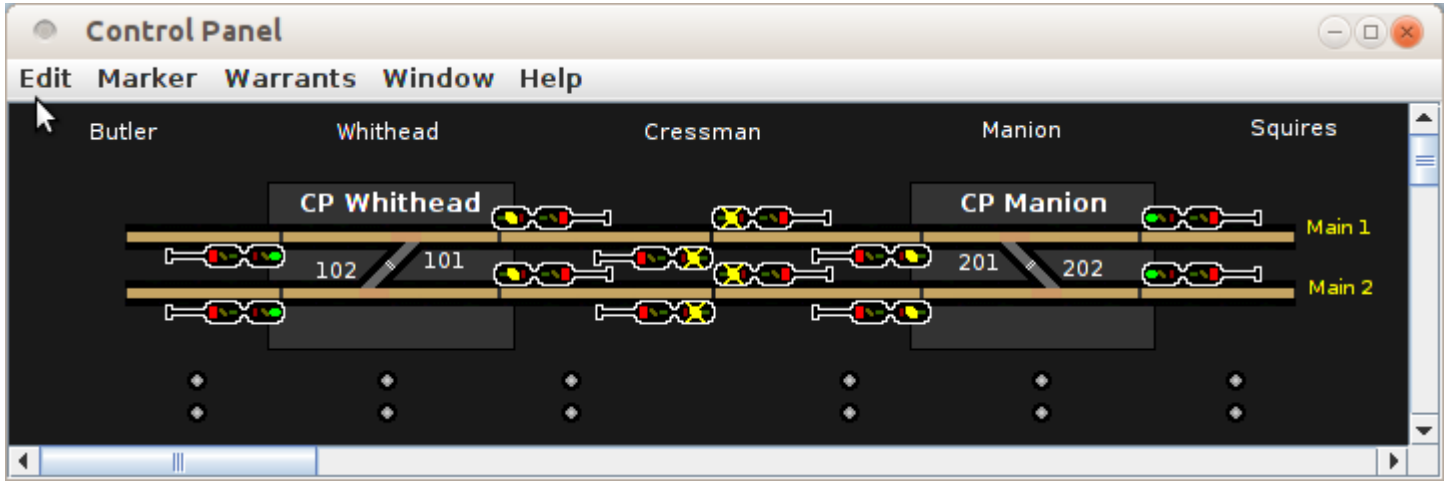
- Right click on each signal and check the 'Hide when not editing' box.

Tying it all together

- To close the editor click on the 'File' drop down list and choose 'Close Editor'.

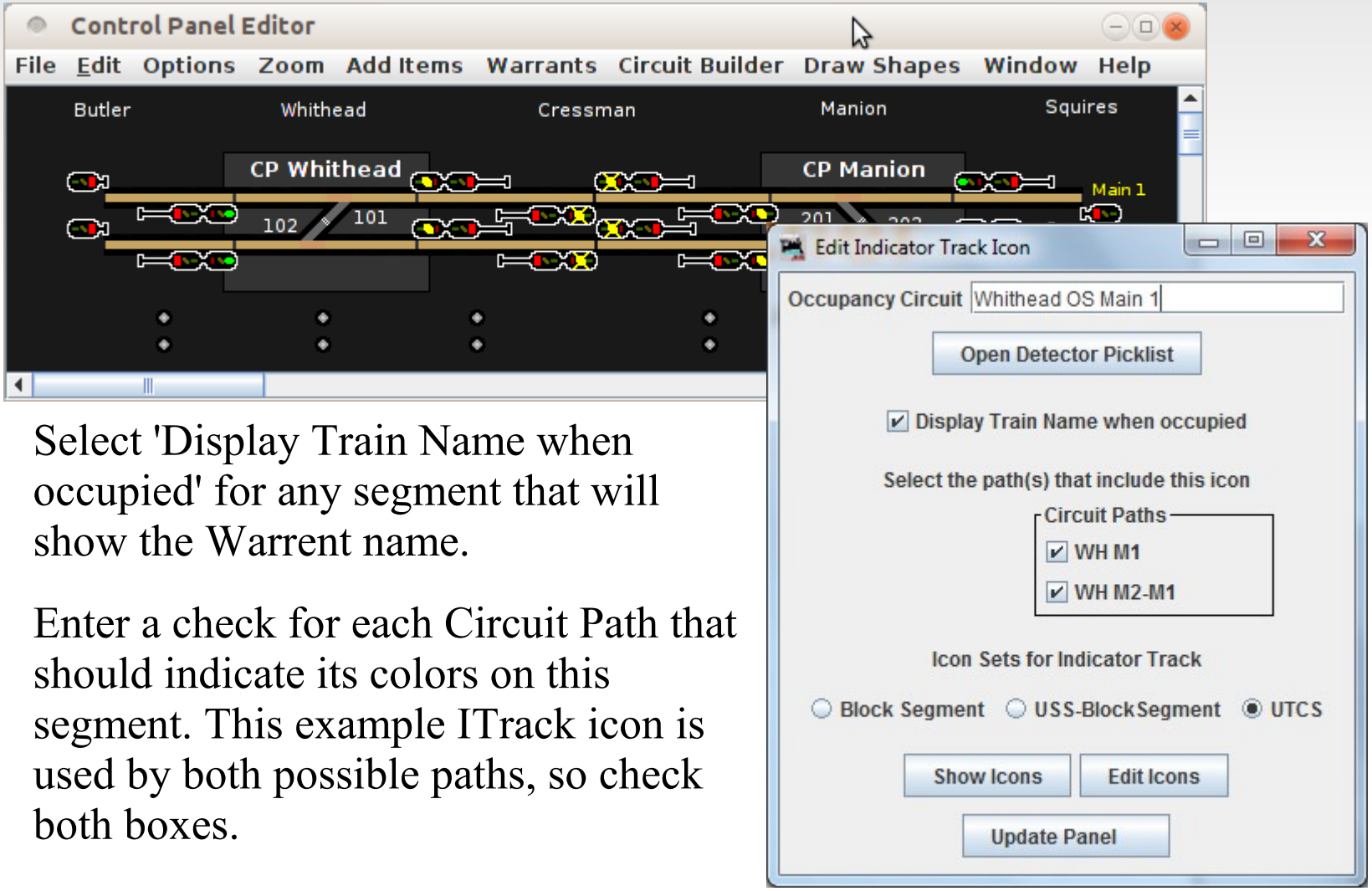


- Obviously we could do the same for all signals to make them invisible when not needed.



Tying it all together

- To allow the animated track to know which paths will control each indicator track icon we must right click each one in sequence and select 'Edit Indicator Track Icon'. The following window will appear.



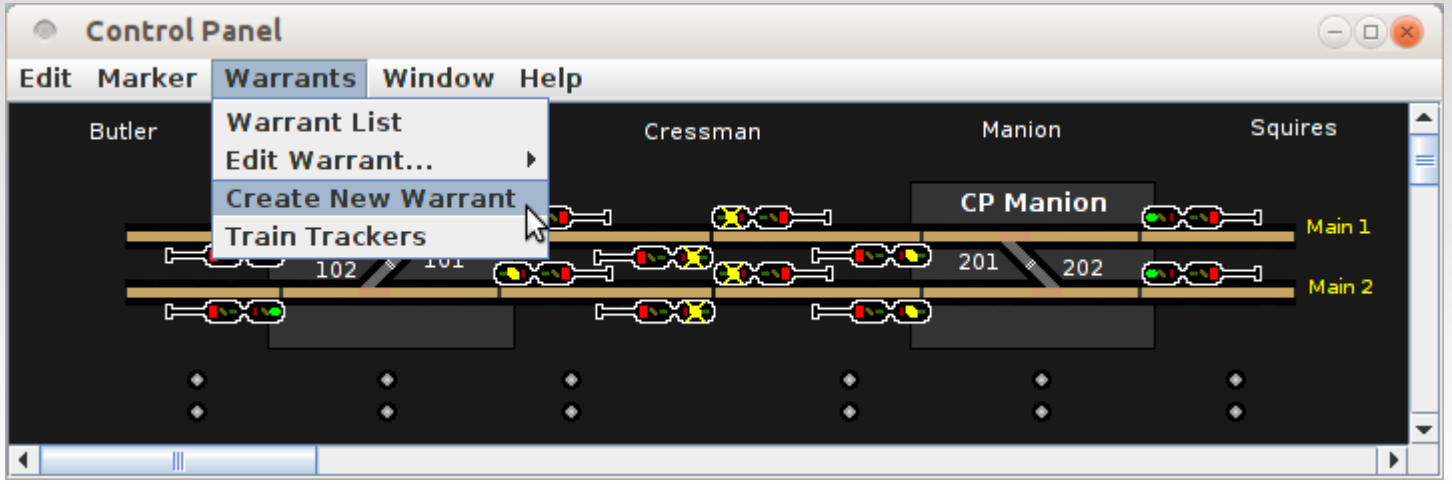
- Select 'Display Train Name when occupied' for any segment that will show the Warrent name.

- Enter a check for each Circuit Path that should indicate its colors on this segment. This example ITrack icon is used by both possible paths, so check both boxes.

Warrants

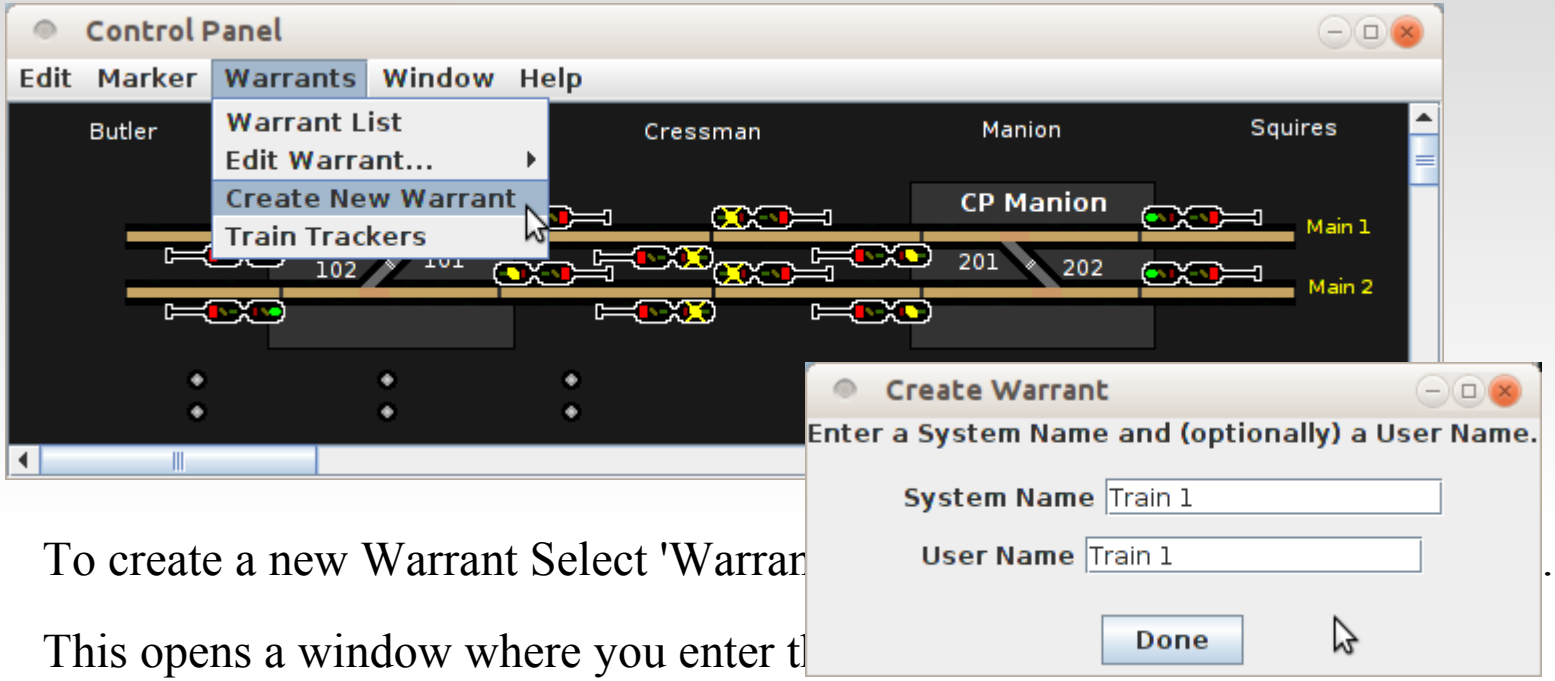
- A Warrant contains the information needed to run a train. This includes the DCC address of the locomotive(s), the route train will take, the settings of the turnouts to traverse the route and the throttle commands to use at various points along the route - e.g. speed, when to show lights, sound horns, bells or other sound effects.
- NOTE: Warrants can only be created if the PanelPro configuration has at least two OBlocks defined.
- There are three steps in creating a normal warrant,
    - 1. Define the route.
    - 2. Select a train.
    - 3. Record the throttle commands.

Warrants



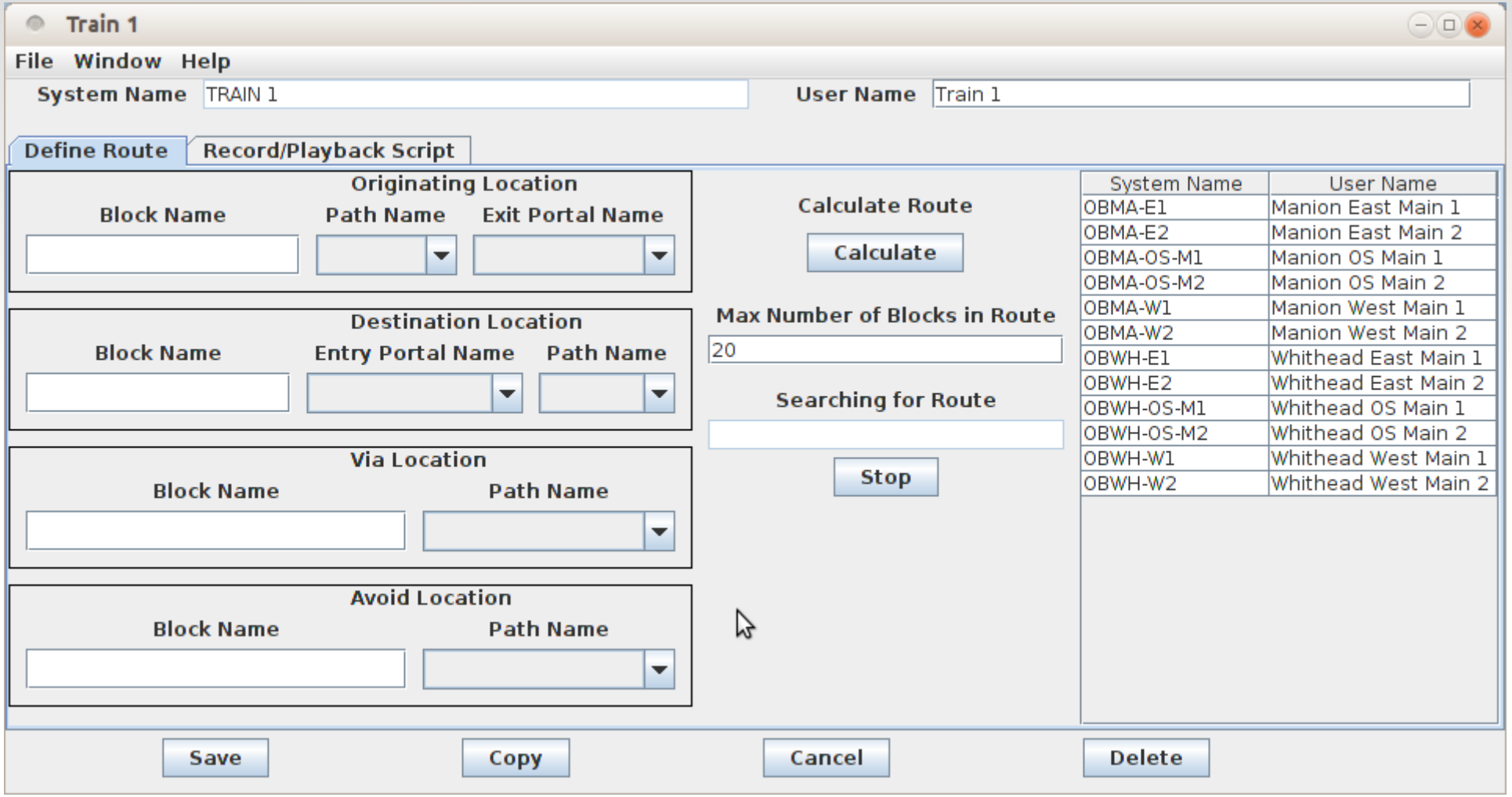
- To create a new Warrant Select 'Warrants' then click on 'Create New Warrant'.

Warrants



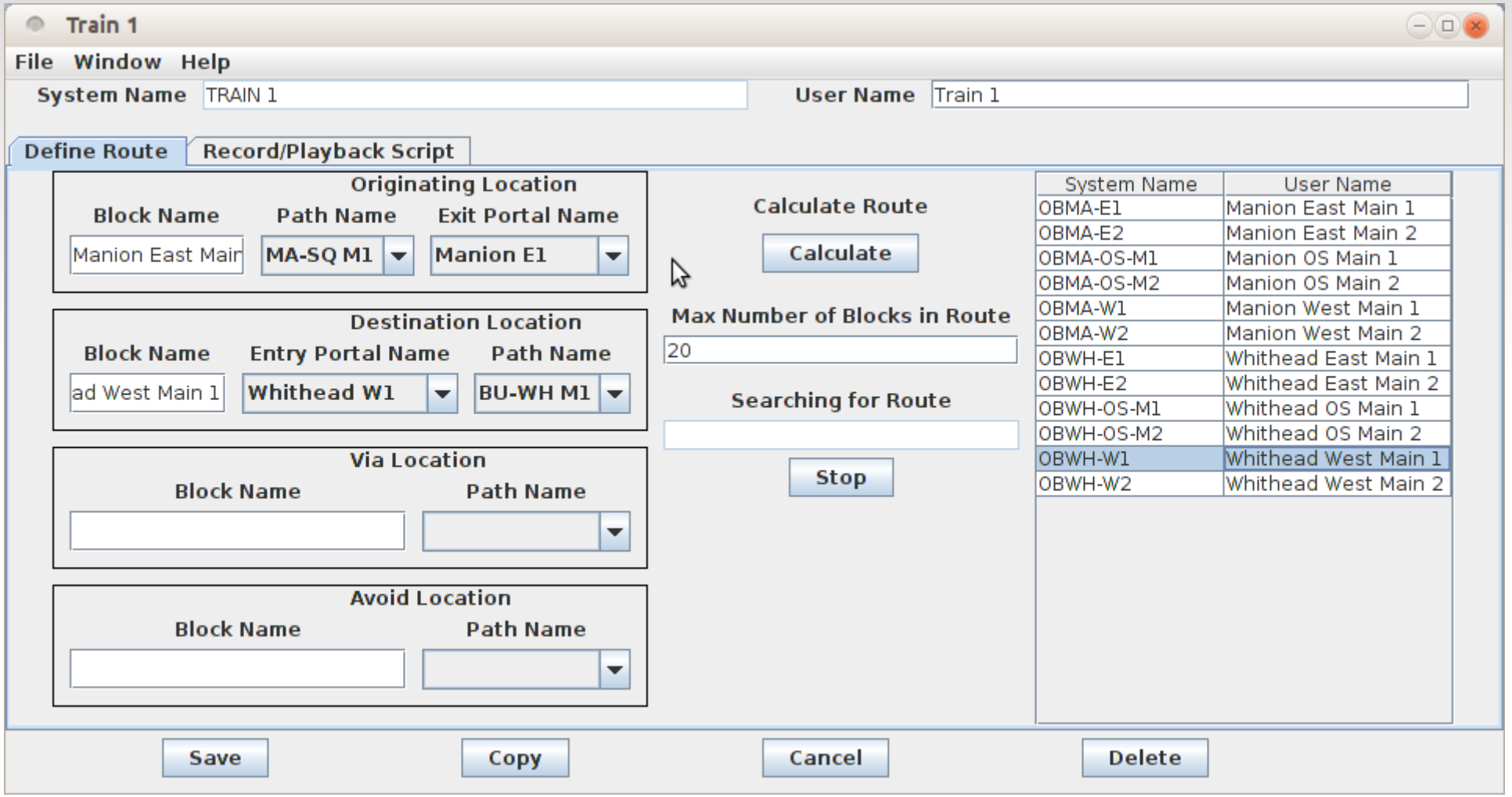
- To create a new Warrant Select 'Warrar .
- This opens a window where you enter t new Warrant's name. When finished click on the 'Done' button.

Warrants



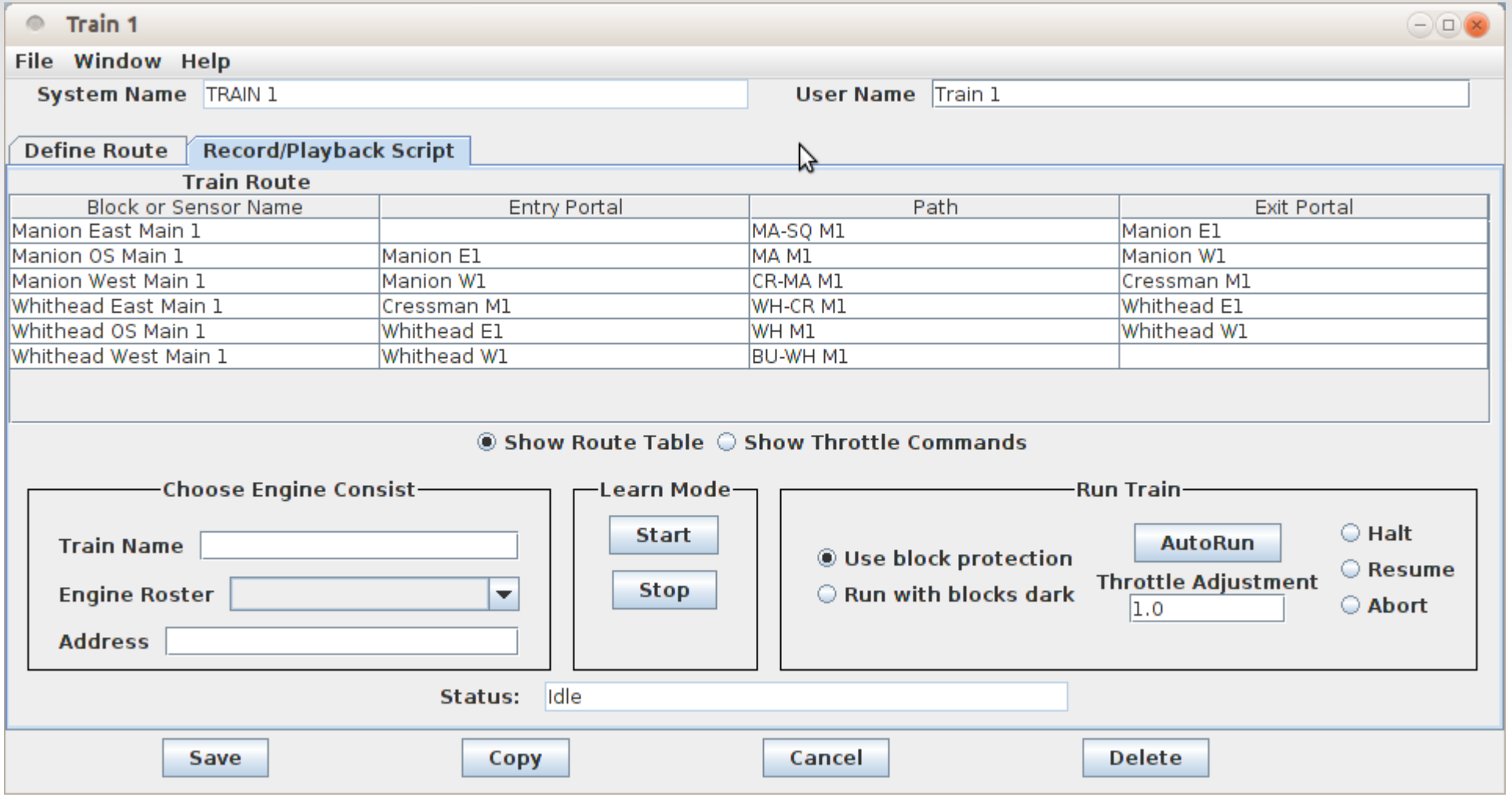
- Start by dragging the Originating and Destination OBlocks from the selection list into their proper locations. You can also click on the required blocks in the Panel itself.

Warrants



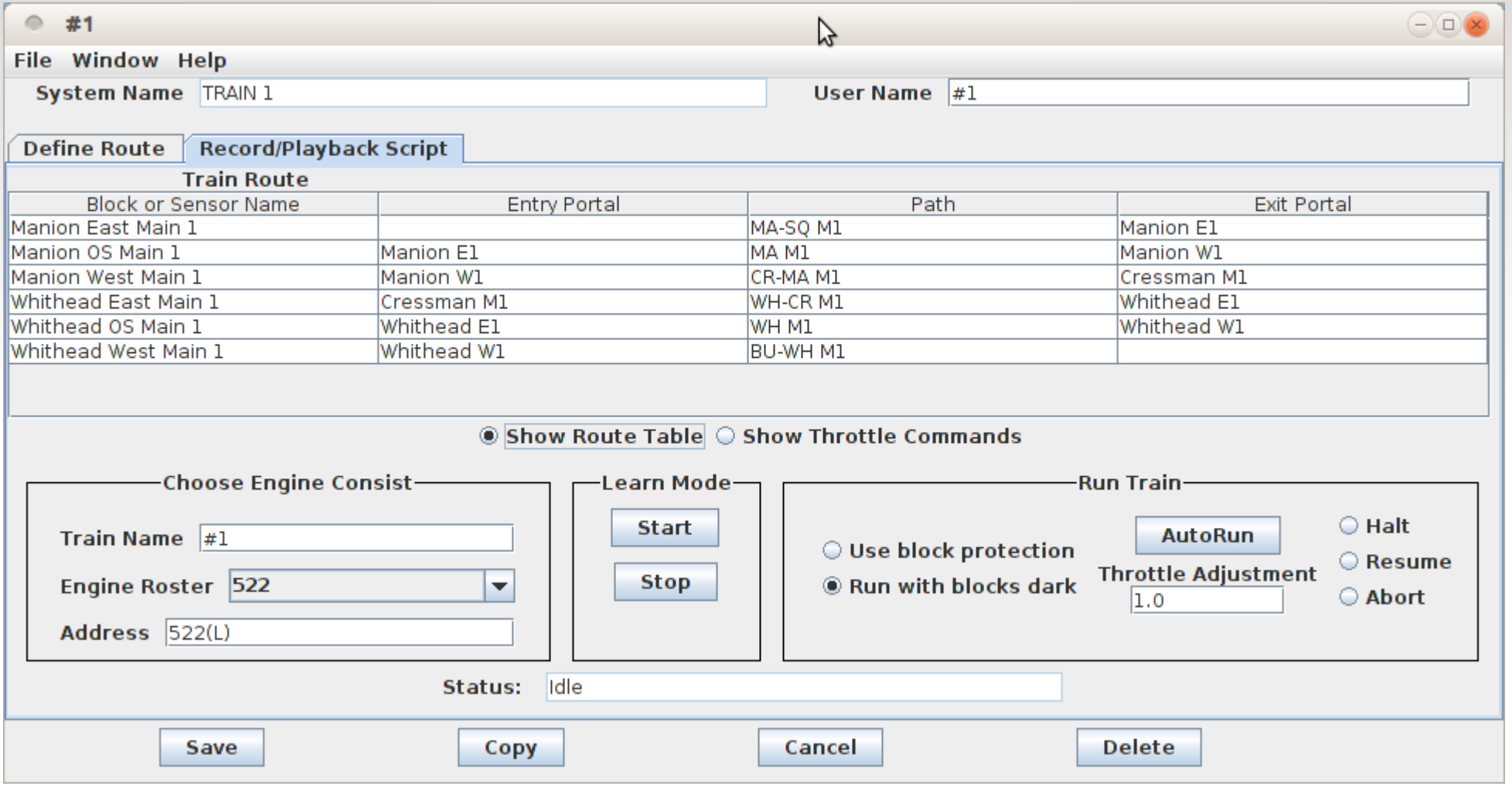
- Next click on 'Calculate'. There is only one way for the train to get there, so there are no reasons to use 'Via' or 'Avoid' locations.

Warrants



- The program almost instantly calculates the route required.
- Select an engine from the roster. Edit the train name if desired.

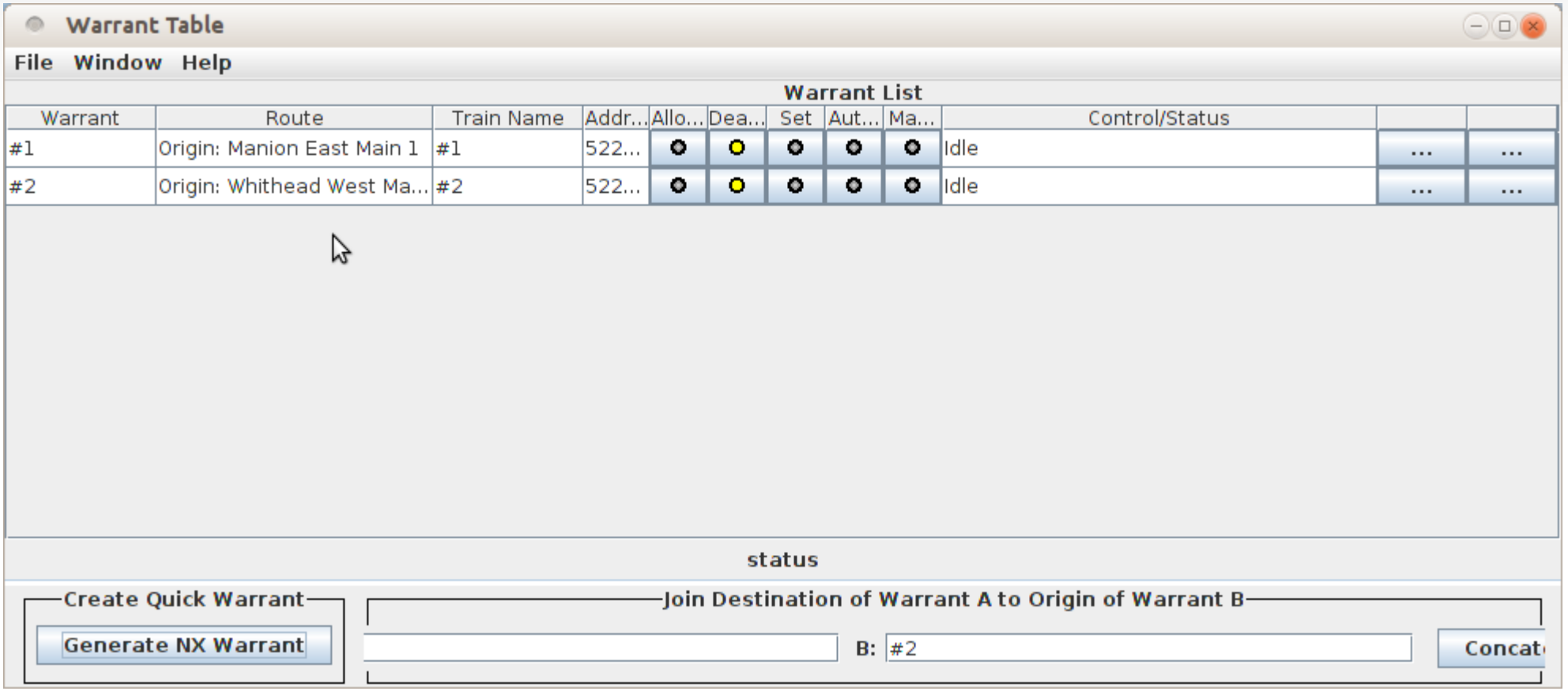
Warrants



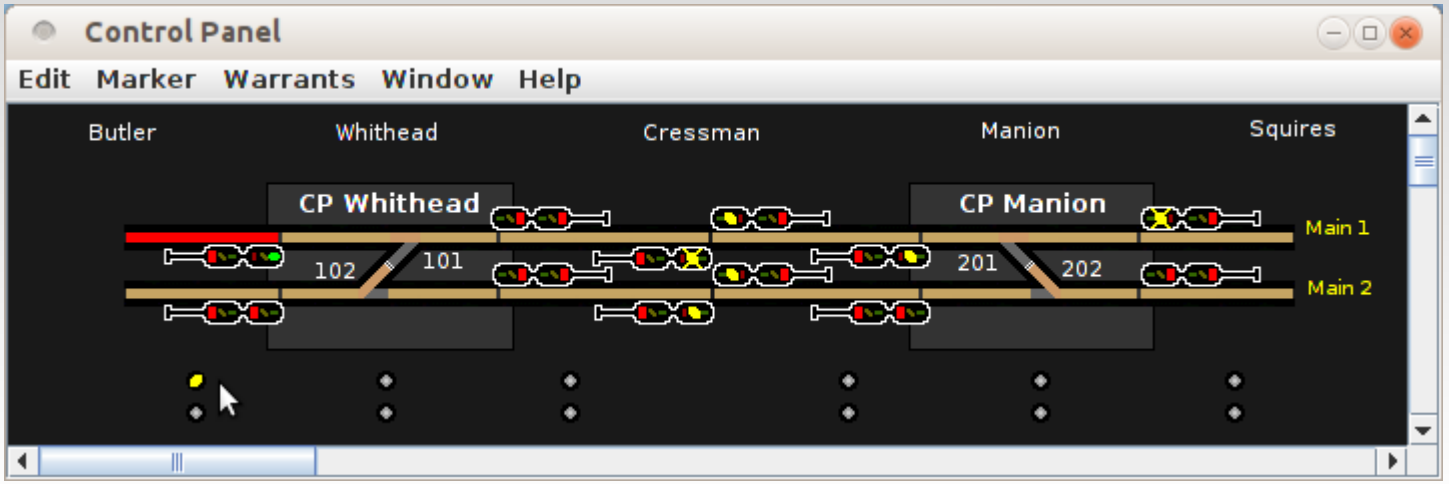
- I used my loco 522 and called the train #1
- To generate a train script you can click on 'Start' then run your train manually on the selected route. The playback will include any throttle commands you include. (horn, etc.)

Warrants

- Once you have saved a train script you can edit it to change timing etc. The train will follow signals that it encounters along the way, even if they were not present during the initial recording session.
- Next go to the 'Warrants' drop down list and select 'Warrant List'.
- You can now use this window to play back any existing Warrant recordings.

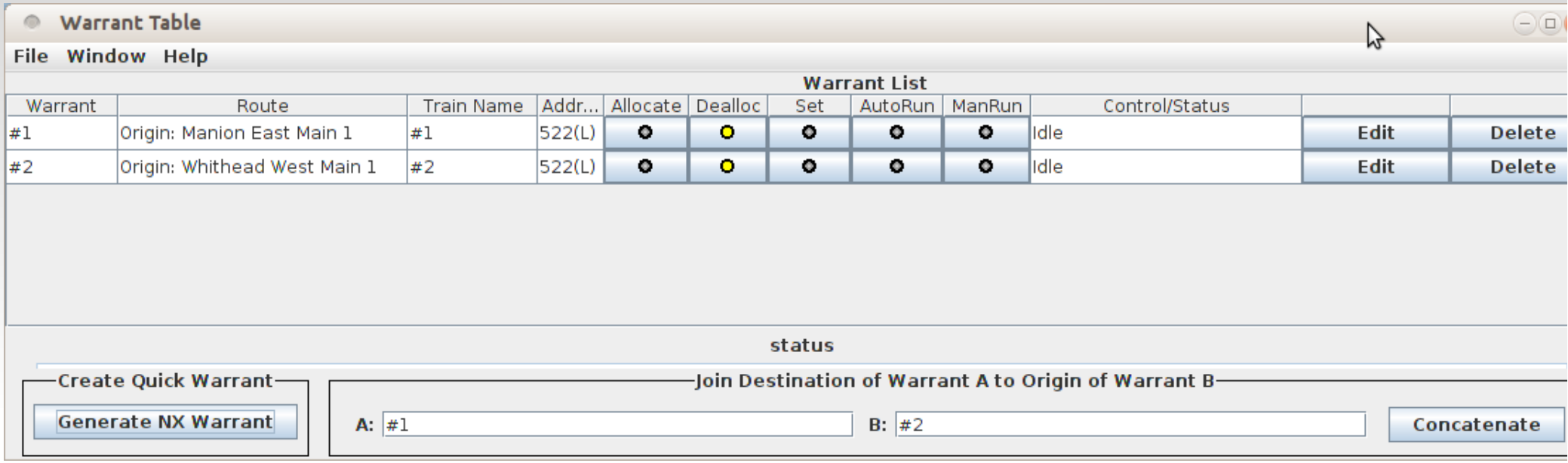


Warrants



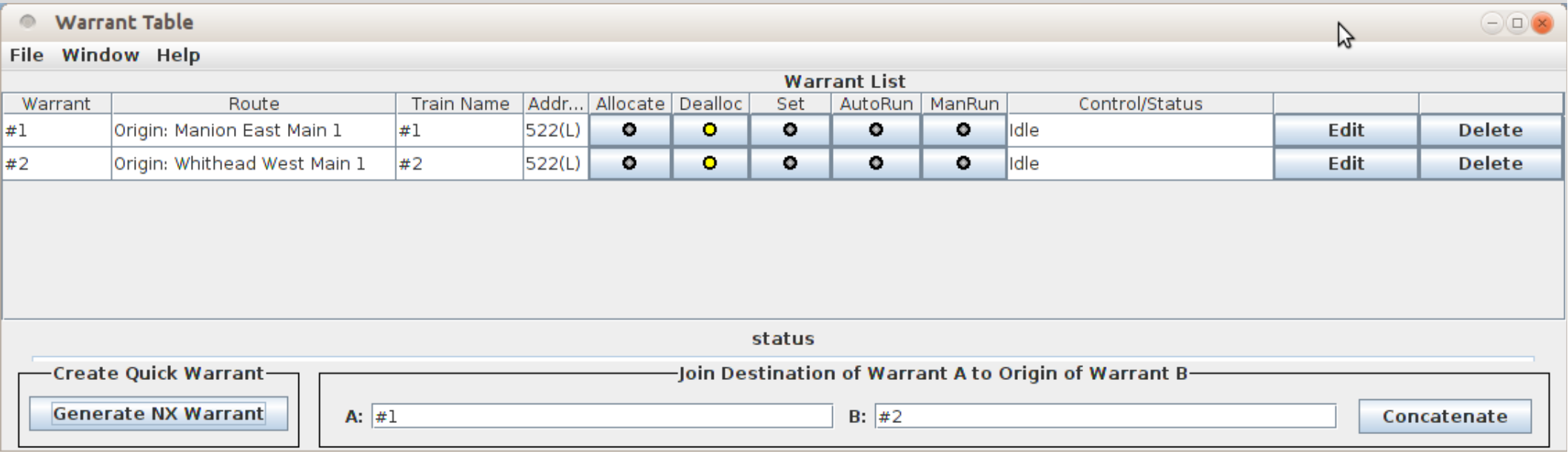
- I added small clickable icons under each block section to let us play with the panel even without any layout attached.
- The turnouts are also 'clickable' to change them.

Warrants



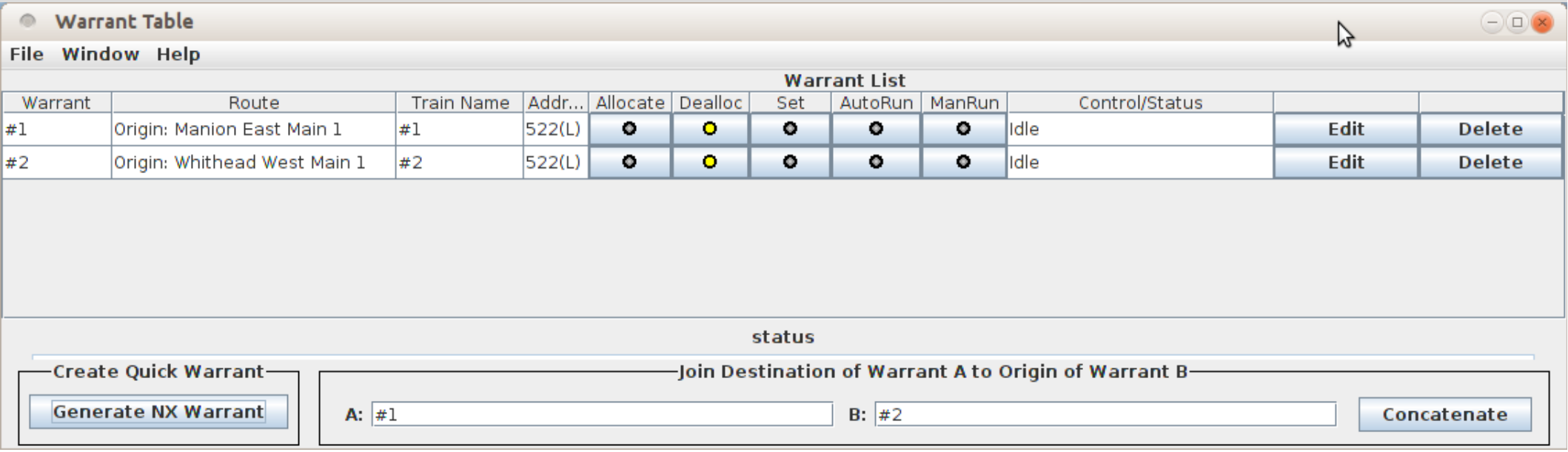
- The Warrant List shows each train with a previously saved Warrant.
- Columns in the Warrant Table
  - Warrant: - The name of the warrant.
  - Route: - The route of the warrant is listed in a drop down combo box. (click to show route)
  - Train Name: - The Train Id, as stated in the Roster.
  - DCC Address: - The DCC Address of the locomotive or consist.
  - Allocate: - A button that reserves the route for the warrant.
  - Deallocate: - A button that removes the reservation for the warrant.
  - Set: - A button the sets the turnouts for the warrant route.

Warrants



- Columns in the Warrant Table Continued.
  - AutoRun: - A button that runs the train over the route according to the automated throttle commands. The recorded speed of the train will be modified according to the occupancy and signal aspects encountered on the route. Be sure the train is in its origin block!
  - Control/Status: - The status of the warrant is shown. It also has a drop down combo box that can send the following commands to a running train. Note: This column has two functions - Status messages and control buttons.
    - Halt, Resume, Retry and Abort commands to an automated running train.
  - Edit: - A button that opens an editing window for the warrant,
  - Delete: - A button that deletes the warrant.

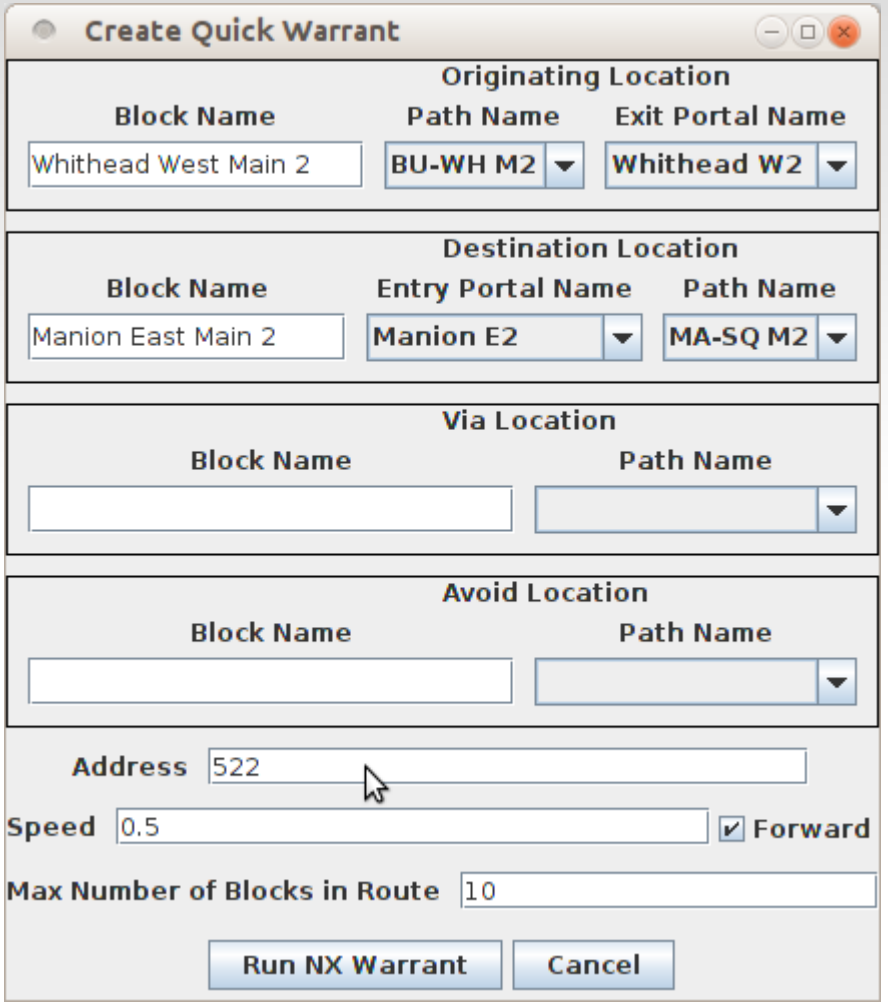
Warrants



- Join – This box allows you to create a new Warrant by concatenating two existing Warrants. Of course you must be sure that the second one continues from where the first one left off running.

Warrants

- A new addition to Warrants is the most amazing in my opinion. Click on the 'Generate NX Warrant' button.
- Open the Occupancy Block Table.
- Drag an originating and destination block into the 'Create Quick Warrant' list. (or type them in)
- Add a locomotive address and choose a speed (percent of required speed) and the direction for it to run. (an important point)
- Click on 'Run NX Warrant'



Warrants

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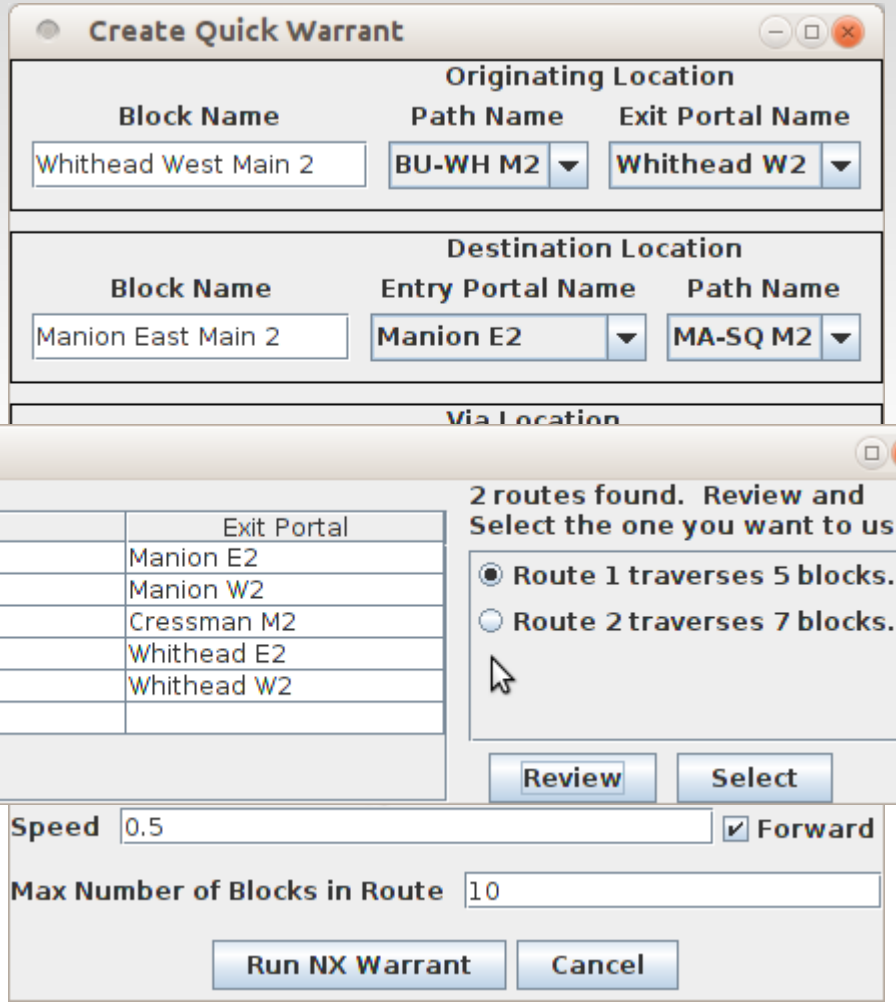
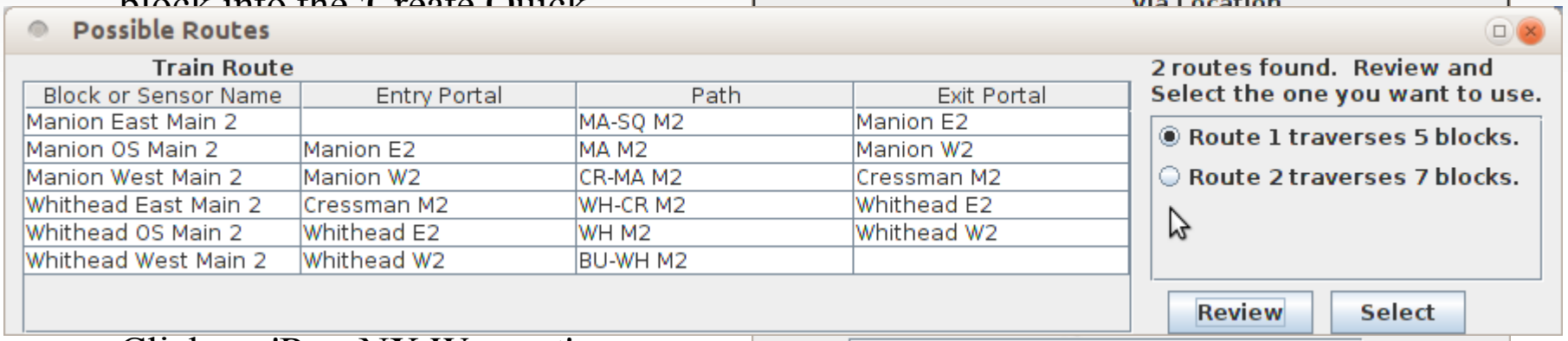
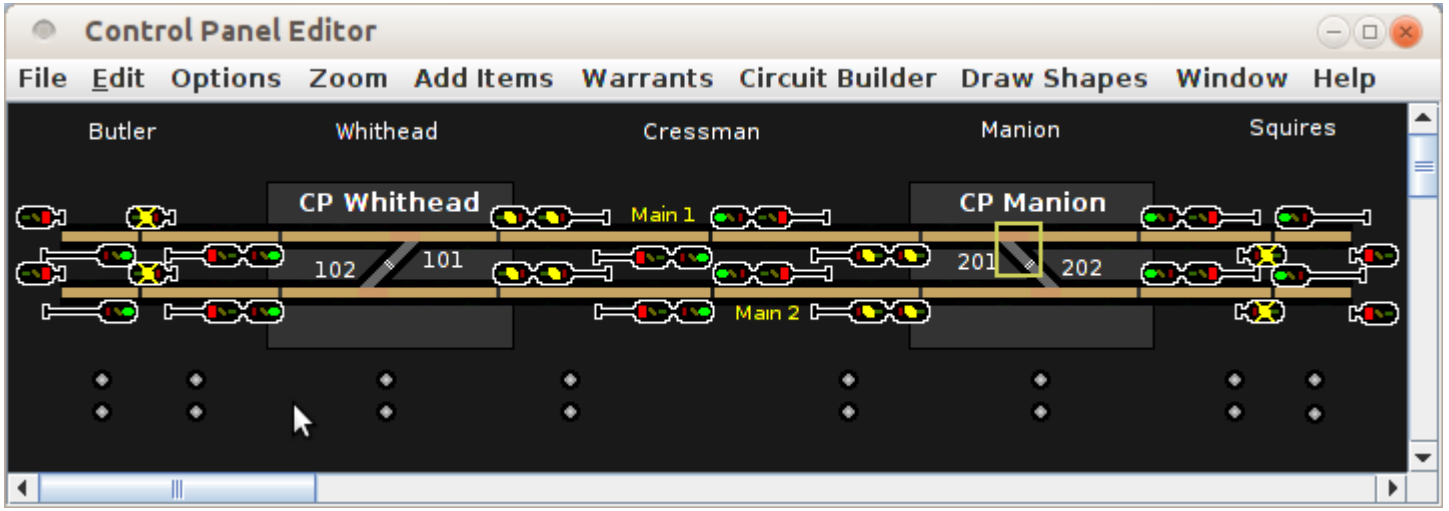




- Click on 'Run NX Warrant'
- If the calculated path includes optional routes, then you will be asked to choose one.
- You can click the 'Review' to see the details of your choice before you select it.

Warrants

- The original demo layout was not setup well for running warrents because it had no stopping blocks other that the block adjacent to the interlocking. When the Warrant enters a block with an 'Approach' signal it slows down and stops.
- On the origina demo layout the 'Approach' signal was displayed before the crossover section. This caused the train to slow and stop before it even cleared the opposing signals, so it would not start in the reverse direction.
- Now we have added an additional block in either direction to solve this. When preparing a layout for automatic running be sure to allow for these additional stopping sections. (e.g. At the end of your automated staging tracks.)



Questions

- http://www.rr-cirkits.com
- ?