Modeling Prototype Freight Operations in Trainz using the Car Movement and Traffic Management System

By David A. Petersen

I like to model railroad "operations". In a discussion with another Trainzer about "operations" he used the phrase "Sense of Operation", which I think is a good description of what many of us get from Trainz. As Trainz players, we usually fill the roles of several employees which adds to our Sense of Operation. In addition, a person's preferred "Sense of Operation" depends on the era of railroading and what "operations" or type of "play" get you excited. Some are strictly passenger operators, some like to drive a heavy through freight and some like switching a small, logging road. Operations has such diversity that there is no one clear definition. However, the one element that is common for all freight operations is making sure that every car gets to its proper destination. And the key ingredient of this element is making sure that every car in service has a destination.

The Trainz built-in system that provides anything close to this key ingredient is the "Way Bill" system. This "Way Bill" system is interesting, but it is nothing like the way things operate in the real world. The Trainz system is structured to compete against the clock by keeping industries supplied on a very short timeline. This system produces a simple computer game with demand driving the delivery of freight, but has very little similarity to the way real railroads operate.

In the real world, industries plan well in advance to make sure they have stock to continue operations and do not have to rely on common carrier transportation for Just-In-Time operations. And the prototype process is supplier or shipper driven, not demand or consumer driven as in the Trainz Way Bill system. The object in the real world is not to beat the clock, but to provide reliable transportation in an environment that promotes safety for employees and equipment. If we are going to simulate railroad locomotives, track, signal systems, equipment, scenery and structures to the detail that Trainz permits, then why not simulate "operations" to the same detail?

The only other available asset I am aware of that provides this key ingredient is TPR's Freightcar Destination System. Although you do most of the set-up for this system in Surveyor, the actual assigning of destinations to individual cars must be done in Driver. I found this rather cumbersome, especially if you have lots of cars on your route. And if any trains are brought onto the route with a portal, you would have to stop and assign a destination to each car. This really interrupts the "Sense of Operations".

The CMTM System

Based on my HO and 7-½" gage model railroading days, I know that a waybill-car card system goes a long way to organizing and driving prototype freight operations. I also looked at various software packages such as Pro-Track and ShipIt that provide this functionality for physical model railroads. It seemed to me that what Trainz needed is a car destination system that could be integrated into a route or session.

After much research, I created what I call the Car Movement and Traffic Management System, or CMTM for short. This is a fully integrated car card system that is automated with lots of features that you will never find in a physical car-card system. As you begin your session, every freight car on the route is assigned a destination. Whenever a train is emitted on to the route via a portal, every freight car in that train is assigned a destination, automatically. The assignment of

destinations is not completely random, but is based on a database of car movements and a preplanned traffic pattern created for the route.

In Driver mode, the CMTM System merely presents the name of the car, the current destination and load/empty status for the car on which the camera is currently focused. The data is presented in a small window in the upper left corner of the screen. This allows the player to plan and execute the delivery of each car. Once a car is delivered to it's destination, the player clicks on the appropriate location in the window to let the system know delivery has been made. When the designated amount of time has elapsed for loading or unloading, a new destination will be shown for that car. If the destination is a portal to take the car off the route, no action is needed by the player when the car arrives at the portal.

One cool feature of this system is that any set of cars will work, as long as you have the correct types of cars the system expects for the local industries. The database of car movements does not care which cars you use on the route, other than they need to be freight cars.

The freight operations of a railroad vary from day to day mostly in the delivery patterns to the various industries it serves. The CMTM system incorporates this concept into a single session. The same trains will run each day, but the traffic for local industries will vary from day to day. Some days the local freight traffic may be light, some days it might be heavy. The player simply chooses a day at the beginning of the session.

One feature of the CMTM system is that any track location can be an industry. Industries do not need to be interactive. No longer does one need to struggle with getting production rates set and trying to match one industries production with anothers consumption. The only industries that I make interactive are the ones that deal with open cars - strictly for the visual animation, and for me, it must be a Proto-LARS industry so there will be a delay from the time I drop off a car to the time it is loaded/unloaded. (You can also eliminate those silly drive through loops at industries that are so unprototypical.)

Another feature is multiple destinations for any car. The CMTM System will support up to 99 destinations per car. You can do LCL operations where the same boxcar stops at every freight station on a way freight run. You can have a car start at the Empty Car Storage track (ECS - every route is required to have one, even if you never use it.) From there it can go to the ice house, then to the packing plant, then to the scale track and from there to a portal or another on-route industry, to the clean-out track and finally back to the ECS track.

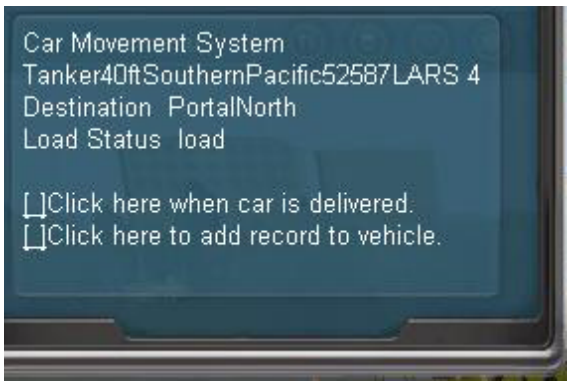
The CMTM System does not control the movements of the cars. This is up to the player. The CMTM System simply presents the destination data to the player.

Running Trains on a CMTM Route

All the set-up work is done in Surveyor, so when a session begins, all you concern yourself with is switching and running the trains. Depending on the route and how the operations have beenstructured, you can have a variety of operational activities. One thing I like to do is classify freight cars and making up trains. Another favorite operation is running a way freight - servicing as many industries as possible. I am looking at one large city route that will have over 150 industries to service without leaving town. Anyone up for that kind of operations?

When a Session starts in driver, a window is displayed that gives you a choice of seven different days to run. When you select a day by clicking on it, the CMTM System goes through a set-up routine and assigns destinations to cars on the route based on the day you have selected.

When you left-mouse-click on a train car, the camera focuses on that train car. With CMTM installed, a window opens in the upper left corner of the computer screen. This window gives the name of the vehicle and other pertinent data. If the train car is not a freight car, it is so noted. If the train car is a freight car, it will state the name of the car as defined in its congif.txt file, its destination and whether it is loaded or empty.

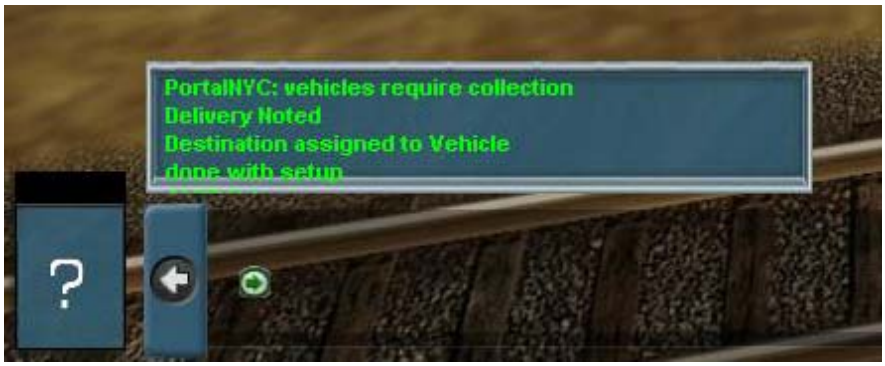


At the bottom of the window are two user input choices - “Click here when car is delivered” and “Click here to add record to vehicle”. Although you may click on the first option at any time, it is only appropriate when the car has reached it’s destination.

When clicked, it starts a timer to track the loading or unloading time. If you select the car again, the window will tell you how much time is left until the car is loaded or unloaded. If the time has elapsed when you next click on the car, the next destination will be displayed.

Clicking on the “add record to vehicle” option is functional only when the car is located on an Empty Car Storage (ECS) track. Given that, a new window will pop-up that displays all Car Movement records that are available for that type of freight car at that ECS location. Upon clicking on a displayed record, it is attached to the current freight car.

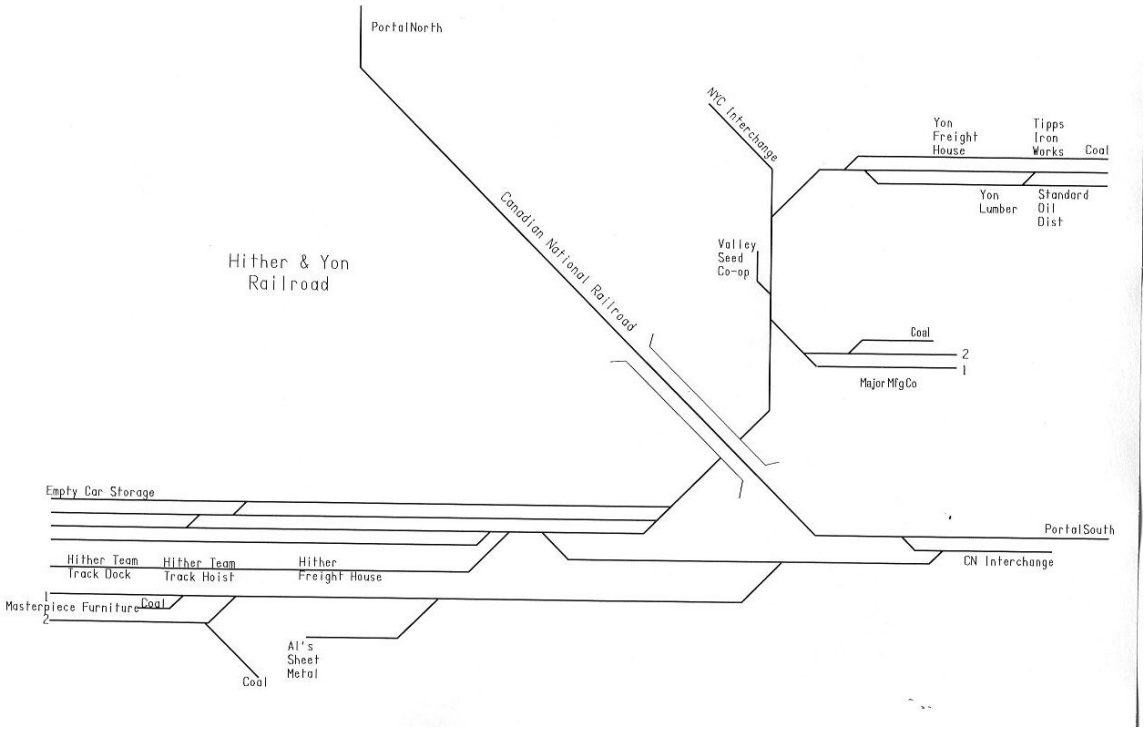
Keep your Trainz message window open and watch for conformation that various selections have been performed or why they have not been performed such as “Selected vehicle is not a freight car” or “Car has off road destination” or “Delivery Noted”, etc.



In Driver Mode - if you press ESC, the CMTM window will close, but will open again when you click on another train car.

A Sample Route for CMTM

If you are not a route creator and just like to operate, hopefully there will soon be a series of routes available. To introduce the CMTM System, I have adapted Al Barten’s **Hither & Yon Railroad**. This is a single baseboard route of a shortline railroad that interchanges with the Canadian National Railroad and the New York Central. It services 10 industries.



This routes demonstrates two different interchange methods, passive and active. The interchange with the NYC is a passive activity. The interchange cars arrive via a portal without an engine with their arrival being announced on the message board. Outgoing cars for a passive interchange track are just drop kicked into the interchange track where they coast into the portal and are gone.

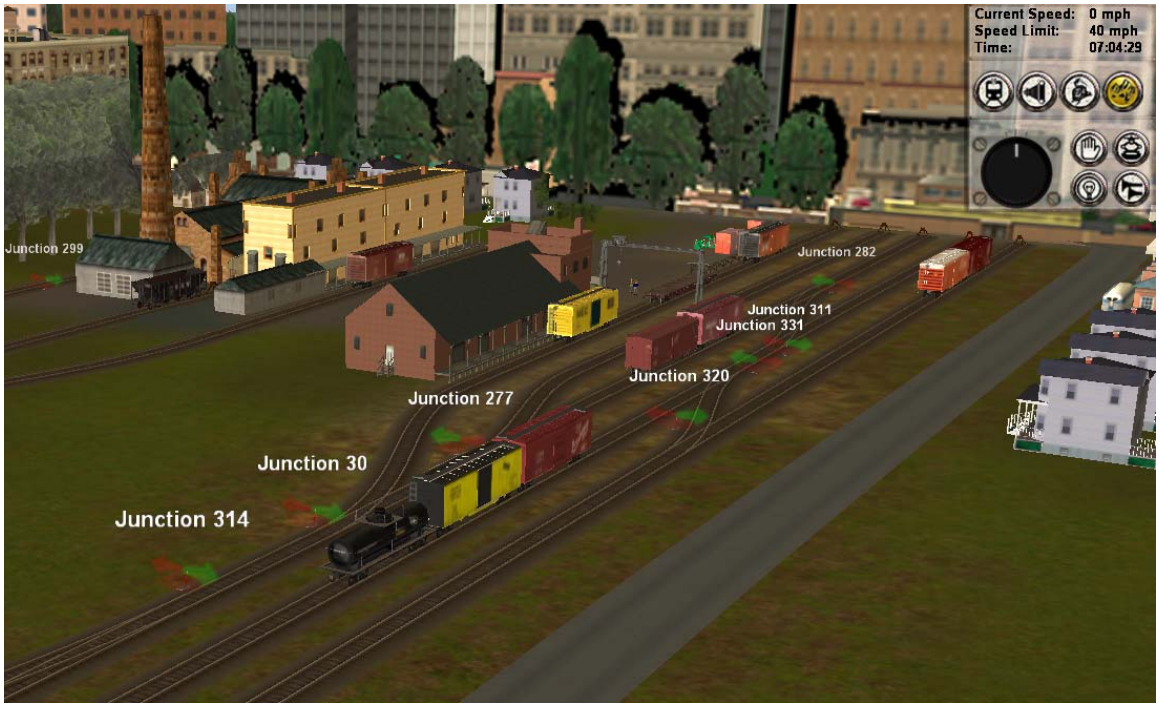
On the other hand, the interchange operations with the CN are active. The interchange track is trailing point for northbound CN trains so they can easily work the interchange. When the CN Northbound arrives on the route, the player is expected to jump on board the CN engine and perform the switching operations. One could put together the Driver Commands needed to make this happen but I chose not to on this route. When the southbound arrives, the Hither & Yon switch engine must be present to push cars onto and pull cars off of the through train.

All the CMTM Sessions are what I call open sessions. You can run them any way you wish. There are certain trains that arrive at a specific time that you must deal with. Other than that, you can make it up as you go. The CMTM destinations will tell you what needs to go where. Try to plan your moves to be the most efficient.

The Hither & Yon CMTM Session

When the session opens, you are presented with a window in which you choose the day of the week you wish to run. When you select a day, the system sets up the data for that day. The session starts at 7am.

All the cars at industries are to be picked up and classified in the yard. Northbound cars are pushed up the hill to the CN Interchange Track. Southbound cars are pulled up the hill. NYC interchange cars go to the NYC interchange track.



Hither Yard looking Southwest

If you are standing at the throat of the yard looking west, track #1 is on the right. The stub end of this track is the ECS track (Empty Car Storage). Tracks 2 and 3 are used for run-around moves. Track #4 is where I like to put the Southbound cars. Beyond the yard tracks are the Hither Freight House and team track with hoist and dock, and beyond that is Masterpiece Furniture. Other than that, use the yard as efficiently as possible. During switching, non-empty cars can placed on the ECS track. This comes in handy at times.

The Northbound freight is due at 7:30am. Push the northbound cars up to the interchange track, uncouple them and pull clear of the interchange switch. The road crew (that will be you) will switch their train on arrival. When you take charge of the through train, click on the driver commands to “Stop Train”. This will give you the throttle. Pick-up the cars on the interchange track and set-out any cars in the northbound train for destinations on the Hither & Yon. When all set-outs and pick-ups have been made, delete the “Wait 1 hour” command and click on Resume Schedule. During the “Wait For” 10 minutes command that remains, the northbound will pump up the air and check the brakes. When they have the air up and brakes checked, the northbound will depart to PortalNorth.

While the northbound is doing their air check, jump back to the switcher and pull the incoming string to the yard. Classify them and prepare the Southbound cars for the Interchange track. These must be pulled up the hill. The Southbound will arrive around 8:15am. The drop-off and pick-up switching moves are a team effort with the switcher pushing and pulling cars off the southbound train and the southbound engine pulling the train forward and breaking it at the appropriate places.

When you get to the interchange track at the top of the hill, jump to the southbound train and click on the Stop Train driver command to get control. When the interchange is done, delete the “Wait 1 hour” command and click on Resume Schedule. The Wait For” 10 minutes command

will give them time to pump up the air and check the brakes. When they have the air up and brakes checked, the southbound will depart to PortalSouth. While the southbound is doing their air check, jump back to the switch engine and push the incoming cars down the hill.

CN Northbound picking up Hither & Yon cars

The NYC will drop off a string of cars on their interchange track somewhere around 8:30am. Any time after that, make up a run to the interchange track, pick up the cars there and drop-kick all cars you have for the NYC into the Portal. A speed of 20 mph is needed. When you reach this speed, uncouple the cars and cut the throttle before the lead car enters the Portal. The cars should roll into NYC oblivion.

NYC Interchange Track - just beyond the bridge

Now the industries need to be serviced. Start by delivering the box car to the Hither Freight House. Then check the Empty Car Storage track. Click on a car on the ECS and then click on the "add record to vehicle" option in the CMTM destination window. This will present the industries that have requested an empty car of that type for today. Choose the industry to which you think this car should go. Do this for all the cars on the ECS. Some days you will have more requests that you have cars. Other days you will have more cars than you have requests. Pull these cars from the ECS track. You now have all the cars for servicing the industries. Make up a run to service Masterpiece Furniture and Al's Sheet Metal. Check the track diagram so you can put them in their proper order before you leave the yard. Then service the Team Track. While you are there, check to see if the car at the freight house has a new destination.

Then make up a run to service the industries in Yon.

When all the industries have been serviced, you can quit for the day. Or, start over again with another day. The same trains will run, but the local traffic pattern will be different.

If you are interested in giving the Hither & Yon a try, It can be downloaded here.

Hither & Yon Railroad

There are more CMTM routes in the works. The next to be released will be the Huron Central, an imaginary division of the C&NW. This route is set in the upper Midwest consisting of an east/west mainline with a diverging branch to the north. The Division headquarters are in Huron along with a 7 track classification yard, a car shop, and an engine servicing facility with roundhouse. There are a total of 18 towns with a total of 64 industries served by the railroad. This division also interchanges with the CMStP and the Soo Line.

If you are interested in incorporating the CMTM System into your route, you can download the users manual at CMTM Manual and the system files CMTM System Files. There is also a CMTM support forum at the Great American Underground Railroad Company website GAURC.

I'd like to thank all the Trainz content creators, code writers and the team at Auran that coached me through this project. Without their input, CMTM would still be an idea bouncing around inside my head. I'd like to thank all my beta testers that have helped find the bugs in the system and for all the great suggestions they had for making it more user friendly. And a big thanks to Al Barten for giving me this great one-board route to adapt to the CMTM System.