**PTC**

**PTC** is not coming, it **is here!** See the PTC status chart under the News tab.

There is some confusion on what and why PTC makes any difference to car owners that won’t be running on Amtrak.

We will work to explain that here. But first, what is PTC?

PTC, Positive Train Control, is a CBTC (Communications Based Train Control) system. That means it uses radio to communicate between the various parts of the system. And it is a law generated by Congress and enforced by the FRA with respect to how and where applied.

Parts of this system are on the locomotives, parts in dispatching, part is radio communications hardware (towers, repeaters, receivers, transmitters and such), and part is use of GPS (Global Positioning System), and some big honking computer calculating capability.

Most people understand that PTC affects locos, they need new equipment. This includes new radio systems, new control valves, and new interconnections between the “PTC” outside the loco and the controls functions inside.

But for the computers to properly calculate stopping distance so that if PTC makes a brake application because the engineer didn’t in time to stop clear, data about the train is needed. This is where PTC affects any kind of car or loco of any ownership operating on any trackage, PTC or not.

This is a direct copy and paste from an email from Lee Trombecky of Amtrak:

*Also UMLER doesn’t match what the owner have been telling us. We need to get the info to line up.*

*Lee Trombecky*

*Sr.Manager Quality & Compliance/Regulatory Compliance*

Why is it soooo important that Arrow and Umler match? If your car is in an Amtrak train that leaves Amtrak controlled trackage for freight railroad controlled trackage and the data doesn’t match up, the stopping distance will not calculate correctly. And bad things could happen.

Now if your car will NEVER be in Amtrak PV service, you still don’t get away with it, because Umler does not have an exception to PTC needs data field. That means every car must have the data required, whether it would ever be used or not. And if your car could be in an excursion train, and that train operates on PTC trackage, it will be needed there even if not an Amtrak or commuter train.

To calculate the stopping distance, PTC needs to know the mass of train. Mass is the weight divided by the force of gravity. That number is used to calculate how much energy the train has that must be dissipated by the brake system to stop, and therefore the distance to stop.

Basic physics: KE = ½ MV2

That is the kentic energy equals onehalf of the mass times velocity squared. The velocity is easy, it comes from the loco directly and/or from GPS. The mass is the problem, and that has to come from Umler or Arrow. And that is why they have to match. And that means someone has to put in correct data to start with.

That is why we now need to know what a car’s tare (empty) weight is relatively accurately today, not when it was built. That is also why we need to calculate the payload, everything that will go on and off the car or is consumable in or under the car during service. It isn’t as simple as a 100 ton coal hopper has 100 tons of coal for the payload. Every passenger, every crew person assigned to the car, water, food, linens, etc. The sum of the two equals the GRL, Gross Rail Load, which is what the computers will use.

Note for steam locos, industry standard published weights during the steam era was tender weight with only 2/3 fuel and water. Need to know the real maximum, so that is max fuel and max water capacities in tons of coal, gallons of oil and gallons of water.

Another wrinkle in this: Umler currently doesn’t have data fields for payload and GRL for passenger cars. That is a change that will happen soon. Already approved by Railinc Umler committee.

To calculate the stopping distance for that energy value, the computer needs to know the deceleration rate of the train. About the best we can do is provide the brake system model number for each car and loco. Because different model brake systems over the years provide different “standard” brake ratios (% of car weight) and therefore different brake rates (deceleration in mph/sec), knowing the system can at least identify generally how quickly or slowly the train will stop. The wrinkle in this is that most passenger cars in private ownership have had modifications that change the weight, the brake system, or both, so the actual deceleration of any individual car may not be as good, might even be better, than the “standard” for the brake system originally applied.

For those of you with locos that desire to run them on the main line in excursion service, that means that your loco must be FULLY PTC compliant if it is to lead in PTC territory. That includes steam. Doesn’t need to be compliant to trail.

Therefore, because PTC goes live on some east coast railroads early 2017, the data is needed NOW so that we can get it input when the data fields are available.

Plan on getting your cars weighed. We’ll be publishing a list of places that can weigh your car on the RPCNB and GLR web sites. If you can’t get it accurately weighed, at least make sure there is some data available on what it was (e.g. builders data, Amtrak ‘blue book’, etc.) and what changes have been made since then. At least that way people that know what they are doing with private passenger cars can calculate a reasonable tare weight estimate.

We have also published on those sites a simple Excel workbook that can be used to calculate your payload. The base numbers in this workbook match Amtrak’s for continuity. Download it, fill in the blanks, the number automatically works out, send it back as an email attachment.

Then we can upload the data to the RPCNB internal data base, then to Umler, and cross check it with Amtrak for 800 PV cars.

Because very soon, if that data is not in Umler, Umler will declare your equipment “restricted in interchange” meaning most railroads won’t move it, PTC territory or not.