C3RS

Inside THE RAIL

From NASA's Confidential Close Call Reporting System

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The New Speed Shuffle

How many times have you heard a popular song on the radio and yet still forget or misunderstand the lyrics? How often are you sure a song was recorded by a certain artist, only to find out later it was actually a different person? It happens all the time!

Rules and bulletins regarding your Maximum Authorized Speed can also be a cause of confusion and mistakes. Remembering a train's Maximum Authorized Speed is a vital part of a train crew's job. But what happens when different rules require different speeds? Just like forgetting the lyrics or artist of a popular song, train crews can sometimes forget what their Maximum Authorized Speed is.

In an August 2021 amendment, 49 CFR§ 236.1029 provided more detailed requirements for operating controlling locomotives with en route failures of safety-critical PTC system components. Trains with failed PTC components are required to operate at specific Maximum Authorized Speeds, usually less than normal operating speeds.

Since the required establishment of PTC and this amendment, C³RS has received numerous close call events associated with train crews operating over Maximum Authorized Speed after events like PTC failures, cab signal failures, or other onboard control system related events. This issue of *Inside the Rail* reviews some of these close calls. Consider these thought-provoking narratives and recognize the important lessons learned that they reveal.

Since You've Been Gone

Distracted and dealing with system disruptions, this Engineer got caught up in a speeding event after losing PTC.

■ *The Train was overspeed by 4 MPH. Under normal circumstances, the train would have been at the right speed; however, the Positive Train Control system had just failed. The system was cut out, which changed the speed of the train…. I increased my speed by 4 MPH before I caught the mistake.*

C³RS Expert Analyst's Callback Summary:

The reporter, an Engineer, advised that Positive Train Control (PTC) was malfunctioning due to a system disruption. Prior to the failure, the reporter was running the train with PTC until it dropped out. Reportedly, PTC cut out on its own and the Engineer immediately noticed and reported the failure. The train was operated 4 MPH over the Maximum Authorized Speed for a failed train. The Engineer mentioned better training to troubleshoot on the fly and more experience with PTC as possible corrective actions.

It's Tricky

This Engineer, dealing with two different PTC systems, describes unsuccessful attempts to initialize and the aftermath of departing without PTC.

■ *Prior to departure, I attempted to initialize Positive Train Control (PTC). Log on was successful for Carrier A but unsuccessful for the Carrier B initialization. I was instructed to leave the station and to attempt to log on at the first station stop. I was unsuccessful with the initialization at the first station stop. I notified my Conductor of the situation and asked him to contact the Dispatcher about the situation. I then operated the train at regular track speed of X MPH [11 MPH overspeed], but I forgot about the rule that states if PTC fails to initialize you must operate at Y MPH.*

Time out of Mind

This Engineer experienced a PTC failure en route and details how losing focus caused an overspeed event.

■ *Our Engine experienced a PTC unusual condition departing Station X, and we were able to re-test at the first station stop of Station Y. Shortly after leaving Station Z, we experienced a PTC failure, electrically cut out the apparatus, and proceeded per operating rules not exceeding X MPH. Approximately 90 minutes later, I briefly lost focus and the train speed drifted up to Y MPH [16 MPH overspeed]. The overspeed condition between X MPH and Y MPH lasted approximately 30 seconds. Immediately upon noticing this, I applied the brakes and got down to normal speed. This was a preventable error on my behalf. Lesson learned!*

C³RS Expert Analyst's Callback Summary:

The reporter, an Engineer, stated there was an employee in the cab with the Engineer doing a re-familiarization ride. When the Positive Train Control (PTC) failed enroute, the Engineer and the employee began to discuss what rules had to be followed and at what speeds to operate the train. The employee then sometime later asked the Engineer about a few upcoming station stops. When the Engineer answered the questions, they looked down and realized they were operating overspeed. The Engineer also stated the need to concentrate on the task at hand instead of allowing a conversation in the cab to be a distraction.

Get Back!

This Engineer shares how not going back to the bulletins for review led to an overspeed event.

■ *I was operating the Train out of Station X….When departing, I noticed on the Cab Signal Aspect Display Unit (ADU) that the Positive Train Control (PTC) did not appear active, which can sometimes occur when a unit comes out of the shop and misses a transponder. We proceeded out of Station X thinking when the engine goes over the next set of transponders that the system will wake up and go active. After passing several transponder sets within the first three miles, I brought the train to a stop and reported the condition to the Conductor and Dispatcher.*

I recycled the PTC breaker on the electrical panel and performed a PTC self-test. The test passed without issue, and all lights on the ADU were functional during the test and were not burned out. I reported to the Dispatcher we were on the move again, and we would see what happened at the next set of transponders. At the next set of transponders the system still did not respond, so I called the Dispatcher back to notify him that the system was not active and not enforcing any speed changes, but was not causing any issues that would require an immediate stop and cutting out of the system.

We continued to Station Y with the system cut in. I told the Conductor upon arrival at Station Y, I would cut out the system as there may be some sort of damage to the system causing the condition. Upon arrival at Station Y, I cut out the PTC and notified the Conductor. We departed Station Y and operated at track and signal speed limits for the line until reaching Foreign Carrier Territory where a separate PTC system would take over enforcement. It was my understanding of PTC rules that I was to operate according to track and signal speeds when a PTC failure occurred, which I did. This has been unchanged on our Carrier, while other railroads changed their rules every week which became confusing for a period of time having to run on several different railroads. We had no further PTC issues for the remainder of the trip and upon arrival at Station Z, an Engineer change occurred.

After disembarking at Station Z, I went back through my Track Bulletins to see if there had been any modifications to the PTC rules on our Carrier Bulletins. That is when I discovered they had changed the operating conditions on PTC failures and restricted the maximum speed to X MPH when a failure occurs, or [the] system is cut out. Operating between Station Y and Station A, between Control Point (CP) X and CP Y we operated at track speed which goes from Y MPH to Z MPH to A MPH [21 MPH overspeed], with a B MPH [11 MPH overspeed] curve inside of the A MPH section, thus exceeding the rule based speed that was implemented into the PTC rules. In the interest of time and to minimize the delay as we were already running late due to the engine change in Station X, I did my best to not delay the train any further and operated under the last revision of the rule that I was aware of. Had I taken the time to dig the bulletins out of my grip and reviewed the applicable rules that had changed, I would have discovered the newly imposed restrictions.

To see other records related to PTC and other close call events that are submitted to C³RS, visit the C³RS website at https://c3rs.arc.nasa.gov and click on the Confidential Close Call Reporting System Online Database under the Online Resources tab.

Did You Know?

If you submit a C³RS report, a NASA C³RS Expert Analyst may call you if you do not include enough information or to better understand the safety issues you are sharing. It is very important that you return our call within 3 days so that your identification (ID) strip (sent by the U.S. Mail) can be returned to you quickly.

The more information you include in your report, the faster the ID strip can be returned to you!

Report Intake By Craft January through March 2022	
Transportation	634
Engineering	24
Mechanical	18

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Monthly Report Intake Previous 3 Months	
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