



Inside **THE** RAIL

From NASA's Confidential Close Call Reporting System



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A Positive Update: POSITIVE TRAIN CONTROL

Since the first railroads of North America appeared in the mid-19th century, safety innovations have come a long way to protect railroad workers, passengers, and others. The invention of the modern railroad coupler that replaced the dangerous link and pin style couplers, the implementation of Automatic Block Signals & Centralized Train Control, and the use of End of Train devices are all important examples of the progress railroads have made towards improving safety. This progress continued into the 21st Century with the rail industry's most dynamic and ambitious safety initiative: Positive Train Control (PTC). Mandated by Congress in the 2008 Rail Safety Improvement Act, railroads across the country developed and applied multiple systems with the same goal: prevent train-to-train collisions, over-speed derailments, incursions into work zones, and movements through switches lined incorrectly.

While the task has been formidable, railroad employees of all types have worked collaboratively to help develop PTC systems like ACSES, I-ETMS, ITCS, and many others. While there is always room for progress, PTC has already shown its importance to modern railroading. C³RS continues to receive close call events in which PTC has helped crews maintain safe operations and, in particular, prevented over-speed events. Below is only a small sample of the positive records submitted to C³RS since the beginning of 2021.

Trouble with the Curve

An Engineer exceeded maximum authorized speed approaching a curve, resulting in a Positive Train Control penalty brake application.

■ *I approached an X MPH Timetable curve at the speed of Y MPH [10 MPH overspeed]. I was thinking that I was on a different speed train, but realized my mistake when Positive Train Control alerted me and initiated a penalty application of the brakes. I have a mixed schedule of trains and lost situational awareness.*

C³RS Expert Analyst's Callback Summary:

The reporter, an Engineer, stated that they reviewed the required speeds for the train they were operating that day prior to departure. The Engineer reiterated that they were used to operating higher speed trains and forgot about the speed change at the curve. Positive Train Control worked as intended, administered a penalty brake application and brought the train to stop in the restriction. The Engineer has made a separate speedsheets to reference when on different equipment to hopefully alleviate this from happening in the future.

What a Relief

An Engineer exceeded maximum authorized speed after not operating at a reduced speed due to equipment-based speed restrictions, resulting in a PTC penalty brake application.

■ *I was called to re-crew a Train. The Train was set for reduced speeds. I had not run reduced speeds in a few years. I was traveling east at the Interlocking on the Track. I was distracted and I entered an X MPH speed restriction at Y MPH [10 MPH overspeed].*

C³RS Expert Analyst's Callback Summary:

The reporter, an Engineer, explained there were certain cars in the train that required running at a reduced speed. A considerable amount of time passed since the reporter ran a train at the reduced speed. The reporter stated they had paperwork out to look up the reduced speed requirements. The train also operated on two territories, so the crew was issued two sets of Track Bulletins and a Movement Permit. It was the first day of the Temporary Speed Restriction and the Engineer was looking through the paperwork, rather than looking ahead. Positive Train Control issued a warning and put the train into a penalty brake application. The

inbound Engineer did not tell the reporter that the train was restricted, so the Engineer had to worry about looking up the reduced speeds. The reporter also felt time pressure from the train being late into the station. The reporter concluded that having a better Job Safety Briefing before getting on the train would have been beneficial.

Helping to Remember

An Engineer received a PTC administered penalty brake application due to accelerating over restricted speed, while departing a station.

■ *My Train left Station X, and normally we go north on Track X. Today we had to go Track Y out of the Interlocking due to signal issues on Track X. As we were arriving at our first station stop, Station Y, we had an Informational Bulletin, but also a Restricting signal entering Station Y, requiring us to go Restricted Speed. Once we made the station stop and received two buzzes to depart, I got distracted looking at a Flagman at the end of platform, who was talking to a worker. Also, I was looking out for men and equipment and quickly referring to my Track Bulletins to ensure we had no Working Limits. I also noticed a Clear signal ahead and forgot I was to be governed under Restricted Speed. Positive Train Control put me into a penalty brake application.*

In Case of a Distraction

An Engineer received a PTC penalty brake application for exceeding restricted speed.

■ *My Train had a departure from Station X to Station Y.. There is an X MPH slow order on Track X from Milepost (MP) X - MP Y. Upon leaving our station stop at Station Z, I was reminded of an X MPH Speed Restriction ahead. I approached the X MPH and was at X MPH at the beginning of the restriction at MP X. Upon departing Station A, while still in the X MPH restriction, I glanced down at the schedule in front of me to check the time out of the next station, Station B. Upon looking up, I was in throttle eight and running Y MPH [3 MPH overspeed]. Positive Train Control (PTC) started beeping at me, and I immediately set the brakes to slow back down to X MPH. I believe I got up to Z MPH [6 MPH overspeed] and then the train went into a penalty application. I was stopped by PTC. I reset the brakes to clear the penalty, and we were on our way.*

Working as Intended

An Engineer reported the train received a Positive Train Control penalty brake application due to overspeed approaching a scheduled PTC outage.

■ *While traveling from the Station, I was late putting brakes on to slow down for a Positive Train Control (PTC) construction zone, which was in effect from Milepost (MP) X to MP Y. Construction zones are set up for PTC maintenance. There were no track conditions or people working in the area. By rule, trains must operate at Maximum Authorized Speed (MAS) not exceeding X MPH while inside construction zone limits. I approached the zone at a higher speed and was issued a penalty by the PTC system, recovered from penalty, and proceeded at the correct speed.*

C³RS Expert Analyst's Callback Summary:

The reporter, an Engineer, explained the speed change may have been updated that day and was listed in the Bulletin Orders, but the reporter was not sure because it was their first trip back from time off. The train was roughly 6 MPH overspeed when PTC initiated a penalty application and reached approximately 11 MPH overspeed. The reporter recovered and proceeded through the construction zone in compliance. The reporter added they should have treated the construction zone like a Temporary Speed Restriction and applied braking to get the speed down. The Engineer noted they were relying on the PTC system to reduce the speed. Time pressure was not a contributing factor and the Engineer stated it was a misunderstanding and they should have slowed down.

To see additional records related to PTC and other close call events that are submitted to C³RS, visit the C³RS Online Resources website page and click on Confidential Close Call Reporting System Online Database.

<https://c3rs.arc.nasa.gov/resources.html>

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 September 2021	
Transportation	2,012
Engineering	87
Mechanical	48

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<https://c3rs.arc.nasa.gov>

Monthly Report Intake Previous 3 Months	
July	224
August	294
September	306