

4/14/2023

FOR YOUR INFORMATION

FYI 2023:3/2-2

27805, 26620, 27412, 27873

To: FRA-RRS

Info: FRA-RCC, PRT, AAR, APTA, ARASA, ASLRRRA, ATDA, BLET, BMWED, BRS, IAMAW, IBB, IBEW, IBT, NRC, NTSB, NYA, SLSI, SMART, TCU, TWU, VOLPE

From: Becky L. Hooley, Director
NASA Confidential Close Call Reporting System

Re: Safety Concerns Related to Positive Train Control

We recently received C³RS reports describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up.

Summary: C³RS is issuing FYI 2023:3/2-2 to inform the rail industry of recent close call events and safety concerns that were voluntarily reported involving Positive Train Control (PTC) in relationship to 49 CFR § 236.1006 Equipping Locomotives Operating in PTC Territory, (d) Onboard PTC Apparatus; 49 CFR § 236.1029 PTC System Use and Failures, (b) En Route Failures. In the following reports, rail employees reported events in which they were unaware of a PTC transponder failure citing the mounting position of the PTC onboard display and the lack of distinct auditory tones that allow one to differentiate between a PTC failure and a normal-operation speed tone without taking eyes off the track ahead. The attached reports also suggest confusion over maximum authorized speed when PTC fails enroute and refer to the lack of standardization of required operating speeds when PTC malfunctions. We feel you should be aware of the following de-identified reports:

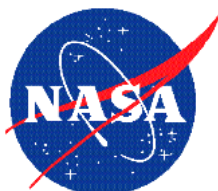
(ACN 27805) An Engineer reported safety concerns with the location of the Positive Train Control Aspect Display Unit in some types of equipment and different operating rules for Foreign Carrier railroads, which are resulting in overspeed events when Positive Train Control misses a transponder.

(ACN 26620) An Engineer exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute on Foreign Carrier Territory. Immediately after realization, the Engineer returned to compliance.

(ACN 27412) An Engineer exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute.

(ACN 27873) An Engineer may have exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Becky Hooley at (408) 541-2854 or email at Becky.L.Hooley@nasa.gov



Confidential Close Call Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189



ACN 27805

DATE / TIME

Date of Occurrence	2023-02
Local Time Of Day	0601 - 1200

ENVIRONMENT

Weather	Clear
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TRAIN / EQUIPMENT A

Operation Type	Passenger / Commuter
Train / Equipment Location	Main Track
Methods Of Operation	Automatic Cab Signals
Train Activity at Time of Event	Enroute

COMPONENT 1

Mechanical Component	PTC
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COMPONENT 2

Signal Component	PTC
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PERSON 1

Accession Number	27805
Function	Engineer

EVENTS

Anomaly	Mechanical - Less Severe
Anomaly	Procedural Deviation - Operations Policy
Anomaly	Signal Events - On Board Control System
Anomaly	Speed Deviation - Maximum Authorized Speed
Anomaly	Safety Concern
Detected by Person	Train Crew
General Result	No Action Taken

NARRATIVE 1

I was running [the] Train between Station X and Station Y. Track speed is X MPH. The speedometer on the cab car was off by 3-5 MPH, so Positive Train Control (PTC) kept beeping for overspeed when the speedometer indicated I was doing 2 or 3 MPH under the Maximum Authorized Speed (MAS). The PTC Aspect Display Unit (ADU) on these cab cars are mounted directly above the Engineer's head and is not visible unless I take my eyes off the track ahead and look overhead. The speedometer is up and to the right. PTC beeps so much that I have become adept at acknowledging without taking my eyes off the track ahead; therefore, I generally don't actually look at the ADU.

At some point between Station X and Station Y, I had a missed transponder. We have a Special Instruction requiring us to reduce our speed to Y MPH when the [ADU] displays double dashes. I didn't notice the missed transponder until I got to Station Z when I was expecting it to beep for the speed drop, and it didn't. It then picked up again at the next transponder set. Thinking back, I acknowledged the PTC around Milepost (MP) X, but I assumed it was because of the issue with the speedometer, so I reduced speed and acknowledged without ever looking at the ADU. I continued to operate close to MAS, as I do daily.

My recommendation is they eliminate this Special Instruction. The Foreign Carrier PTC Special Instructions make a lot more sense and are easier to follow. Right now, my attention is being divided between what's going on inside the cab and what's going on ahead. The setup of the cab cars and some of our Locomotives where the PTC ADU is is nowhere near where I'm looking while operating the train (nor is it near the

speedometer) [and] makes this scenario all too common. This Y MPH requirement for a single missed transponder is probably the rule I violate the most because I'm more concerned with the track ahead and the actual track speed.

Sometimes we get a double dash (missed transponder) where there is an expected speed change, and I don't notice. The thing beeps too much, missed transponders are too common, and I'm finding this rule impossible to follow. It's causing distress and mental distraction without enhancing safety.

CALLBACK 1

The reporter, an Engineer, stated the Positive Train Control (PTC) rules on Foreign Carrier Territory are different, and the speeds associated with malfunctioning PTC are 20 MPH different. The Engineer believes Maximum Authorized Speed when PTC fails, or malfunctions should be the same across all railroads to alleviate any confusion. The Engineer also mentioned the location of the PTC system in the operating cab of some types of equipment is well outside the sight line of the Engineer. When the PTC drops out, it only makes the same audible alert as it would for any speed change. The Engineer hears the audible sound and acknowledges it without looking at the PTC system. Then the Engineer realizes later that PTC malfunctioned or dropped out and the train is operating overspeed. The Engineer believes the PTC system should make a different audible alert when the system drops out to let the Engineer know it is not working properly.

SYNOPSIS

An Engineer reported safety concerns with the location of the Positive Train Control Aspect Display Unit in some types of equipment and different operating rules for Foreign Carrier railroads, which are resulting in overspeed events when Positive Train Control misses a transponder.

ACN 26620

DATE / TIME

Date of Occurrence 2022-09
Local Time Of Day 0001 - 0600

ENVIRONMENT

Weather Clear

TRAIN / EQUIPMENT A

Operation Type Passenger / Commuter
Operation Type Push / Pull - Passenger
Train / Equipment Location Main Track
Methods Of Operation Automatic Cab Signals
Train Activity at Time of Event Enroute

COMPONENT 1

Mechanical Component PTC

PERSON 1

Accession Number 26620
Function Engineer

EVENTS

Anomaly Mechanical - Less Severe
Anomaly Procedural Deviation - Operations Policy
Anomaly Signal Events - On Board Control System
Anomaly Speed Deviation - Maximum Authorized Speed
Anomaly Speed Deviation - At or Above 10MPH Deviation
Detected by Person Train Crew
General Result Slowing Of Train / Equipment
Transportation Result Returned To Compliance

NARRATIVE 1

When entering my Carrier Territory from Foreign Carrier Territory, I glanced up at my Positive Train Control (PTC) display and thought it had picked up from "Missing Temporary Speed Restriction," but it had not. Traveled at X-Y MPH [9-11 MPH overspeed] for a short distance before realizing my mistake and correcting my speed. My Carrier Special Instructions dictate Z MPH Maximum Authorized Speed with missing Temporary Speed Restriction or missing transponder displayed. Foreign Carrier is A MPH in cab signal territory.

SYNOPSIS

An Engineer exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute on Foreign Carrier Territory. Immediately after realization, the Engineer returned to compliance.

ACN 27412

DATE / TIME

Date of Occurrence 2022-12
Local Time Of Day 1801 - 2400

ENVIRONMENT

Weather Clear

TRAIN / EQUIPMENT A

Operation Type Passenger / Commuter
Operation Type Push / Pull - Passenger
Train / Equipment Location Main Track
Methods Of Operation Automatic Cab Signals
Train Activity at Time of Event Enroute

COMPONENT 1

Mechanical Component PTC

PERSON 1

Accession Number 27412
Function Engineer

EVENTS

Anomaly Mechanical - Less Severe
Anomaly Procedural Deviation - Operations Policy
Anomaly Signal Events - On Board Control System
Anomaly Speed Deviation - Maximum Authorized Speed
Anomaly Speed Deviation - At or Above 10MPH Deviation
Detected by Person Train Crew
General Result Stopped Train / Equipment
Transportation Result Returned To Compliance

NARRATIVE 1

My train operated through a Positive Train Control (PTC) construction zone between Station X and Station Y. No issues there. I complied with the X MPH, Maximum Authorized Speed (MAS) required when operating through the construction zone. PTC woke up again and worked as expected. About two miles down the track, I noticed the Aspect Display Unit (ADU) was flashing between the permanent track speed and the missed transponder symbol. I had been doing the track speed of Y MPH [11 MPH overspeed] over those 2 miles when X MPH is required by Special Instruction when PTC flashes between the permanent track speed and the missed transponder symbol. I simply had not noticed it was flashing as I was paying attention to items outside of the cab in front of me (grade crossings and a station stop) and not staring at the ADU.

CALLBACK 1

The reporter, an Engineer, stated the Positive Train Control (PTC) beeped coming out of the construction zone. The Engineer assumed the beep indicated that PTC was active again, so the Engineer began to accelerate to track speed. However, when the Engineer looked at the PTC display, it was still flashing double dashes, and the Engineer realized the train was operating overspeed for the PTC malfunction. The Engineer immediately brought the train back to compliant speed and maintained X MPH until the malfunction cleared, then resumed track speed without issue. In the future, the Engineer will look at PTC to ensure the system is working properly when clearing construction zones and not assume when hearing the audible notification.

SYNOPSIS

An Engineer exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute.

ACN 27873

DATE / TIME

Date of Occurrence	2023-02
Local Time Of Day	0601 - 1200

ENVIRONMENT

Weather	Clear
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TRAIN / EQUIPMENT A

Operation Type	Passenger / Commuter
Operation Type	Pulling
Train / Equipment Location	Main Track
Methods Of Operation	Centralized Traffic Control
Methods Of Operation	Automatic Cab Signals
Train Activity at Time of Event	Enroute

COMPONENT 1

Signal Component	PTC
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COMPONENT 2

Mechanical Component	PTC
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PERSON 1

Accession Number	27873
Function	Engineer

EVENTS

Anomaly	Mechanical - Less Severe
Anomaly	Procedural Deviation - Operations Policy
Anomaly	Signal Events - On Board Control System
Anomaly	Speed Deviation - Maximum Authorized Speed
Anomaly	Speed Deviation - At or Above 10MPH Deviation
Detected by Person	Train Crew
General Result	No Action Taken

NARRATIVE 1

While enroute and running train from originating terminal to my final destination, I took note that the locomotive's Positive Train Control (PTC) system had been occasionally alternating between the normal and fault modes since departure. In the fault mode, the Aspect Display Unit (ADU) for the PTC portion shows either a track speed alternating with a double dash or continuous double dashes. In either case, the train speed is capped to a maximum of X MPH. In the normal mode, train speed is the Maximum Authorized Speed published for any given route segment. I may not have been paying close attention to the display, but at one point while running, I heard a beep from the display with the message, "transponder not read at Milepost (MP) X." This indicates a PTC fault mode, and I thought I remembered receiving a similar message earlier at a different milepost location but could not recall. There is no beep if the fault mode self-clears, which it often does, and I may then resume normal mode speeds. If, in fact, I had been in fault mode at an earlier eight-mile-long track segment location while running, I would have been significantly overspeed with the train by about 20 MPH. I realized that I could not remember what mode the PTC system was in at that earlier location and that it is possible I may well have been speeding while in that segment. I also neglected to notify the Train Dispatcher of the fault condition segments, which is required. I think I could have prevented this situation by

paying closer attention to the PTC mode and setting up some vertical paperwork on the desktop as a reminder to myself if in a PTC mode other than normal and by notifying the Train Dispatcher as soon as possible.

CALLBACK 1

The reporter, an Engineer, stated the Positive Train Control (PTC) system makes an audible alert when it drops out; however, the alert is the same alert coming into a restriction when the system is working properly. The Engineer is operating the train and blowing the whistle and sometimes does not notice the PTC has dropped out and is reading double dashes instead of the target speed. The PTC also only makes the same audible alert when it comes back in, again one audible alert, the same noise as when it is working as intended. The Engineer said you cannot stay fixated on the PTC Aspect Display Unit (ADU) the whole time while running the train. The Engineer believes the PTC system should make a series of alerts when it drops out or comes back to ensure the Engineer knows that the PTC system is working or not working. The Engineer is still unsure if there was an overspeed event since there is no way to tell when the PTC actually dropped out.

SYNOPSIS

An Engineer may have exceeded Maximum Authorized Speed after Positive Train Control malfunctioned enroute.