

display to show prompting to the train crew whenever a system fault related to braking prediction calculation exits. As this joint RFA involves requests for FRA's approval of the proposed material modifications to FRA-certified positive train control (PTC) systems, FRA is publishing this notice and inviting public comment on railroads' joint RFA to their PTCSPs.

**DATES:** FRA will consider comments received by May 1, 2023. FRA may consider comments received after that date to the extent practicable and without delaying implementation of valuable or necessary modifications to PTC systems.

**ADDRESSES:**

*Comments:* Comments may be submitted by going to <https://www.regulations.gov> and following the online instructions for submitting comments.

*Instructions:* All submissions must include the agency name and the applicable docket number. The relevant PTC docket numbers for the host railroads that filed a joint RFA to their PTCSPs are cited above and in the Supplementary Information section of this notice. For convenience, all active PTC dockets are hyperlinked on FRA's website at <https://railroads.dot.gov/research-development/program-areas/train-control/ptc/railroads-ptc-dockets>. All comments received will be posted without change to <https://www.regulations.gov>; this includes any personal information.

**FOR FURTHER INFORMATION CONTACT:**

Gabe Neal, Staff Director, Signal, Train Control, and Crossings Division, telephone: 816-516-7168, email: [Gabe.Neal@dot.gov](mailto:Gabe.Neal@dot.gov).

**SUPPLEMENTARY INFORMATION:** In general, Title 49 United States Code (U.S.C.) Section 20157(h) requires FRA to certify that a host railroad's PTC system complies with Title 49 Code of Federal Regulations (CFR) part 236, subpart I, before the technology may be operated in revenue service. Before making certain changes to an FRA-certified PTC system or the associated FRA-approved PTCSP, a host railroad must submit, and obtain FRA's approval of, an RFA to its PTCSP under 49 CFR 236.1021.

Under 49 CFR 236.1021(e), FRA's regulations provide that FRA will publish a notice in the **Federal Register** and invite public comment in accordance with 49 CFR part 211, if an RFA includes a request for approval of a material modification of a signal and train control system. Accordingly, this notice informs the public that the twenty host railroads' recent, joint RFA to their PTCSPs is available in their

respective public PTC dockets, and this notice provides an opportunity for public comment.

On March 22, 2023, the following twenty host railroads jointly submitted an RFA to their respective PTCSPs for their Interoperable Electronic Train Management Systems (I-ETMS): Alaska Railroad; The Belt Railway Company of Chicago; BNSF Railway; Caltrain; Canadian National Railway; Canadian Pacific Railway; Consolidated Rail Corporation; CSX Transportation, Inc.; Kansas City Southern Railway; Kansas City Terminal Railway; National Railroad Passenger Corporation (Amtrak); New Mexico Rail Runner Express; Norfolk Southern Railway; North County Transit District; Northeast Illinois Regional Commuter Railroad Corporation (Metra); Northern Indiana Commuter Transportation District; South Florida Regional Transportation Authority; Southern California Regional Rail Authority (Metrolink); Terminal Railroad Association of St. Louis; and Union Pacific Railroad. Their joint RFA is available in Docket Numbers FRA-2010-0028, -0029, -0039, -0042, -0043, -0045, -0048, -0049, -0051, -0054, -0056, -0057, -0058, -0059, -0060, -0061, -0062, -0064, -0065, and -0070. Interested parties are invited to comment on this RFA by submitting written comments or data. During FRA's review of these railroads' joint RFA, FRA will consider any comments or data submitted within the timeline specified in this notice and to the extent practicable, without delaying implementation of valuable or necessary modifications to PTC systems. See 49 CFR 236.1021; see also 49 CFR 236.1011(e). Under 49 CFR 236.1021, FRA maintains the authority to approve, approve with conditions, or deny these railroads' joint RFA to their PTCSPs at FRA's sole discretion.

**Privacy Act Notice**

In accordance with 49 CFR 211.3, FRA solicits comments from the public to better inform its decisions. DOT posts these comments, without edit, including any personal information the commenter provides, to <https://www.regulations.gov>, as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at <https://www.transportation.gov/privacy>. See <https://www.regulations.gov/privacy-notice> for the privacy notice of [regulations.gov](https://www.regulations.gov). To facilitate comment tracking, we encourage commenters to provide their name, or the name of their organization; however, submission of names is completely optional. If you wish to provide comments containing proprietary or confidential information,

please contact FRA for alternate submission instructions.

Issued in Washington, DC.

**Carolyn R. Hayward-Williams,**

*Director, Office of Railroad Systems and Technology.*

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**BILLING CODE 4910-06-P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Railroad Administration**

**Safety Advisory 2023-02; Train Makeup and Operational Safety Concerns**

**AGENCY:** Federal Railroad Administration (FRA), U.S. Department of Transportation (DOT).

**ACTION:** Notice of Safety Advisory.

**SUMMARY:** FRA is issuing Safety Advisory 2023-02 to emphasize significant concerns related to train makeup and to ensure that all railroads exercise due diligence and recognize the importance of taking proactive measures to address potential safety risks related to operating train builds with varying configurations, load and empty placement, distributed power arrangements, and other factors. FRA has noticed a rising trend in recent incidents where train build and makeup have been identified as a potential cause or contributing factor. In response, FRA incorporates train simulations into its investigative process when it is suspected that high in-train forces may have contributed to train accidents. To address these concerns, FRA is providing recommendations for freight railroads to improve the safety of their train build processes and practices.

**FOR FURTHER INFORMATION CONTACT:**

Christian Holt, Staff Director, Operating Practices Division, Office of Railroad Safety, FRA, 1200 New Jersey Avenue SE, Washington, DC 20590, telephone (202) 366-0978.

**SUPPLEMENTARY INFORMATION:**

**Significant Incidents**

On March 4, 2023, in Springfield, Ohio, a Norfolk Southern Railway (NS) 210-car mixed freight train totaling 17,966 trailing tons with Distributed Power Units (DPU) experienced a derailment involving 28 cars, including 21 empty and 7 loaded cars. The train had 82 cars equipped with end-of-car cushioning devices, and 18 of those derailed. The locomotives were arranged in a 3x2x0 configuration,<sup>1</sup> with

<sup>1</sup> 3x2x0 represents 3 headend locomotives, 2 mid DPU's, 0 rear DPU's.

one headend locomotive offline. The train was traveling on an ascending 0.6% grade with a heavier part on a 0.7% downhill grade. The weight was mostly concentrated at the head and rear ends of the train. During the accident, dynamic braking was applied only to the headend locomotive consist, while the DPUs were idle, making it function like a conventional train. The derailment happened at the sag between ascending and descending grades, with short, empty rail cars designed to ship coiled steel being the first to derail. Buff forces peaked at the downhill portion of the train ran-in, causing the derailment of cars 70–72 and the subsequent pile-up. The train was classified as a Key Train,<sup>2</sup> with 28 loaded hazardous materials (hazmat) cars distributed throughout. No hazmat cars derailed.

On September 19, 2022, in Albers, Illinois, a NS train derailment occurred involving a 131-car mixed freight train (41 empty and 90 loaded) with a DPU and totaling 11,392 trailing tons. The first derailed car was empty and 27 cars derailed in total. Fifty-six cars were equipped with end-of-car cushioning devices. The locomotives were arranged in a 3x0x2 configuration, and Energy Management System (EMS) was active during the incident. The derailment occurred as the train traversed a slight descending grade and a 2-degree curve. Among the train's cars, 21 were carrying hazmat. Two of these hazmat cars derailed, and their contents were released. The assigned cause for the accident was excessive lateral drawbar force on the curve due to the train's makeup.

On September 5, 2022, in Hampton, Iowa, a Union Pacific Railroad Company (UP) 165-car mixed freight train (34 empty and 131 loaded) with a total trailing weight of 18,479 tons experienced a derailment involving 44 cars. The train had 26 cars equipped with end-of-car cushioning devices and a 2x0x1 locomotive configuration. The head end of the train was ascending a 1% grade, while the rear end was descending a 1% grade during the incident. The derailment took place at the sag between the ascending and descending grades, with much of the train's weight concentrated at the head

and rear ends. The train was a Key Train, carrying 26 loaded hazmat cars, of which 14 derailed and 5 released their contents. At the time of the derailment, EMS technology was operating the train. The assigned cause of the incident was excessive buffing or slack action due to train makeup.

On May 16, 2022, in Gravette, Arkansas, a Kansas City Southern Railway DPU train with a total of 125 cars (one empty and 124 loaded) with a total trailing weight of 17,113 tons experienced a derailment, which involved one car. The locomotive configuration was 2x0x3. The incident occurred while the train was moving uphill and negotiating a curve, resulting in the derailment of the single empty car on the high side of the curve. The root cause of the derailment was identified as improper train makeup.

On February 17, 2022, in Rupert, Idaho, a UP 195-car mixed freight, DPU train derailed 4 cars that consisted of 106 empty and 89 loaded cars with 14,017 trailing tons. The first car to derail was empty. The locomotives were configured as 3x1x1. The train was in the process of stopping due to a hot box detector warning. It was using dynamic braking on the head and mid locomotive consists while idling down on the rear consist as it traveled down a descending grade. The train contained five HazMat cars, but none of them derailed. Nearby residents were evacuated as a precautionary measure. The incident was attributed to improper train makeup.

On May 16, 2021, in Sibley, Iowa, a UP 159-car mixed freight train (43 empty and 116 loaded), weighing a total of 16,545 tons, with a 2x1x0 DPU configuration experienced a derailment, resulting in 47 derailed cars. The first car to derail was empty and equipped with an end-of-car cushioning device, as were 12 other derailed cars. At the time of the incident, the train navigated a grade, with the front section ascending and the rear section descending a grade steeper than 1%. Dynamic braking was used before the derailment but was switched to idle shortly before the accident. The derailment took place in a curve located in a sag between the ascending and descending grades. This Key Train contained 26 loaded hazmat cars, of which 14 derailed and 5 released their contents. As a result, the nearby town was evacuated for three days. The cause of the derailment was determined to be excessive buffing or slack action due to the train's makeup.

The analysis of the recent train accidents reveals several common characteristics and patterns:

1. Train Length: Each of the accident trains had 125 or more cars.

2. Distributed Power Units (DPUs): The fact that all accident trains featured DPUs underscores the importance of correctly utilizing and managing DPUs to enhance train handling and minimize the likelihood of accidents. While DPUs can contribute to improved train control, they should not be considered a replacement for proper train car placement and makeup.

3. Trailing Tons: All accident trains far exceeded 4,000 trailing tons, which is the maximum weight threshold established by the AAR's 1992 *Train Make-up Manual*, for considering train makeup for mixed merchandise trains with a grade less than 2.0% and maximum track curvature less than 8 degrees.

4. First Car Derailed: In each accident, the first car to derail was an empty car.

5. Train Type: Five out of the six accidents involved mixed freight trains, which typically require more complex train makeup considerations.

6. Hazmat Cars: Five out of the six accident trains contained hazmat cars, highlighting the potential risks associated with transporting hazardous materials in long, complex consists.

7. Derailed Hazmat Cars: In three of the accidents, hazmat cars were derailed, increasing the risk of hazardous material release and environmental damage.

8. Hazmat Release: Three of the accidents resulted in the release of hazardous materials, posing a threat to public safety and the environment.

9. Evacuations: Two of the accidents led to the evacuation of local populations due to the release of hazardous materials.

10. Key Trains: Three of the six accident trains were classified as Key Trains, which are trains with a higher level of potential risk due to the nature of the cargo they carry or their operational characteristics.

Technologies such as DPUs, energy management systems, and dynamic braking can be used in conjunction with proper train car placement and makeup. While these technologies can improve train handling and fuel efficiency, they cannot replace the need for correct car placement and assembly. Railroads must prioritize proper train makeup to maintain safety, prevent accidents, and optimize train performance. Further, all operating employees must be properly trained in these technologies and the handling of complex trains to ensure safe operation and minimize human error.

<sup>2</sup> As defined by Association of American Railroads (AAR) Circular OT-55, available at <https://public.railinc.com/sites/default/files/documents/OT-55.pdf>, a "Key Train" is any train with: (1) One tank car load of Poison or Toxic Inhalation Hazard1 (PIH or TIH) (Hazard Zone A, B, C, or D), anhydrous ammonia (UN1005), or ammonia solutions (UN3318); (2) 20 car loads or intermodal portable tank loads of any combination of hazardous material; or (3) One or more car loads of Spent Nuclear Fuel (SNF), High Level Radioactive Waste (HLRW).

## Recommended Actions

To improve train safety and reduce the risk of accidents, FRA recommends the following best practices:

1. Review and update train makeup policies, procedures, and guidelines to ensure they are comprehensive, effective, and current.
2. Ensure that all personnel involved in train makeup decisions and operations receive appropriate training, guidance, and supervision to effectively execute train makeup policies, procedures, and guidelines to ensure safe operations.
3. Establish a system to regularly monitor and assess train makeup practices, with a focus on identifying and addressing potential safety risks.
4. Encourage open communication and collaboration among all stakeholders, including train crews, dispatchers, yardmasters, and maintenance personnel, to ensure a comprehensive understanding of train makeup factors and their potential impact on safety. Personnel should be encouraged and empowered to adhere to train makeup policies, procedures, and guidelines, even if it delays a train.
5. Develop and implement strategies to mitigate the risks associated with train build factors, such as the proper use of distributed power, train length limitations, and other operational train handling practices.
6. Enhance incident investigation procedures to specifically address train makeup factors and their potential contribution to the cause of the incident.

FRA encourages freight railroads to take actions consistent with the preceding recommendations. FRA may modify this Safety Advisory 2023–02, issue additional safety advisories, or take other appropriate action necessary to ensure the highest level of safety on the Nation's railroads, including pursuing other corrective measures under its rail safety authority.

Issued in Washington, DC.

**John Karl Alexy,**

*Associate Administrator for Railroad Safety  
Chief Safety Officer.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Railroad Administration

[Docket No. FRA–2010–0030]

### Massachusetts Bay Transportation Authority's Request To Amend Its Positive Train Control System

**AGENCY:** Federal Railroad Administration (FRA), Department of Transportation (DOT).

**ACTION:** Notice of availability and request for comments.

**SUMMARY:** This document provides the public with notice that, on March 23, 2023, the Massachusetts Bay Transportation Authority (MBTA) submitted a request for amendment (RFA) to its FRA-certified positive train control (PTC) system in order to support the reconfiguration of its underlying Automatic Train Control (ATC) system on its commuter rail network. On MBTA's South Side, the ATC System in the area is being reconfigured requiring the PTC system to be taken out of service during the reconfiguration as well as during the recommissioning of the ATC system and MBTA's Advanced Civil Speed Enforcement System II (ACES II). FRA is publishing this notice and inviting public comment on MBTA's RFA to its PTC system.

**DATES:** FRA will consider comments received by May 1, 2023. FRA may consider comments received after that date to the extent practicable and without delaying implementation of valuable or necessary modifications to a PTC system.

**ADDRESSES:** *Comments:* Comments may be submitted by going to <https://www.regulations.gov> and following the online instructions for submitting comments.

*Instructions:* All submissions must include the agency name and the applicable docket number. The relevant PTC docket number for this host railroad is Docket No. FRA–2010–0030. For convenience, all active PTC dockets are hyperlinked on FRA's website at <https://railroads.dot.gov/research-development/program-areas/train-control/ptc/railroads-ptc-dockets>. All comments received will be posted without change to <https://www.regulations.gov>; this includes any personal information.

**FOR FURTHER INFORMATION CONTACT:**

Gabe Neal, Staff Director, Signal, Train Control, and Crossings Division, telephone: 816–516–7168, email: [Gabe.Neal@dot.gov](mailto:Gabe.Neal@dot.gov).

**SUPPLEMENTARY INFORMATION:** In general, Title 49 United States Code (U.S.C.)

Section 20157(h) requires FRA to certify that a host railroad's PTC system complies with Title 49 Code of Federal Regulations (CFR) part 236, subpart I, before the technology may be operated in revenue service. Before making certain changes to an FRA-certified PTC system or the associated FRA-approved PTC Safety Plan (PTCSP), a host railroad must submit, and obtain FRA's approval of, an RFA to its PTC system or PTCSP under 49 CFR 236.1021.

Under 49 CFR 236.1021(e), FRA's regulations provide that FRA will publish a notice in the **Federal Register** and invite public comment in accordance with 49 CFR part 211, if an RFA includes a request for approval of a material modification or discontinuance of a signal and train control system. Accordingly, this notice informs the public that, on December 21, 2022, MBTA submitted an RFA to its ACSES II system, which seeks FRA's approval to temporarily discontinue its PTC system to install Construction Zone (CZ) Transponders on MBTA's Middleboro Main Line segment between May and June 2023. That RFA is available in Docket No. FRA–2010–0030.

Interested parties are invited to comment on MBTA's RFA to its PTC system by submitting written comments or data. During FRA's review of this railroad's RFA, FRA will consider any comments or data submitted within the timeline specified in this notice and to the extent practicable, without delaying implementation of valuable or necessary modifications to a PTC system. *See* 49 CFR 236.1021; *see also* 49 CFR 236.1011(e). Under 49 CFR 236.1021, FRA maintains the authority to approve, approve with conditions, or deny a railroad's RFA to its PTC system at FRA's sole discretion.

### Privacy Act Notice

In accordance with 49 CFR 211.3, FRA solicits comments from the public to better inform its decisions. DOT posts these comments, without edit, including any personal information the commenter provides, to <https://www.regulations.gov>, as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at <https://www.transportation.gov/privacy>. *See* <https://www.regulations.gov/privacy-notice> for the privacy notice of regulations.gov. To facilitate comment tracking, we encourage commenters to provide their name, or the name of their organization; however, submission of names is completely optional. If you wish to provide comments containing proprietary or confidential information,