U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

JAN 10 2017

Mr. Edward R. Hamberger
President and CEO
Association of American Railroads
425 3rd Street SW
Washington, DC 20024

Mr. Richard A White
Acting President and CEO
American Public Transportation Association
1300 I Street NW, Suite 1200 East
Washington, DC 20005

Ms. Linda Bauer Darr
President and Treasurer
American Short Line and Regional Railroad Association
50 F Street NW, Suite 7020
Washington, DC 20001

Re: Positive Train Control Interoperability Testing and Notification Guidance

Dear Mr. Hamberger, Mr.White, and Ms. Darr:

As you are aware, each Positive Train Control (PTC) system required by the Rail Safety Improvement Act of 2008, as amended by the Positive Train Control Enforcement and Implementation Act of 2015, must comply with those statutes, as codified at 49 U.S.C. § 20157, and the applicable regulations under Title 49 Code of Federal Regulations (CFR) Part 236, Subpart I, Positive Train Control Systems. To receive PTC System Certification, among other requirements, a railroad must show that its PTC system is interoperable with the movement of trains of other railroad carriers over the same lines. *See* 49 U.S.C. §§ 20157(a)(2)(A)(i), (i)(3).

FRA recently received questions regarding PTC system interoperability testing. Accordingly, FRA prepared the enclosed guidance. Please share this information with your member railroads that must interoperate with either host or tenant railroads.

If you have questions regarding certification, please contact Mr. David Blackmore, Staff Director, Positive Train Control Division, at (312) 835-3903 or David.Blackmore@dot.gov.

Sincerely,

Robert C. Lauby
Associate Administrator for Railroad Safety
Chief Safety Officer

Enclosure

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Positive Train Control Interoperability Testing and Notification Guidance

This document is intended to provide guidance to railroads on how to approach Positive Train Control (PTC) system interoperability testing.

Under the Rail Safety Improvement Act of 2008, as amended by the Positive Train Control Enforcement and Implementation Act of 2015, each host railroad's PTC Implementation Plan (PTCIP) must describe how the host's PTC system will provide for interoperability of the system with the movements of other railroad carriers' trains over its lines. *See* 49 U.S.C. § 20157(a)(2)(A)(i)(I). *See* also Title 49 Code of Federal Regulations (CFR) Section 236.1011(a)(3). Interoperability means the ability of a controlling locomotive to communicate with and respond to the PTC system in use on the line over which it is operating, including uninterrupted movements over property boundaries. *See* 49 U.S.C. § 20157(i)(3); 49 CFR § 236.1003. To receive PTC System Certification for its system, each host railroad must provide a complete description of the "as built" system in the PTC Safety Plan (PTCSP) with its associated safety case, specific procedures and test equipment necessary to ensure safe and proper implementation of its systems)and show that it has equipped its lines as provided in its approved PTCIP, including its interoperability plans. *See* 49 U.S.C. § 20157(h); 49 CFR §§ 236.1005(b)(1), 236.1015(d)(7).

To obtain the data necessary to support its PTCSP, FRA recommends that host railroads perform the following PTC system tests before any interoperability or boundary testing (including field testing):

- *Requirements Validation*: Through lab, vendor, and field testing, railroads should demonstrate that the installed PTC system works as designed, is highly reliable and available with a high level of supportability, and meets all statutory and regulatory requirements.

- *Hosted Service Acceptance Testing*: Validate any third party contractors (hosted service provider), if used, meets the railroad's and PTC system's contractual, functional, and technical requirements. The railroad contracting to use a third party contractor/hosted service provider should consider requiring the third party/hosted service provider to provide standard test cases and railroad-specific results to reduce the railroad's overall cost and preparation time and FRA's review time.

- *Dispatch System Integration Testing*: Validate functional and technical requirements for the dispatch system and its interface to the PTC Back Office Server. Each dispatch vendor and/or hosted service vendor, if used, should be able to provide testing assistance.

- *PTC Subdivision Readiness*: Validate the critical features of the PTC system's wayside interface units, PTC routes, and the PTC system's geographical information system.

- *Train Braking Tests*: Demonstrate that the onboard system's braking algorithm meets regulatory requirements by not violating an enforcement target on the steepest track grade of the railroad under worst-case conditions of speed and load. A railroad may be capable of referencing braking tests conducted by other railroads, but is generally expected to conduct at least some tests in the field. Railroads are encouraged to submit braking test results to Transportation Technology Center, Incorporated to support ongoing braking algorithm research and model development.

- *Locomotive Segment Integration Testing*: Conduct a thorough integration test for each class of PTC-equipped locomotive and an installation verification test for each PTC-equipped locomotive. Such testing should include verification of the following:

    - Onboard system integration with locomotive control systems (e.g., brakes, wheel tachometer, head of train device (HOTD), end of train device (EOTD), Locomotive Interface Gateway (LIG)).
    - All service and emergency brake applications.
    - All communications paths (primary and backup communications systems).
    - Global Positioning System operations.
    - Correct operation of the locomotive dead reckoning.

Each railroad must receive FRA approval for interoperability field testing under 49 CFR § 236.1035, *Field testing requirements*, under the following circumstances:

1. Before any interoperability field testing of an uncertified host PTC system with an uncertified tenant PTC system.

2. Before any interoperability field testing of a certified host PTC system with an uncertified tenant PTC system of the same PTC technology and the tenant has not previously received FRA provisional authority to operate the tenant PTC system.

3. Before any interoperability field testing of a certified host PTC system with a certified tenant PTC system of a different PTC technology.[1]

Note: Any tenant PTC interoperability testing request submitted under 49 CFR § 236.1035 on a host railroad will not be considered by FRA unless the host railroad concurs, in writing, with the tenant's testing proposal.

FRA approval under 49 CFR § 236.1035 to conduct interoperability testing is unnecessary if:

1. The railroads are both using the same PTC technology **and**

2. The host and tenant railroad are in written agreement with the testing to be conducted **and**

[1] For example, if the host railroad has a certified Interoperable Electronic Train Management System and the tenant railroad has a certified Advanced Civil Speed Enforcement System.

3. One of the following conditions exists:
    a) They both received system certification of their individual PTC systems **or**
    b) The host received system certification of their PTC system and the tenant received provisional authority to operate.

A tenant railroad may not conduct interoperability testing, regardless of the certification status of the tenant railroad's PTC system, on a host railroad without prior FRA notification and approval, if the host railroad's PTC system is not certified.

The testing railroad is expected to provide, in writing, to all potentially affected host or tenant railroads:

1. A complete description of the specific test procedures, including the measures that will be taken to protect trains and on-track equipment.

2. The date the proposed testing will begin.

3. The test locations.

4. The effect on the current method of operation the PTC system will or may have under test.

5. Additional testing conditions that the testing railroad believes may be necessary for the safety of train operations.

Prior to conducting testing, the testing railroad must receive written acknowledgement from the hosts and all other potentially affected tenant railroads of receipt of the testing railroads notification.

As 49 CFR § 236.1035 requires, a railroad requesting authority to conduct any field testing, must provide FRA "an analysis of the applicability of the requirements of subparts A through G of 49 CFR part 236 that will not apply during the proposed testing." In FRA's written response to any test request, FRA will explain whether it agrees or disagrees with the railroad's analysis and what requirements of subparts A through G, if any, FRA agrees do not apply for a particular PTC system. Relief from regulations other than from 49 CFR 236 subparts A through G must be requested under 49 CFR Part 211, Rules of Practice.

Consistent with 49 CFR § 236.1035(b), when approving any railroad's field testing request, FRA will reserve the right to terminate the railroad's authority to conduct the testing or modify the conditions of FRA's approval of the testing, without prior notice as it believes may be necessary for the safety of train operations.