

(e) The air pressure sensor contained in the end-of-train device must be tested by the processes and frequency identified in §229.27 or by manufacturer specifications approved under §232.307. The date and location of the test and the name or unique employee identifier of the person performing the test must be legibly displayed on a weather-resistant marking device affixed to the outside of the unit.

(f) Each manufacturer of telemetry transceiver equipment must either:

(1) Establish and communicate publicly to its customers a reasonable recommended calibration period; or

(2) Submit to FRA an annual report including:

(i) The total number of transceivers—itemized by model name, number, or type—sold to date;

(ii) The number of transceivers that have been reported as inoperative or otherwise malfunctioning or returned for servicing; and

(iii) The number of transceivers reported or returned for service with frequency modulation or transmit power outside of either manufacturer's specifications or FCC-approved specifications.

[66 FR 4193, Jan. 17, 2001, as amended at 66 FR 29502, May 31, 2001; 67 FR 17584, Apr. 10, 2002; 85 FR 80574, Dec. 11, 2020]

Subpart F—Introduction of New Brake System Technology

§ 232.501 Scope.

This subpart contains general requirements for introducing new brake system technologies. This subpart is intended to facilitate the introduction of new complete brake system technologies or major upgrades to existing systems which the current regulations do not adequately address (*i.e.*, electronic brake systems). This subpart is not intended for use in the introduction of a new brake component or material.

§ 232.503 Process to introduce new brake system technology.

(a) Pursuant to the procedures contained in §232.17, each railroad shall obtain special approval from the FRA Associate Administrator for Safety of a pre-revenue service acceptance testing

plan, developed pursuant to §232.505, for the new brake system technology, prior to implementing the plan.

(b) Each railroad shall complete a pre-revenue service demonstration of the new brake system technology in accordance with the approved plan, shall fulfill all of the other requirements prescribed in §232.505, and shall obtain special approval from the FRA Associate Administrator for Safety under the procedures of §232.17 prior to using such brake system technology in revenue service.

§ 232.505 Pre-revenue service acceptance testing plan.

(a) *General; submission of plan.* Except as provided in paragraph (f) of this section, before using a new brake system technology for the first time on its system the operating railroad or railroads shall submit a pre-revenue service acceptance testing plan containing the information required by paragraph (e) of this section and obtain the approval of the FRA Associate Administrator for Safety, under the procedures specified in §232.17.

(b) *Compliance with plan.* After receiving FRA approval of the pre-revenue service testing plan and before introducing the new brake system technology into revenue service, the operating railroad or railroads shall:

(1) Adopt and comply with such FRA-approved plan, including fully executing the tests required by the plan;

(2) Report to the FRA Associate Administrator for Safety the results of the pre-revenue service acceptance tests;

(3) Correct any safety deficiencies identified by FRA in the design of the equipment or in the inspection, testing, and maintenance procedures or, if safety deficiencies cannot be corrected by design or procedural changes, agree to comply with any operational limitations that may be imposed by the Associate Administrator for Safety on the revenue service operation of the equipment; and

(4) Obtain FRA approval to place the new brake system technology in revenue service.

(c) *Compliance with limitations.* The operating railroad shall comply with

§ 232.601

49 CFR Ch. II (10–1–24 Edition)

each operational limitation, if any, imposed by the Associate Administrator for Safety.

(d) *Availability of plan.* The plan shall be made available to FRA for inspection and copying upon request.

(e) *Elements of plan.* The plan shall include all of the following elements:

(1) An identification of each waiver, if any, of FRA or other Federal safety regulations required for the tests or for revenue service operation of the equipment.

(2) A clear statement of the test objectives. One of the principal test objectives shall be to demonstrate that the equipment meets the safety design and performance requirements specified in this part when operated in the environment in which it is to be used.

(3) A planned schedule for conducting the tests.

(4) A description of the railroad property or facilities to be used to conduct the tests.

(5) A detailed description of how the tests are to be conducted. This description shall include:

(i) An identification of the equipment to be tested;

(ii) The method by which the equipment is to be tested;

(iii) The criteria to be used to evaluate the equipment's performance; and

(iv) The means by which the test results are to be reported to FRA.

(6) A description of any special instrumentation to be used during the tests.

(7) A description of the information or data to be obtained.

(8) A description of how the information or data obtained is to be analyzed or used.

(9) A description of any criteria to be used as safety limits during the testing.

(10) A description of the criteria to be used to measure or determine the success or failure of the tests. If acceptance is to be based on extrapolation of less than full level testing results, the analysis to be done to justify the validity of the extrapolation shall be described.

(11) A description of any special safety precautions to be observed during the testing.

(12) A written set of standard operating procedures to be used to ensure that the testing is done safely.

(13) Quality control procedures to ensure that the inspection, testing, and maintenance procedures are followed.

(14) Criteria to be used for the revenue service operation of the equipment.

(15) A description of all testing of the equipment that has previously been performed, if any.

(f) *Exception.* For brake system technologies that have previously been used in revenue service in the United States, the railroad shall test the equipment on its system, prior to placing it in revenue service, to ensure the compatibility of the equipment with the operating system (track, signals, etc.) of the railroad. A description of such testing shall be retained by the railroad and made available to FRA for inspection and copying upon request.

Subpart G—Electronically Controlled Pneumatic (ECP) Braking Systems

SOURCE: 73 FR 61553, Oct. 16, 2008, unless otherwise noted.

§ 232.601 Scope.

This subpart contains specific requirements applicable to freight trains and freight cars equipped with ECP brake systems. This subpart also contains specific exceptions from various requirements contained in this part for freight trains and freight cars equipped with ECP brake systems.

§ 232.602 Applicability.

This subpart applies to all railroads that operate a freight car or freight train governed by this part and equipped with an ECP brake system. Unless specifically excepted or modified in this section, all of the other requirements contained in this part are applicable to a freight car or freight train equipped with an ECP brake system.