(b) If an REC letter conforms to paragraph (a)(1) of this section, the Associate Administrator, at his or her sole discretion, may also issue a new Type Approval for the PTC system.

(c) In order to receive a Type Approval or PTC System Certification under paragraph (a) or (b) of this section, the PTC system must be shown to reliably execute the functionalities required by §§ 236.1005 and 236.1007 and otherwise conform to this subpart.

(d) Previous approval or recognition of a train control system, together with an established service history, may, at the request of the PTC railroad, and consistent with available safety data, be credited toward satisfaction of the safety case requirements set forth in this part for the PTCSP with respect to all functionalities and implementations contemplated by the approval or recognition.

(e) To the extent that the PTC system proposed for implementation under this subpart is different in significant detail from the system previously approved or recognized, the changes shall be fully analyzed in the PTCDP or PTCSP as would be the case absent prior approval or recognition.

(f) As used in this section—

(1) *Approved* refers to approval of a Product Safety Plan under subpart H of this part.

(2) *Recognized* refers to official action permitting a system to be implemented for control of train operations under an FRA order or waiver, after review of safety case documentation for the implementation.

(g) Upon receipt of an REC, FRA will consider all safety case information to the extent feasible and appropriate, given the specific facts before the agency. Nothing in this section limits reuse of any applicable safety case information by a party other than the party receiving:

(1) A prior approval or recognition referred to in this section; or

(2) A Type Approval or PTC System Certification under this subpart.

§ 236.1033 Communications and security requirements.

(a) All wireless communications between the office, wayside, and onboard components in a PTC system shall provide cryptographic message integrity and authentication.

(b) Cryptographic keys required under paragraph (a) of this section shall:

(1) Use an algorithm approved by the National Institute of Standards (NIST) or a similarly recognized and FRA approved standards body;

(2) Be distributed using manual or automated methods, or a combination of both; and

(3) Be revoked:

(i) If compromised by unauthorized disclosure of the cleartext key; or

(ii) When the key algorithm reaches its lifespan as defined by the standards body responsible for approval of the algorithm.

(c) The cleartext form of the cryptographic keys shall be protected from unauthorized disclosure, modification, or substitution, except during key entry when the cleartext keys and key components may be temporarily displayed to allow visual verification. When encrypted keys or key components are entered, the cryptographically protected cleartext key or key components shall not be displayed.

(d) Access to cleartext keys shall be protected by a tamper resistant mechanism.

(e) Each railroad electing to also provide cryptographic message confidentiality shall:

(1) Comply with the same requirements for message integrity and authentication under this section; and

(2) Only use keys meeting or exceeding the security strength required to protect the data as defined in the railroad's PTCSP and required under § 236.1013(a)(7).

(f) Each railroad, or its vendor or supplier, shall have a prioritized service restoration and mitigation plan for scheduled and unscheduled interruptions of service. This plan shall be included in the PTCDP or PTCSP as required by §§ 236.1013 or 236.1015, as applicable, and made available to FRA upon request, without undue delay, for restoration of communication services that support PTC system services.

(g) Each railroad may elect to impose more restrictive requirements than those in this section, consistent with

interoperability requirements specified in the PTCSP for the system.

§ 236.1035 Field testing requirements.

(a) Before any field testing of an uncertified PTC system, or a product of an uncertified PTC system, or any regression testing of a certified PTC system is conducted on the general rail system, the railroad requesting the testing must provide:

(1) A complete description of the PTC system;

(2) An operational concepts document;

(3) A complete description of the specific test procedures, including the measures that will be taken to protect trains and on-track equipment;

(4) An analysis of the applicability of the requirements of subparts A through G of this part to the PTC system that will not apply during testing;

(5) The date the proposed testing shall begin;

(6) The test locations; and

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

(b) FRA may impose additional testing conditions that it believes may be necessary for the safety of train operations.

(c) Relief from regulations other than from subparts A through G of this part that the railroad believes are necessary to support the field testing, must be requested in accordance with part 211 of this title.

§ 236.1037 Records retention.

(a) Each railroad with a PTC system required to be installed under this subpart shall maintain at a designated office on the railroad:

(1) A current copy of each FRA approved Type Approval, if any, PTCDP, and PTCSP that it holds;

(2) Adequate documentation to demonstrate that the PTCSP and PTCDP meet the safety requirements of this subpart, including the risk assessment;

(3) An Operations and Maintenance Manual, pursuant to § 236.1039; and

(4) Training and testing records pursuant to § 236.1043(b).

(b) Results of inspections and tests specified in the PTCSP and PTCDP must be recorded pursuant to § 236.110.

(c) Each contractor providing services relating to the testing, maintenance, or operation of a PTC system required to be installed under this subpart shall maintain at a designated office training records required under § 236.1039(b).

(d) After the PTC system is placed in service, the railroad shall maintain a database of all safety-relevant hazards as set forth in the PTCSP and PTCDP and those that had not been previously identified in either document. If the frequency of the safety-relevant hazards exceeds the threshold set forth in either of these documents, then the railroad shall:

(1) Report the inconsistency in writing by mail, facsimile, e-mail, or hand delivery to the Director, Office of Safety Assurance and Compliance, FRA, 1200 New Jersey Ave, SE, Mail Stop 25, Washington, DC 20590, within 15 days of discovery. Documents that are hand delivered must not be enclosed in an envelope;

(2) Take prompt countermeasures to reduce the frequency of each safety-relevant hazard to below the threshold set forth in the PTCSP and PTCDP; and

(3) Provide a final report when the inconsistency is resolved to the FRA Director, Office of Safety Assurance and Compliance, on the results of the analysis and countermeasures taken to reduce the frequency of the safety-relevant hazard(s) below the threshold set forth in the PTCSP and PTCDP.

§ 236.1039 Operations and Maintenance Manual.

(a) The railroad shall catalog and maintain all documents as specified in the PTCDP and PTCSP for the installation, maintenance, repair, modification, inspection, and testing of the PTC system and have them in one Operations and Maintenance Manual, readily available to persons required to perform such tasks and for inspection by FRA and FRA-certified state inspectors.

(b) Plans required for proper maintenance, repair, inspection, and testing of safety-critical PTC systems must be adequate in detail and must be made available for inspection by FRA and FRA-certified state inspectors where such PTC systems are deployed or