maintained. They must identify all software versions, revisions, and revision dates. Plans must be legible and correct.

(c) Hardware, software, and firmware revisions must be documented in the Operations and Maintenance Manual according to the railroad’s configuration management control plan and any additional configuration/revision control measures specified in the PTCDP and PTCSP.

(d) Safety-critical components, including spare equipment, must be positively identified, handled, replaced, and repaired in accordance with the procedures specified in the PTCDP and PTCSP.

(e) Each railroad shall designate in its Operations and Maintenance Manual an appropriate railroad officer responsible for issues relating to scheduled interruptions of service contemplated by §236.1029.

§236.1043 Task analysis and basic requirements.

(a) Training structure and delivery. As part of the program required by §236.1041, the employer shall, at a minimum:

1. Identify the specific goals of the training program with regard to the target population (craft, experience level, scope of work, etc.), task(s), and desired success rate;
2. Based on a formal task analysis, identify the installation, maintenance, repair, modification, inspection, testing, and operating tasks that must be performed on a railroad’s PTC systems. This includes the development of failure scenarios and the actions expected under such scenarios;
3. Develop written procedures for the performance of the tasks identified;
4. Identify the additional knowledge, skills, and abilities above those required for basic job performance necessary to perform each task;
5. Develop a training and evaluation curriculum that includes classroom, simulator, computer-based, hands-on, or other formally structured training designed to impart the knowledge, skills, and abilities identified as necessary to perform each task;
6. Prior to assignment of related tasks, require all persons mentioned in §236.1041(a) to successfully complete a training curriculum and pass an examination that covers the PTC system and appropriate rules and tasks for which they are responsible (however, such persons may perform such tasks under the direct onsite supervision of a qualified person prior to completing such training and passing the examination);
§ 236.1045 Training specific to office control personnel.

(a) Any person responsible for issuing or communicating mandatory directives in territory where PTC systems are or will be in use shall be trained in the following areas, as applicable:

1. Instructions concerning the interface between the computer-aided dispatching system and the train control system, with respect to the safe movement of trains and other on-track equipment;

2. Railroad operating rules applicable to the train control system, including provision for movement and protection of roadway workers, unequipped trains, trains with failed or cut-out train control onboard systems and other on-track equipment; and

3. Instructions concerning control of trains and other on-track equipment in case the train control system fails, including periodic practical exercises or simulations, and operational testing under part 217 of this chapter to ensure the continued capability of the personnel to provide for safe operations under the alternative method of operation.

(b) [Reserved]

§ 236.1047 Training specific to locomotive engineers and other operating personnel.

(a) Operating personnel. Training provided under this subpart for any locomotive engineer or other person who participates in the operation of a train in train control territory shall be in the PTCSP as well as the PTCSP. The following elements shall be addressed:

1. Familiarization with train control equipment onboard the locomotive and the functioning of that equipment as part of the system and in relation to other onboard systems under that person's control;

2. Any actions required of the on-board personnel to enable, or enter data to, the system, such as consist data, and the role of that function in the safe operation of the train;

3. Sequencing of interventions by the system, including pre-enforcement notification, enforcement notification, penalty application initiation and post-penalty application procedures;

4. Railroad operating rules and testing (part 217) applicable to the train control system, including provisions for movement and protection of any unequipped trains, or trains with failed or cut-out train control onboard systems and other on-track equipment;

5. Means to detect deviations from proper functioning of onboard train control equipment and instructions regarding the actions to be taken with respect to control of the train and notification of designated railroad personnel; and

6. Information needed to prevent unintentional interference with the proper functioning of onboard train control equipment.

(b) Locomotive engineer training. Training required under this subpart for a locomotive engineer, together with required records, shall be integrated into the program of training required by part 240 of this chapter.

(c) Full automatic operation. The following special requirements apply in the event a train control system is used to effect full automatic operation of the train:

1. The PTCSP shall identify all safety hazards to be mitigated by the locomotive engineer.