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DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Safety Advisory 2013-04]

Importance of Clear Safety Procedures for Temporary Removal from Service of Highway-Rail Grade Crossing Warning Systems and Wayside Signal Systems

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

ACTION: Notice of Safety Advisory.

SUMMARY: FRA is issuing this Safety Advisory 2013-04 to reemphasize the importance of clear and precise railroad safety procedures to ensure the safety of the traveling public and railroad employees when highway-rail grade crossing warning systems and wayside signal systems are temporarily removed from service for purposes of testing, inspection, maintenance, or repair. FRA previously made related recommendations to railroads regarding the importance of clear safety procedures to ensure the safety of highway-rail grade crossing warning systems and wayside signal systems in Safety Advisory 2002-01.

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SUPPLEMENTARY INFORMATION:

Background

Highway-rail grade crossing warning devices and wayside train signals are among the most important safety systems in the railroad industry for preventing train collisions and highway-rail grade crossing accidents. Despite the high degree of reliability of these systems, failures occasionally do occur. FRA regulations (Title 49 Code of Federal Regulations (CFR) parts 234 and 236) require that grade crossing warning devices and wayside signals operate on the "fail safe" or "closed circuit" principle, which causes a system to revert to its safest state in the event of a failure or malfunction of a vital component of the system. In practical terms, fail-safe operations mean the grade crossing warning devices will activate to stop traffic or a wayside signal will stop train movement in the event of a component failure. However, under certain circumstances, particularly where human error is involved, the fail-safe features can be deactivated or circumvented, creating the potential for an accident. FRA has found that serious highway-rail grade crossing accidents and false proceed signal failures have occurred due to human error.

FRA acknowledges that the railroad industry has long recognized the importance of having well-defined safety procedures in place to ensure safety when highway-rail grade crossing warning systems and wayside signal systems have been temporarily removed from service for purposes of testing, inspection, maintenance, or repair. Most railroads have had such safety procedures in place for many years. In 2002, FRA published a safety advisory about the importance of having clear safety procedures for

the temporary removal of highway-rail grade crossing systems and wayside signal systems from service. Safety Advisory 2002-01[1] was issued in response to a series of grade crossing accidents that also involved the failure of railroad personnel to follow appropriate safety procedures for the temporary removal of highway-rail grade crossing warning systems from service. Nevertheless, FRA remains concerned that grade crossing accidents and false proceed signal failures continue to occur. Thus, FRA believes it is necessary to reemphasize to the railroad industry the importance of reviewing and re-evaluating their existing safety procedures related to these events.

Over the past year, two serious incidents have resulted from the failure of railroad personnel to follow appropriate safety procedures when removing grade crossing warning devices and wayside signal systems from service for repair. A brief review of these incidents may help illustrate the critical importance of railroads having clear and precise safety procedures in place when testing, inspecting, maintaining, or repairing highway-rail grade crossing warning systems and wayside signal systems.[2]

One incident involved a fatal collision between a southbound passenger train and an automobile that was eastbound at a highway-rail grade crossing. At the time of the collision, two railroad signal employees were working on the grade crossing warning system. The warning system had been removed from service and did not activate as the train approached the crossing. The train was equipped with a forward-facing video camera that recorded (1) that the gate arms were in the upright position, and (2) that the grade crossing warning lights were deactivated as the train traveled through the highway-

[1] 67 FR 3258 (Jan. 23, 2002).
[2] Additional information pertaining to these incidents can be obtained from National Transportation Safety Board Safety Recommendations R-13-3 and -4.

rail grade crossing and struck the automobile. The automobile driver was fatally injured as a result of the collision.

The second incident involved the derailment of a passenger train that had entered a yard track from the main track. Locomotive video- and event-recorder data show that the passenger train was proceeding on a clear signal through a power-operated switch that had been aligned in the reverse position toward the yard. After traveling at a speed of 61 mph through a turnout that was limited to 15 mph for movement onto a 5 mph yard track, the passenger train derailed about 254 feet beyond the power-operated switch. Four cars and two locomotives derailed upright and emergency responders reported that 14 persons were injured, 8 of whom were transported to area hospitals.

Preliminary information indicates that a signal employee was performing troubleshooting activities with jumper wires inside the signal bungalow just before the derailment. The signal employee was applying a jumper wire to energize the circuit that verified the position of a power-operated switch. This circumvented the signal system's ability to verify that the power-operated switch was aligned and locked in the correct position for the displayed signal aspect.

Both of the occurrences discussed above resulted from interference with the normal functioning of the systems without measures being taken to provide for the safety of highway traffic and train operations that depend on the normal functioning of such systems. FRA is very concerned about these recent incidents and believes that issuance of this safety advisory is necessary in order to once again draw the attention of the railroad industry to this issue with the intent to reduce the likelihood of similar incidents occurring in the future.

Failure to provide for the safety of highway traffic and train operations during all periods while the normal functioning of a system is interfered with is a violation of Federal rail safety regulations (see 49 CFR 234.209 and 236.4). FRA believes these requirements are vital to ensuring the safety of railroad employees, highway users, and the general public. Accordingly, when a system is completely or partially deactivated without adequate protective measures being taken, FRA will take firm enforcement action, which could include civil penalties against the companies or individuals responsible or both. However, preventing such serious failures in the first place is our primary goal and the consistent application of proper procedures is critical to achieving that goal.

Railroads need to have clear and precise procedures for temporarily removing grade crossing warning devices and wayside signal systems from service when performing repairs, tests, inspections, or maintenance. These procedures need to address the use of jumper wires, where applicable, and should also help ensure that grade crossing warning devices and wayside signal systems are properly tested and known to be in proper working order before they are restored to service. Most railroads already have such procedures in place; however, in light of the incidents noted above, FRA believes that railroads should review existing procedures to ensure that they are adequate and should take steps to ensure that these safety procedures are followed.

Use of Jumper Wires

There are situations where it may be necessary to temporarily circumvent the normal functioning of a grade crossing warning or wayside signal system. These situations include testing, inspection, maintenance, and repair of grade crossing warning

systems or wayside signal systems, maintenance-of-way activity, and trains standing within a warning system's approach circuit for extended periods. A common method of circumventing the normal functioning of a grade crossing warning or wayside signal system is the application of jumper wires, which is appropriate when done in a safe manner.

In situations involving grade crossing warning systems, it is critical that the system's credibility be maintained. For example, if maintenance-of-way work is being performed on trackage that is part of a highway-rail grade crossing warning system's train detection circuit without the application of jumper wires, it is highly probable that the warning system will activate. This indicates to motorists that it is not safe to cross the railroad tracks when, in fact, no train is approaching the crossing. The integrity of the warning system would be compromised by the conveyance of false information to motorists, such that in the future, they would not necessarily comply with the warning system indications. Appropriate use of jumper wires or other safe means of circumventing the normal functioning of the system thus prevents the incorrect warning from being displayed to motorists. Safety is also maintained as long as measures are taken to provide for the safety of motorists and train operations.

Temporary removal from service of grade crossing warning devices and wayside signal systems—through the application of jumpers or other means—is a safe practice, when combined with protective measures for highway traffic and train operations. FRA has reviewed some of the safety procedures for disabling grade crossing warning devices and wayside signal systems that are in place on the major railroads to determine "best practices" that have been developed in the industry. We

found that the most effective safety procedures include the following items: (1) requirements for signal employees to obtain proper authority from the train dispatcher or other appropriate personnel responsible for the movement of trains through the territory before disabling a grade crossing warning or wayside signal system; (2) documentation of the authority to disable the grade crossing warning or wayside signal system; (3) a requirement that all disabled grade crossing warning and wayside signal systems must be properly inspected and tested to ensure proper operation before being restored to service; and (4) a procedure for signal employees to verify with the train dispatcher or other appropriate personnel responsible for the movement of trains through the territory that the grade crossing warning system or wayside signal system has been properly tested before being restored to service.

To mitigate the risks inherent with circumventing the normal functioning of a system, FRA believes it is important that individual railroads have standard procedures in place before interfering with the normal operation of a grade crossing warning or wayside signal system.

Recommended Actions

In recognition of the need to ensure safety, FRA strongly recommends that:

1. Each railroad responsible for the proper operation of a highway-rail grade crossing warning system or wayside signal system review and evaluate its specific railroadwide instructions for the proper method for temporary removal of these systems from service. These instructions should address the following items:
    a. The manner in which the deactivation is authorized.
    b. The personnel designated to authorize deactivation.

c. The protocols for notifying appropriate persons, especially personnel responsible for the movement of trains, that a grade crossing warning system or wayside signal system has been temporarily removed from service.

d. The appropriate methods of providing for the safety of train movements while the grade crossing warning system or wayside signal system is temporarily removed from service.

e. The requirements necessary to perform an inspection and operational test of the pertinent system components before restoring the grade crossing warning system or wayside signal system to service.

f. The protocols for documenting and notifying appropriate persons that the grade crossing warning system or wayside signal system has been properly tested and restored to service.

2. Each railroad provide regular periodic training to all affected employees to ensure their understanding of instructions for the proper procedures for the temporary removal from service of grade crossing warning or wayside signal systems, including the proper use of jumper wires.

FRA encourages railroad industry members to take actions that are consistent with the preceding recommendations, and to take other complementary actions to help ensure the safety of the Nation's railroad employees. FRA may modify this Safety Advisory 2013-04, issue additional safety advisories, or take other appropriate actions

necessary to ensure the highest level of safety on the Nation's railroads, including pursuing other corrective measures under its rail safety authority.

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