4910-06-P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

Safety Advisory 2014-02

Roadway Worker Authority Limits—Importance of Clear Communication, Compliance with Applicable Rules and Procedures, and Ensuring that Appropriate Safety Redundancies Are in Place in the Event of Miscommunication or Error

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

ACTION: Notice of Safety Advisory.

SUMMARY: FRA is issuing Safety Advisory 2014-02 to reemphasize the importance of clear communication and compliance with applicable rules and procedures regarding roadway worker authority limits on controlled track. FRA believes it is necessary to issue this advisory in light of the miscommunication or error involved in recent roadway worker incidents that occurred at locations that were either outside of authority limits or within authority limits that were no longer protected due to dispatcher error. This safety advisory recommends that railroads monitor their employees for compliance with existing applicable rules and procedures and that they also examine their train dispatching systems, rules, and procedures to ensure that appropriate safety redundancies are in place in the event of miscommunication or error. In addition, this safety advisory recommends that if a railroad determines that appropriate safety redundancies are not in place, the railroad should adopt electronic technology that would provide appropriate safety redundancies, and adopt certain interim safety measures and procedures at least until such technology is in place.

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SUPPLEMENTARY INFORMATION:

Background

FRA is concerned about the infrequent, but repetitive incidents involving roadway workers being struck or nearly struck by trains that appear to be due to miscommunication or error regarding the roadway workers' authority limits or location in relation to the authority limits. This safety advisory discusses six such incidents, three of which resulted in four employee fatalities. However, there have been other close-call incidents involving similar circumstances that did not result in fatalities but further highlight the need for this safety advisory. Information regarding some of the incidents discussed below is based on FRA's preliminary findings and the respective railroad's reporting to date. The probable causes and contributing factors, if any, have not yet been established for all of these incidents and nothing in this safety advisory is intended to attribute a cause to these incidents, or place responsibility for these incidents on the acts or omissions of any person or entity.

The following is a summary of the circumstances involved in each of the incidents:

In November 2013, a BNSF Railway Co. (BNSF) lead welder was killed when his welding truck collided with an eastbound freight train on a single main track at a location that was outside of his roadway work group's limits of authority. It appears from FRA's preliminary investigation that the two-man work group set on the track at a location outside of their authority limits after the workers disagreed regarding the extent of the authority limits and after not being able to quickly resolve the discrepancy because the screen displaying their authority was not visible at the time they set on the track. The foreman was apparently attempting to "wake up" the computer screen as the operator was setting their vehicle on and operating over the track, rather than remaining clear of the track until the discrepancy could be resolved, as required by the railroad's good faith challenge procedures.

In May 2013, a Metro-North Commuter Railroad Co. (Metro-North) track foreman was struck and killed by a passenger train in Danbury, Connecticut, after a student dispatcher prematurely removed the control signal blocking devices that had been established for the track foreman's work group, and cleared the signal for the passenger train. Investigation by FRA and the National Transportation Safety Board (NTSB) determined that the student dispatcher assumed that the foreman no longer needed the main track after the dispatcher had lined the foreman-piloted locomotive crane into an out-of-service track. Several weeks prior to this incident, a very similar incident occurred on the same railroad. However, in that situation, the roadway worker detected the advancing train movement in sufficient time to move away from the track and avoid being struck by the train.

In May 2013, a CSX Transportation, Inc. (CSX) hi-rail vehicle collided with a CSX train while traveling southward on the CSX Florence Division, Charlotte Subdivision. The hi-rail was operating under an EC-1 authority (a form of exclusive track occupancy), but was struck when it encountered the northbound CSX train at milepost (MP) 340.52. This location was approximately one and one-quarter miles outside of the authority limits the track inspector operating the vehicle had requested and was granted (i.e., from MP 339.1 to MP 339.3). FRA's investigation also determined that in requesting authority from the dispatcher, the track inspector stated his location as MP 339.5, which was approximately two-tenths of a mile outside of the authority limits he requested; however, neither the dispatcher nor the operator caught that the initial point of entry was outside of the authority limits being requested during the radio transmission of the authority. In addition, when the track inspector completed his work, he had planned on exiting at the same point that he had entered the track, but decided that the highway traffic at the crossing at that location was too heavy to safely take off the hi-rail, so he continued south, thinking that he could exit the track at the crossing located at MP 340.88, but was struck in a curve before reaching that crossing. The track inspector received minor injuries from the head-on collision, and no train crew injuries were reported.

In April 2013, a Metro-North roadway work group in a hi-rail truck mistakenly reported to the dispatcher that they were in the clear, south of an interlocking. However, FRA's investigation determined that the truck was in fact still inside the limits of the interlocking. Minutes later, a commuter train struck and destroyed the vehicle. The

occupants vacated the vehicle seconds before it was struck, and there were no injuries to the employees or the passengers.

In March 2013, a Kansas City Southern Railway Co. (KCS) hi-rail vehicle operating northward on KCS' Shreveport Subdivision collided with the side of a BNSF freight train that was operating on Union Pacific Railroad Co. track through a KCS interlocking at Texarkana, Texas. FRA's investigation determined that the KCS section foreman that was operating the hi-rail vehicle had been looking for potential washouts after heavy rains, and indicated to FRA that he attempted to stop his hi-rail vehicle short of the interlocking after realizing his close proximity, but failed to do so due to wet rail conditions. The KCS hi-rail truck entered the limits of the interlocking (outside of his limits of authority) and collided with the 74th and 75th cars in the BNSF train that was operating on signal indication through the interlocking. The collision resulted in significant damage to the hi-rail vehicle, and minimal damage to the rolling stock. The section foreman was not injured.

In January 2007, a Massachusetts Bay Commuter Railroad Co., LLC dispatcher prematurely lifted an exclusive track occupancy that was providing on-track safety for a roadway work group in Woburn, Massachusetts, and a commuter train struck and killed two roadway workers in the group and seriously injured two others. The track gang had a valid Form D, Line 4 (a form of exclusive track occupancy) with a main track out of service. Just prior to the incident, a hi-rail vehicle asked for and received permission from the roadway worker in charge (RWIC) of the authority limits to enter the out-of-service area. When the hi-rail vehicle cleared the authority limits, the operator of the hi-rail broadcast this information via a radio communication. Investigation by FRA and the

NTSB determined that the dispatcher lifted the blocking devices after having accepted that communication as the track gang foreman having cleared the limits, rather than the operator of the hi-rail vehicle having cleared the limits. FRA notes this incident in particular, since it gave rise to NTSB safety recommendations, as discussed in footnote 1.

The above incidents represent the various types of errors that can occur by various employees in establishing, removing, or adhering to roadway worker authority limits, and highlight the importance of clear communication and the need for railroads to monitor their employees for compliance with existing applicable rules and procedures. In addition, the range of possible errors also highlights the need for railroads to examine their train dispatching systems, rules, and procedures to ensure that appropriate safety redundancies[1] are in place in the event that an employee fails to comply with such rules and procedures.

FRA believes that the probability of the incidents described above occurring could be significantly reduced by installation of Positive Train Control (PTC). Until such time that PTC is implemented, and for locations where PTC is not required, FRA

[1] The incident that occurred in January 2007 in Woburn, Massachusetts, resulted in three NTSB Safety Recommendations to FRA, two of which are addressed, or partially addressed, in this safety advisory. Safety Recommendation R-08-05 recommended that FRA "[a]dvise railroads of the need to examine their train dispatching systems and procedures to ensure that appropriate safety redundancies are in place for establishing protection and preventing undesired removal of protection for roadway workers receiving track occupancy authority," and Safety Recommendation R-08-06 recommended that FRA "[r]equire redundant signal protection, such as shunting, for maintenance-of-way work crews who depend on the train dispatcher to provide signal protection." Although this safety advisory adopts Safety Recommendation R-08-05 and recommends safety redundancies in general that would also seemingly address the recommendation in R-08-05, it does not recommend a position on shunting, as FRA has specifically invited comment on this issue from the railroad industry and other interested parties in a notice of proposed rulemaking on Railroad Workplace Safety; Roadway Worker Protection Miscellaneous Revisions (see 77 FR 50324, Aug. 20, 2012), and that issue will be addressed in the final rule.

recommends that railroads adopt one or more electronic technologies that may serve to fill the technology gap. Examples of such technology already in use include the following systems:

- Enhanced Employee Protection System – With this system, when an RWIC secures a track authority, he or she is provided a code via a beeper-like device that is not provided to the dispatcher issuing the authority. The system is designed so that the dispatcher cannot remove the blocking devices that are preventing the clearing of the absolute signal until the RWIC provides him or her with the issued code. Thus, the dispatcher cannot remove the associated on-track safety provided by the authority without the knowledge and agreement of the RWIC. This system is currently in use on a northeastern commuter railroad.

- Hi-Rail Limits Compliance System – This system relies upon a global positioning system location transponder that is mounted in a hi-rail or roadway maintenance machine and linked to the dispatching office. When the vehicle or machine is operated within a mile of the authority limits, the operator will be alerted via a yellow warning light on the transponder. When the vehicle or machine is operated within one-half mile of the authority limits, the operator will be alerted via a yellow flashing light on the transponder. If the operator operates the vehicle or machine outside of his or her authority limits or sets on a main track for which he or she does not have authority, the operator will be alerted via a red warning light and the dispatcher is immediately notified as well, so that appropriate action can be taken. This system is currently in use on a number of subdivisions of a Class 1 railroad.

- Train Approach Warning System (TAWS) – For this system, an electronic alerter device is utilized at interlockings to detect an approaching train on any track and provide both visual and audible indicators to roadway workers via a personal beeper device on their person and at their bungalow, once the system is activated. This on-track safety system has been utilized under FRA waiver by a major Class 1 railroad at selected interlockings since 2001.

Recommended Action

In light of the miscommunication or error involved in roadway worker incidents that have occurred at locations that were either outside of the respective roadway workers' authority limits or within authority limits that were no longer protected due to dispatcher error, FRA recommends that railroads take the following actions to promote the safety of roadway workers:

1. Increase monitoring of their employees for compliance with existing applicable rules and procedures, particularly those involving the establishment, removal, or verification of track authority, and good faith challenges.

2. Examine their train dispatching systems, rules, and procedures to ensure that appropriate safety redundancies are in place.

3. If a railroad determines that appropriate safety redundancies are not in place, adopt electronic technology that would provide appropriate safety redundancies. At least until such technology is in place, and as an immediate first step to the adoption of such technology, railroads should—

    a. Stress the importance of dispatchers being advised of the work plans by the RWIC when securing track occupancy authority;

b. Forbid student dispatchers by general order or bulletin from removing blocking devices until confirmation is received by the dispatcher providing supervision; and

c. Require student dispatchers to secure confirmation from the supervising dispatcher prior to the removal of blocking devices.

d. With regard to inadvertent and unauthorized hi-rail movement outside the limits of authority, instruct roadway workers that prior to passing any absolute signal, a roadway worker should verify the limits of his or her authority as follows:

   i. For roadway workers traveling with other occupants in a vehicle, verify the limits with another occupant within the vehicle by verbally reviewing the authority;

   ii. For roadway workers acting in the capacity of a lone worker (or otherwise traveling alone in a vehicle that is the first vehicle in the roadway work group to pass the absolute signal), announce over the radio the location and intent to pass the absolute signal; and

   iii. In either case, if the roadway worker or roadway work group is relying upon an electronic authority, and the electronic device displaying that authority malfunctions, the roadway worker must either secure a hard copy of the authority or vacate the track until he or she can verify the authority.

FRA encourages railroads to take actions that are consistent with the preceding recommendations and to take other actions to help ensure the safety of the Nation's railroad employees and the general public. FRA may modify this Safety Advisory 2014-02, issue additional safety advisories, or take other appropriate actions it deems necessary

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

Robert C. Lauby,
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