



DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA-2018-0037; Notice No. 2] [Safety Advisory 2018-02]

Safety Advisory Related to Temporary Signal Suspensions

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

ACTION: Notice of Safety Advisory.

SUMMARY: FRA is issuing this Safety Advisory addressing railroad operations under temporary signal suspensions. This Safety Advisory recommends the use of industry best practices when planning and implementing temporary signal suspensions, including when conducting rail operations under temporary signal suspensions. This Safety Advisory also recommends that railroads develop and implement procedures and practices consistent with the identified best practices and that railroads take certain other actions to ensure the safety of railroad operations during temporary signal suspensions. FRA believes that actions consistent with this Safety Advisory will reduce the risk of serious injury or death both to railroad employees and members of the public.

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SUPPLEMENTARY INFORMATION:

Background

On April 23, 2018, FRA published a notice of a draft Safety Advisory in the Federal Register addressing railroad operations during temporary signal suspensions. 83 FR 17701. As stated in the draft Safety Advisory, a review of FRA's accident/incident data shows that overall, rail transportation, both passenger and freight, is safe. However, recent rail accidents occurring in areas where a railroad has temporarily suspended the signal system, typically for purposes of maintenance, repair, or installation of additional components for a new or existing system, demonstrate that rail operations during signal suspensions present increased safety risks. In the draft Safety Advisory, FRA specifically noted the February 4, 2018 accident in Cayce, South Carolina, in which the engineer and conductor of National Railroad Passenger Corporation (Amtrak) Train P09103 were killed and 115 passengers injured,¹ when their train collided head-on with a CSX Transportation, Inc. freight train (Train F77703). As noted in the draft Safety Advisory, while the cause of this accident has not yet been determined, FRA's preliminary investigation indicates that despite the CSX train crew reporting to the train dispatcher that the switch was lined correctly, the crew did not restore the main track switch to its normal position as required by Federal regulation (Title 49 Code of Federal Regulations (CFR) 218.105) and CSX's own operating rules. The misaligned switch diverted the next

¹ Including 92 individuals who were transported to medical facilities for treatment and 23 people who received first aid at a triage area established near the accident site.

train to traverse the location (the Amtrak train) into the siding and into the standing CSX train parked on the siding.

In the draft Safety Advisory, FRA also noted the March 14, 2016 accident near Granger, Wyoming, which occurred when a Union Pacific Railroad (UP) freight train traveled from the main track through a misaligned switch into a controlled siding and collided head-on with another UP freight train standing on the siding.

Notably, both the Cayce and Granger accidents occurred while the operating railroads were installing and testing positive train control (PTC) technology and while the railroads had temporarily suspended the signals in the accident areas to perform installation and testing activities. In the Granger accident, while the signals were suspended, UP established absolute blocks intended to provide for the safe movement of trains through the area without signals. In the Cayce accident, the Amtrak train was operating on a track warrant and at the time of the accident, signal personnel had stopped working for the day, yet the temporary signal suspension remained in place.

As explained in the draft Safety Advisory, the National Transportation Safety Board (NTSB) determined that the probable cause of the Granger accident was the employee-in-charge incorrectly using information from a conversation with the train dispatcher as authorization to send a train into the area where the signal system suspension was in effect. The NTSB also found that a contributing factor was the conductor pilot's failure to check the switch position before authorizing the train to enter the area. Both FRA and the NTSB's investigations into the Cayce accident are ongoing

and while neither agency has yet issued any formal findings, on February 13, 2018, the NTSB issued a Safety Recommendation Report² to FRA regarding train operations during signal suspensions. In its report, the NTSB recommended that FRA issue an emergency order directing railroads to require train crews to approach switches at restricted speed when signal suspensions are in effect and a switch has been reported relined for a main track (NTSB Safety Recommendation R-18-005). The NTSB further recommended that after the switch position is verified, train crews should be required to report to the dispatcher that the switch is correctly lined for the main track before subsequent trains are permitted to operate at maximum-authorized speed.

FRA issued the draft Safety Advisory consistent with the purpose of the NTSB's recommendation and to ensure all railroads were made aware of both the safety concerns identified and information and practices available to specifically address the issues raised. Moreover, FRA intended the draft Safety Advisory to provide railroads the flexibility to review and revise their existing operating rules and practices as necessary to ensure the safety of their operations, without imposing rigid and inherently limited, new requirements on the industry. FRA intended the draft Safety Advisory to provide an opportunity for interested parties and industry experts to provide input on potential ways to prevent future accidents such as those that occurred in Granger and Cayce by sharing known industry best practices and seeking input on the same.

In the draft Safety Advisory, FRA noted the following best practices that some

² NTSB, Safety Recommendation Report: Train Operation During Signal Suspension, Report No. RSR-18/01, Recommendation No. R-18-005 (Feb. 13, 2018), <https://www.nts.gov/investigations/AccidentReports/Reports/RSR1801.pdf>.

railroads were already implementing:

- Taking all practical measures to ensure sufficient personnel are present to continue signal work until the system is restored to proper operation. If sufficient personnel are not present, the signal suspension is terminated until such time as sufficient personnel are on hand.
- If a railroad elects to allow train traffic through signal suspension limits:
 - Establishing the smallest limits possible for the signal suspension (if possible, no more than three (3) control points or use phased limits to allow restoration of the signal system as work is completed);
 - Minimizing the duration of the signal suspension to the shortest time period possible (if possible, no more than twelve (12) hours); and
 - Taking all practical measures to ensure only through traffic is allowed to operate within the limits (avoiding any train meets or any movements requiring the manipulation of switches within the suspension limits).
- If any switches within the suspension limits are manipulated, consistent with 49 CFR 218.105, establishing an effective means of verifying that all switches have been returned to the proper position prior to any train traffic operating through the limits. (For example, require spiking or clamping of switches followed by locking for through movement after use; utilize a signal employee to tend the switch and to establish agreement between assigned crew members and the switch tender that the switch is properly lined; and/or require the first train through the limits after the manipulation of any switch to operate at restricted speed).

Among other recommendations, in the draft Safety Advisory, FRA recommended that railroads develop and implement procedures and practices consistent with these industry best practices for operations conducted under temporary signal suspensions. FRA also recommended that railroads increase supervisory operational oversight and conduct operational testing on the applicable operating rules pertaining to the operation of hand-operated main track switches and that this increased oversight should include face-to-face initial job briefings with all train and engine crews that will operate in any area where the signal system will be temporarily suspended.

Discussion of Comments Received in Response to Draft Safety Advisory

In response to the draft Safety Advisory, FRA received comments from the NTSB, the Association of American Railroads and the American Short Line and Regional Railroad Association (AAR/ASLRRRA), Amtrak, the Brotherhood of Locomotive Engineers and Trainmen (BLET), the Transportation Division of the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART) and individuals involved in railroad transportation. Some commenters, including the NTSB, BLET, and SMART expressed the view that FRA's issuance of a Safety Advisory did not go far enough to address the safety issues associated with signal suspensions. These commenters expressed the view that FRA should mandate solutions through the regulatory process.³ FRA respectfully disagrees with these commenters. FRA believes that when properly implemented and complied with, FRA's existing

³ On June 11, 2018, recognizing FRA's publication of the draft Safety Advisory, the NTSB classified FRA's response to Safety Recommendation R-18-005 as "Open – Unacceptable Response." In its letter to FRA, the NTSB noted that it did not agree with FRA that "an advisory goes far enough to ensure safety."

regulations (e.g., 49 CFR part 218, subpart F) and the railroads' related operating rules effectively address the safety issues involved. Moreover, given the variety of circumstances under which railroads may need to temporarily suspend signal systems, FRA does not believe mandating a "one size fits all" solution is practical or in the interest of railroad safety.

The NTSB further commented that the draft Safety Advisory offered "contradictory statements" in noting that the Advisory provided railroads the "flexibility to review and revise their existing operating rules and practices as necessary to ensure the safety of their rail operations, without imposing rigid, and inherently limited, new requirements on the industry" and at the same time stating that temporary signal suspensions "are necessarily common occurrences" and that "rail operations under signal suspensions should be rare and appropriately limited." These statements are not contradictory. FRA recognizes that signal suspensions are necessary to maintain and upgrade signal systems. In recent years railroads have improved upon installation and testing processes to minimize the extent and duration of signal suspensions. Furthermore, some railroads have sought to limit or prohibit operations through signal suspensions, and FRA agrees that in some circumstances, limiting or prohibiting operations through signal suspensions may be appropriate. Accordingly, in this Safety Advisory, FRA is recommending that before initiating a planned temporary signal system suspension, a railroad conduct a risk assessment to, among other things, evaluate whether rail operations through and/or within the suspension limits should continue during the suspension.

The NTSB further recommended that FRA require railroads, when operating trains during signal suspensions, to establish “an effective means for verifying that all switches have been returned to the proper position prior to any train traffic operating through” the suspension limits. The NTSB agreed with FRA’s statement in the draft Safety Advisory that spiking or clamping switches, followed by locking the switches for through movement after use is one way to effectively verify switch position. In its comments, the NTSB also reiterated its Safety Recommendation R-18-005 recommending that FRA require train crews to approach switches at restricted speed when signal suspensions are in effect and a switch has been reported relined for a main track. The NTSB also recommended FRA convert the draft Safety Advisory into a regulation. As noted previously, FRA does not agree with this recommendation. FRA does, however, agree with the NTSB, and other commenters’ recommendation that restricted speed may be an effective mitigation measure, and in this Safety Advisory FRA is specifically reiterating that as a potential best practice to be employed as appropriate.

BLET echoed the NTSB’s restricted speed recommendation and expressed the view that it is irrelevant that both the Granger and Cayce accidents occurred while signal suspensions were in effect. Instead, from an operational standpoint, BLET asserted that the issue needing to be addressed is misaligned switches in non-signaled territory. As such, BLET expressed the view that FRA should not only implement NTSB Safety Recommendation R-18-005 as a regulation, but FRA should also implement the NTSB’s Safety Recommendation R-12-29. NTSB Safety Recommendation R-12-29 recommended that until appropriate switch position warning technology is installed on main track switches, the first train through any dark territory after a main track switch

had been reported relined for the main track must approach the switch location at restricted speed until the train crew reported to the dispatcher that the switch is correctly lined for the main track.⁴

SMART urged FRA to establish “uniform safety procedures” noting that many SMART members operate trains over more than one railroad. In addition, SMART suggested FRA issue an emergency order requiring railroads to adopt the best practice of spiking and locking main track switches when trains operate over a section of track where a signal system is suspended or “turned off and abandoned.”

In their comments, AAR/ASLRRA expressed agreement with the draft Safety Advisory’s recommendation that railroads develop and implement procedures and practices for operations under temporary signal suspensions consistent with industry best practices. In their comments, however, AAR/ASLRRA suggested that certain aspects of the best practices FRA identified in the draft Safety Advisory should be modified. Specifically, AAR/ASLRRA suggested that FRA’s recommended best practices should not limit signal suspensions to three control points and 12 hours in duration. Instead, noting the often complex nature of signal work, AAR/ASLRRA suggested that best practices should simply be for railroads to limit the number of control points involved in signal suspensions and the duration of the signal suspensions to the extent practicable. AAR/ASLRRA also expressed agreement with FRA’s recommendation for increased supervisory operational oversight of the application of operating rules regarding the operation of hand-operated switches, but suggested that face-to-face initial job briefings

⁴ NTSB previously closed R-12-29 after reconsideration of the recommendation noting that 49 CFR part 218, subpart F addresses the intent of the recommendation in an alternative manner.

with train and engine crews operating in signal suspension areas are “not always feasible” or the most effective solution. Thus, AAR/ASLRRA suggested that FRA revise its recommendation to allow for job briefings regarding temporary signal suspensions through bulletin or notice from the dispatcher, as opposed to a face-to-face job briefing. Given the variety of reasons a railroad may choose or need to suspend its signal system and the variety of circumstances under which such suspensions are conducted, FRA generally agrees with AAR/ASLRRA’s comments that no geographic limit or time duration should be specified as a matter of industry-wide best practice. Accordingly, FRA believes railroads should limit the geographic scope and time duration of signal suspensions to the extent possible given the particular circumstances, but agrees that no hard limit on the number of control points, specific ways of limiting the geographic scope (such as using phased limits), or duration of signal suspensions should be specified. FRA also generally agrees that face-to-face job briefings may not always be practical if a signal suspension results from an unplanned event, such as a storm as referenced in AAR/ASLRRA’s comments. This Safety Advisory, however, is specifically directed to the best practices for carrying out planned signal suspensions and thus, AAR/ASLRRA’s comment on job briefings is outside the scope of this Advisory.

Amtrak generally expressed support for the recommendations in the draft Safety Advisory and additionally shared its experience in developing and implementing a Safety Management System (SMS) to enhance communication of safety concerns and issues. Amtrak also referenced its February 2018 initiation of the development of a formal risk assessment methodology to identify, analyze, assess, and mitigate risks due to human error associated with operating passenger service through territories in which the normal

signal systems have been temporarily suspended. Amtrak explained that upon notification of a signal system suspension from a host railroad, using a collaborative process with departments across the railroad (including Operating Practices, System Safety, and local Train and Engine staff), Amtrak performs a risk assessment to identify appropriate operational mitigations including, but not limited to, speed restrictions, alternate routing, or service suspensions. Amtrak explained that each risk assessment and the mitigations prescribed are reviewed and approved by Amtrak senior leadership and the results of that assessment and approved operational mitigations are communicated to affected employees and shared with Amtrak's host railroad. Amtrak indicates in its comments that it has performed over thirty risk assessments and is committed to continuously improving the assessment process. FRA believes Amtrak's comments have merit and in this Safety Advisory is revising its recommendations to railroads to include a risk assessment component.

Safety Advisory 2018-02⁵

Railroads suspend signal systems for a variety of reasons, including for maintenance or repair purposes, to install a new system, or to add additional components to an existing system. As exemplified by the accidents described above, rail operations under the temporary loss of protections provided by an existing signal system have the potential to introduce new safety risks and amplify existing safety risks because railroad

⁵ The draft Safety Advisory published on April 23, 2018, was captioned "Draft Safety Advisory 2018-01." Subsequent to publication of the draft Safety Advisory, however, on July 27, 2018, FRA published a separate Safety Advisory addressing electrode-induced rail pitting from pressure electric welding. That Safety Advisory was numbered 2018-01. Accordingly, FRA has revised the number assigned to this Safety Advisory to 2018-02.

employees accustomed to the safety an existing signal system provides must operate in an environment they may not encounter on a regular basis. A temporary signal suspension requires operating employees to immediately apply operating rules and practices different from those to which they are accustomed. Because a person's routine may include learned habits that are difficult to set aside when a temporary condition is imposed, operating employees may also need specialized instruction on the applicable rules and practices. Such risks must be addressed to provide for the safety of train operations during the loss of protection afforded by the signal system.

As discussed in detail in the draft Safety Advisory, Federal regulations require railroads to apply for FRA approval for certain discontinuances and modifications of signal systems, but Federal regulations do not prohibit railroads from temporarily suspending existing signal systems for purposes of performing maintenance, upgrades, repairs, or implementing PTC technology. *See* 49 CFR 235.7. FRA does not believe that Federal regulations should include such a prohibition. FRA's regulations already require individual railroads to adopt and comply with operating rules addressing the operation of hand-operated main track switches. *See* 49 CFR 218.105.

In addition to the regulatory requirements, virtually all railroads have adopted additional operational protections to ensure the safety of rail operations when an existing signal system is temporarily suspended. FRA believes certain operational safeguards that railroads already undertake constitute the best practices within the industry when temporarily suspending a signal system. These best practices include:

- Take all practical measures to ensure sufficient personnel are present to continue signal work until the system is restored to proper operation. If sufficient

personnel are not present, terminate the signal suspension until sufficient personnel are on hand.

- If a railroad elects to allow train traffic through signal suspension limits:
 - Establish the smallest limits possible for the signal suspension;
 - Minimize the duration of the signal suspension to the shortest time period possible;
 - Take all practical measures to ensure only through traffic is allowed to operate within the limits (avoiding any train meets or any movements requiring the manipulation of switches within the suspension limits).
- If any switches within the signal suspension limits are manipulated, consistent with 49 CFR 218.105, establish an effective means of verifying that all switches have been returned to the proper position prior to any train traffic operating through the limits (for example, require spiking or clamping of switches followed by locking for through movement after use; utilize a signal employee to tend the switch and to establish agreement between assigned crew members and the switch tender that the switch is properly lined; and/or require the first train through the limits after the manipulation of any switch to operate at restricted speed).

Recommendations: After careful consideration of the comments received in response to the draft Safety Advisory, and to ensure the safety of the Nation's railroads, their employees, and the public, FRA recommends that railroads take immediate actions consistent with the following:

1. Before initiating a planned temporary suspension of a signal system, perform a risk assessment to determine the most effective and safest way to implement the

suspension. The risk assessment should include consideration of the need to minimize the geographic scope and duration of the suspension and evaluate whether rail operations through and/or within the suspension limits should continue during the suspension. If a railroad concludes operations through or within the suspension limits may continue, the risk assessment should identify appropriate operational mitigations including, but not limited to, speed restrictions or alternate routing. The risk assessment should be performed with the input of all affected railroad departments (e.g., Operating, Signal and Train Control, System Safety, and involved Train and Engine Staff), and any approved operational mitigations should be clearly communicated to all affected employees in advance of initiating the suspension or allowing the employees to operate through or within the suspension limits.

2. Develop and implement procedures and practices consistent with the industry best practices discussed above for rail operations conducted under temporary signal suspensions.
3. Inform employees of the circumstances surrounding the February 4, 2018, accident in Cayce, South Carolina, and the March 14, 2016, accident near Granger, Wyoming, discussed above, emphasizing the potential consequences of misaligned switches and the relevant Federal regulations and railroad operating rules intended to prevent such accidents.
4. Review, and as appropriate, revise all operating rules related to operating hand-operated main track switches (including operating rules required by 49 CFR 218.105), to enhance them to ensure (a) train crews and others restore switches

to their normal position after use, and (b) the position of switches are clearly communicated to train control employees and/or dispatcher(s) responsible for the movement of trains through the area where the signal system is temporarily suspended. In doing so, railroads should pay particular attention to those main track switches where employees report clear of the main track to the train dispatcher.

5. Increase supervisory operational oversight and conduct operational testing on the applicable operating rules pertaining to the operation of hand-operated main track switches. This should include face-to-face initial job briefings with all train and engine (T&E) crews that will operate in any area where the signal system will be temporarily suspended.
6. Enhance instruction on the relevant operating rules concerning the operation of hand-operated main track switches in non-signaled territory, including the operating rules required by 49 CFR 218.105(d) during both initial and periodic instruction required by 49 CFR 217.11. In doing so, railroads should emphasize the applicability of the rules to any area(s) where the signal system is temporarily suspended and the need to ensure and verify that all hand-operated main track switches manipulated within any suspension limits have been returned to the proper position prior to operating any trains through the limits.
7. Stress to T&E employees the importance of thorough and accurate job briefings when operating hand-operated main track switches, particularly in areas where the signal system is temporarily suspended, and specifically when releasing main track authority. Ensure adequate processes and procedures are in place

enabling clear and timely communication of switch positions between and among all dispatching, T&E, and train control employees responsible for operating, performing work, or authorizing trains to operate through areas where the signal system is temporarily suspended. These processes and procedures should include processes and procedures for communicating switch position information during shift handovers. Encourage employees, in case of any doubt or uncertainty regarding the position of hand-operated switches, to immediately contact the train dispatcher or take other appropriate action to confirm the position of the switch prior to authorizing a train to operate through the limits of the area.

FRA encourages railroads to take immediate action consistent with the recommendations of this Safety Advisory and to take any other actions appropriate to help ensure the safety of the Nation's railroads. FRA may modify this Safety Advisory or take other appropriate actions necessary to ensure the highest level of safety on the Nation's railroads.

Issued in Washington, DC.

Ronald L. Batory,
Administrator.

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