



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Railroad Administration**

**[Safety Advisory 2013-05]**

#### **Joint Failure on Continuous Welded Rail Track**

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

**ACTION:** Notice of Safety Advisory.

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**SUMMARY:** FRA is issuing Safety Advisory 2013-05 to remind railroad track owners about the importance of reviewing current, internal continuous welded rail (CWR) plans and properly inspecting CWR joints to identify and correct locations that indicate potential joint failure that may cause a derailment. FRA is issuing this notice in response to two recent train derailments. Although the causes of these derailments are still under investigation, preliminary evidence suggests that failed joint bars played a significant role in both derailments. This notice reminds railroad track owners that they must comply with the requirements of their CWR plan procedures regarding inspecting track to identify indications of potential joint failure in CWR track, especially that of compromise joints. This notice also recommends that railroad track owners review their CWR plans

to ensure that the instructions properly identify the necessary track maintenance procedures to remedy indications of potential joint failure that lead to rapid failure of joint bars. Finally, the notice recommends that railroad track owners follow good maintenance practices to ensure the joints are adequately supported and, wherever possible, eliminate joints in CWR, especially compromise joints in passenger and hazardous material routes.

**FOR FURTHER INFORMATION CONTACT:** Mr. Kenneth Rusk, Staff Director, Track Division, Office of Railroad Safety, FRA, 1200 New Jersey Avenue, SE., Washington, DC 20590, telephone (202) 493-6236; Mr. Carlo M. Patrick, Staff Director, Rail and Infrastructure Integrity Division, Office of Railroad Safety, FRA, 1200 New Jersey Avenue, SE., Washington, DC 20590, telephone (202) 493-6399; or Ms. Elisabeth Galotto, Trial Attorney, Office of Chief Counsel, FRA, 1200 New Jersey Avenue, SE., Washington, DC 20590, telephone (202) 493-0270.

**SUPPLEMENTARY INFORMATION:**

Joints in CWR are considered one of the weakest elements of track structure. The track components at a joint are subject to stresses in vertical, lateral, and longitudinal planes. Although the number of CWR joint-caused derailments on a main line has been relatively small, these derailments can be catastrophic, especially if passenger trains or hazardous materials are involved. Recent accidents highlight the need for track owners, railroads, and their respective employees to review, reemphasize, and adhere to the requirements of a track owner's CWR plan procedures and current internal engineering instructions that address inspecting track to identify stress conditions in CWR joints.

FRA requires that a track owner comply with the contents of an approved or conditionally approved CWR plan under Title 49 Code of Federal Regulations (CFR) Section 213.118, *Continuous welded rail (CWR), plan review and approval*.<sup>1</sup> See § 213.119, *Continuous welded rail (CWR), plan contents*. The plan must include procedures that prescribe the scheduling and conduct of inspections to detect cracks and other indications of potential failures in CWR joints. See § 213.119(h). These procedures are required to specify the conditions of actual or potential joint failure for which railroad personnel must inspect, including, at a minimum, (i) loose, bent, or missing joint bolts; (ii) rail end batter or mismatch that contributes to instability of the joint; and (iii) evidence of excessive longitudinal rail movement in or near the joint, including, but not limited to: wide rail gap, defective joint bolts, disturbed ballast, surface deviations, gap between tie plates and rail, or displaced rail anchors. See § 213.119(h)(3).

**RECENT INCIDENTS:**

This section provides a brief summary of the circumstances surrounding two recent train derailments that appear to be related to joint bar failure in CWR. Information regarding these incidents is based on FRA and the respective railroad's preliminary findings to date. The probable causes and contributing factors, if any, have not yet been established. Therefore, 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.

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<sup>1</sup> All references in this notice to a section or other provision of a regulation are to a section, part, or other provision in 49 CFR, unless otherwise specified.

On May 17, 2013, at approximately 6:08 p.m., an eastbound Metro-North Commuter Railroad (Metro-North) train derailed near Bridgeport, CT. A portion of the derailed train fouled the adjacent track and was struck by a westbound Metro-North commuter train. Sixty-nine people were reportedly injured and damages to the equipment and track amounted to several million dollars. At the accident, a pair of broken compromise joint bars was found. The National Transportation Safety Board is currently investigating the derailment and will ultimately determine the cause of the accident.

On March 18, 2013, an empty Long Island Rail Road (LIRR) passenger train derailed in Forest Hill, Queens, NY. Four of the train's eight cars derailed while traveling 75 mph. The railroad's preliminary investigation determined the cause to be a broken joint bar.

**RECOMMENDED ACTION:**

Rail joints in CWR warrant special attention and maintenance. Adequate support (which includes good tie condition, sufficient ballast, and good drainage) is essential to preventing joint bar failure. FRA recommends that track owners and railroads:

1. Review the requirements of their CWR plans and train employees responsible for inspecting CWR, with a focus on inspecting CWR track to identify conditions of actual or potential joint failure.
2. Review current internal engineering instructions to ensure that the instructions contain the appropriate track maintenance instructions to remedy joint conditions that cause joint bars to fail and cause derailments.

3. Follow good maintenance practices to ensure the joints are adequately supported, in addition to all of the requirements prescribed in § 213.119. Ties under and adjacent to CWR joints must be capable of supporting the traffic loading. When spot tamping the joints by hand, joints should be raised at least 1 inch to ensure the ballast particles are properly tamped under the entire width of ties. If the tamping is conducted in hot weather without immediate mechanical track stabilization, as is the case with machine tamping, a speed restriction is required to reduce the risk of track buckling.
4. Perform appropriate ballast maintenance to ensure proper track drainage for adequate tie support.
5. Wherever possible, eliminate joints in CWR, especially compromise joints in passenger and hazardous materials routes.
6. Reinforce with employees responsible for inspecting track the importance of the proper installation and maintenance of joints by ensuring that sufficient anchoring, ballast, and ties ensure the integrity of the joint. This is especially important around compromise joints, which by design typically have a suspended joint configuration.
7. If joint bars (and particularly compromise joint bars) are found cracked or broken between the middle two bolt holes after a relatively short time after installation, determine the root cause that led to the premature failure of the joint bars and correct the deficiency.

FRA strongly encourages railroads and track owners to take actions that are consistent with the preceding recommendations to help ensure the safety of the Nation's

railroad employees and the public. FRA may modify Safety Advisory 2013-05, 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.

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Operations.

[FR Doc. 2013-18787 Filed 08/02/2013 at 8:45 am; Publication Date: 08/05/2013]