NTSB 2017–2018
MOST WANTED LIST OF
TRANSPORTATION SAFETY IMPROVEMENTS

National Transportation Safety Board

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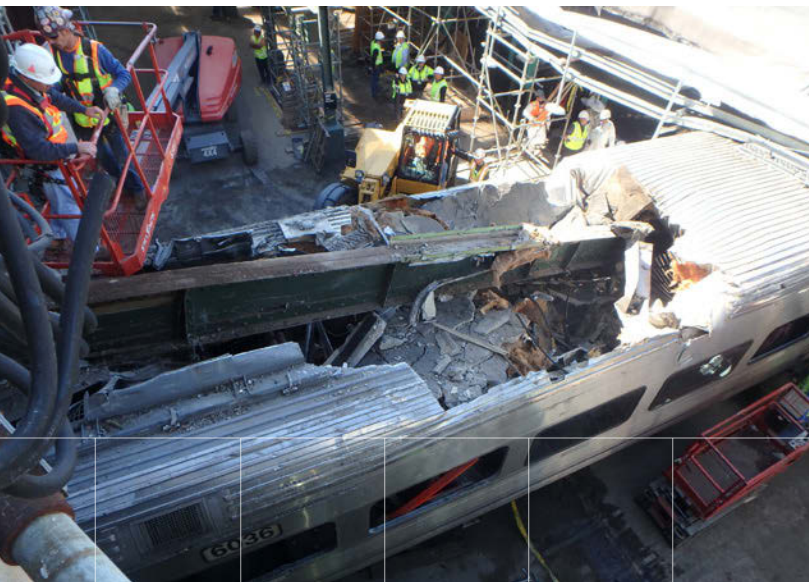# Expand Recorder Use to Enhance Safety

What is the issue?

Recorders—data, audio/voice and video—capture and store critical information that can help investigators determine the cause of a transportation accident and companies and operators take proactive steps to prevent accidents. Yet, some trains are still not equipped with these critical technologies, even though recorders are readily available, easily installed, and largely affordable.

An event data recorder records technical information about train control operation and performance. It records for a brief period of time (seconds, not minutes) before, during, and after an accident. Audio/voice recorders capture crew discussions and transportation-related noises, while image/video event recorders show the engineer and crew immediately before, during, and after an event.

We have used recorder data to determine the cause of accidents and to develop recommendations to help prevent future accidents. For example, in the May 2015 Amtrak 188 passenger train crash and derailment in Philadelphia, investigators used event recorder data to derive the engineer's throttle manipulation, which allowed us to determine the train's speed and the engineer's actions prior to the crash. However, some questions can only be answered through the data provided from an image recorder. Because of Amtrak 188's forward-facing video, investigators were able to determine the conditions visible to the engineer at night as he approached the curve where the accident occurred. These devices help investigators and operators fill in the gaps when data and voice/audio recordings don't tell the whole story.

Recorders not only help with determining the cause of a crash or accident, but, perhaps more importantly, they help operators establish effective safety management strategies. Data from recorders can be used to adjust procedures and enhance crew training to prevent accidents from happening in the first place. Although some operators have implemented or are in the process of implementing recorder programs and systems, many are slow to do so without regulatory requirements.

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Expand Recorder Use to Enhance Safety

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What can be done?

Crash-resistant data, audio/voice, and image recorders are readily available and can be easily installed in trains. Regulators should require their use and ensure a consistent, comprehensive approach to the timely identification of important safety issues. Additionally, regulators should work to remove barriers for industry and encourage voluntary implementation.

The Federal Railroad Administration (FRA) and Federal Transit Administration (FTA) are making some progress in expanding recorder use to enhance safety, and the FRA plans to mandate installation of inward- and outward-facing recording devices in the controlling locomotive cab and cab car operating compartments. However, we recommend that all locomotive cabs be equipped with both audio *and* video. We also recommend equipping some light rail vehicles with recorders. The FTA has recognized the value of event recorders in accident reconstruction and in working with industry to develop standards. It is considering surveying members of the rail transit industry to evaluate event recorder availability and adaptability to various modes of transit.

Regardless of regulation, we urge all railroads to use recorded information for operational and safety oversight. Operators should not wait for regulators to take action, but should proactively procure recorder technology to improve the operational and safety oversight of their trains.

In all controlling locomotive cabs and cab car operating compartments, railroads should install crash- and fire-protected inward- and outward-facing audio and image recorders that can verify that train crew actions are in accordance with essential safety rules and procedures, as well as to monitor train operating conditions. The devices should have a minimum 12-hour, continuous recording capability and should provide recordings that are easily accessible for investigators and management to review in the event of an accident or for system-wide performance monitoring.

The safety of our railroads and the passengers and cargo they carry can be enhanced by the data that only recorders can provide. Industry and regulators should work to ensure such systems are installed in all trains. ■

The NTSB Most Wanted List highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and promote recommended safety solutions.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation – railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

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Related Accidents*

Date	Location	Accident ID
May 12, 2015	Philadelphia, PA	DCA15MR010
September 29, 2016	Hoboken, NJ	DCA16MR011

*For detailed accident reports visit **www.ntsb.gov**

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Critical changes needed to reduce transportation accidents and save lives.