



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 15, 2002

In reply refer to: R-02-2

To all Class I and Regional Railroads (See attached list)

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses the issue of grade crossing warning signal performance and is derived from the Safety Board's investigation of the March 15, 1999, grade crossing accident in Bourbonnais, Illinois, and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued five safety recommendations, one of which is addressed to all class I and regional railroads. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

About 9:47 p.m. on March 15, 1999, National Railroad Passenger Corporation (Amtrak) train 59, with 207 passengers and 21 Amtrak or other railroad employees on board and operating on Illinois Central Railroad (IC) main line tracks, struck and destroyed the loaded trailer of a tractor-semitrailer combination that was traversing the McKnight Road grade crossing in Bourbonnais, Illinois. Both locomotives and 11 of the 14 cars in the Amtrak consist derailed. The derailed Amtrak cars struck 2 of 10 freight cars that were standing on an adjacent siding. The accident resulted in 11 deaths and 122 people being transported to local hospitals. Total Amtrak equipment damages were estimated at \$14 million, and damages to track and associated structures were estimated to be about \$295,000.¹

The National Transportation Safety Board determined that the probable cause of the collision between Amtrak train 59 and a truck tractor-semitrailer combination vehicle at the McKnight Road grade crossing in Bourbonnais, Illinois, was the truckdriver's inappropriate response to the grade crossing warning devices and his judgment, likely impaired by fatigue, that he could cross the tracks before the arrival of the train. Contributing to the accident was Melco

¹ For more information, see National Transportation Safety Board, *Collision of National Railroad Passenger Corporation (Amtrak) Train 59 With a Loaded Truck-Semitrailer Combination at a Highway/Rail Grade Crossing in Bourbonnais, Illinois, March 15, 1999*, Railroad Accident Report RAR/NTSB-02/01 (Washington, D.C.; NTSB, 2002).

Tranfer, Inc.'s failure to provide driver oversight sufficient to detect or prevent driver fatigue as a result of excessive driving or on-duty periods.

The truckdriver stated that as he approached the grade crossing on the night of the accident, he saw the crossing signal lights illuminate. He said that because of his proximity to the crossing when the lights activated, his best course of action was to accelerate across the tracks before the train arrived.

The only scenario under which the time from activation of the warning signals until the arrival of the train would not have allowed the truckdriver to either stop his truck short of the crossing or accelerate safely across would involve some malfunction of the signal warning system. However, postaccident testing of the lights found no evidence that they were not operating as designed, and the Safety Board concluded that the grade crossing signal lights began flashing at least 26 seconds before the train's arrival at the McKnight Road grade crossing.

Witness statements offered conflicting information about the position of the crossing gates in the moments before the accident. Crossing gates typically begin to lower within 4 to 5 seconds after the warning lights activate. Although data downloaded from the signal system event recorder for the accident crossing showed that a lowering of the gates was initiated, the information captured by the event recorder did not include the actual position of the gates.

Where highway/railroad grade crossing signal systems are equipped with event recorders, it is often possible to put in place a method to detect whether the gate has descended fully. The method of detection is sometimes as simple as an electrical contact made when the gate reaches the horizontal. Such a system may aid signal maintainers and inspectors, enabling them to see clear recorded evidence of signal malfunctions before accidents occur. As noted above, however, the accident crossing in Bourbonnais was not equipped with a gate position detection system.

The Safety Board notes that all modern electronic warning signal systems may be equipped easily with signal event recorders and that almost all the warning systems installed as new or as upgrades by class I railroads are equipped with such devices. These recorders may or may not, however, capture the actual deployed gate position for those systems that are equipped with gates. For example, while all the warning systems installed or upgraded by the Canadian National/Illinois Central (CNIC) Railroad since 1995 have been equipped with signal event recorders, only after the Bourbonnais accident did the company specify that its newly purchased systems be required to capture gate position (horizontal or other than horizontal). According to CNIC officials, about 60 to 75 of the company's crossing signal event recorders now record this data. Some other class I railroads, notably the Burlington Northern/Santa Fe, also use event recorders that capture gate position information.²

In the view of the Safety Board, determination of actual crossing gate position is important not only because it facilitates accident reconstruction but also because it can help railroads detect and correct warning system defects or anomalies before they become a hazard to the public. While, as noted above, some railroads already recognize the benefits of gate position information and are installing event recorders that capture such data, other railroads are less

² The Burlington Northern/Santa Fe Railroad event recorders that capture gate position indicate whether the gate is vertical (between 83 and 90 degrees) or horizontal (between 0 and 5 degrees).

aggressive in pursuing this option as they install new or upgraded systems. The Safety Board believes that the Federal Railroad Administration, while not requiring that grade crossing warning systems be equipped with signal event recorders, can nonetheless play a role in ensuring that those systems that are in place provide gate position information. The National Transportation Safety Board therefore has made the following safety recommendation to the Federal Railroad Administration:

For all railroads that install new or upgraded grade crossing warning systems that include crossing gates and that are equipped with event recorders, require that the information captured by those event recorders include the position of the deployed gates. (R-02-1)

In the interim, nothing prevents railroads that have not done so from following the lead of other carriers in regard to obtaining gate position information for those crossings equipped with new or upgraded warning systems that have both gates and event recorders.

The Safety Board therefore makes the following safety recommendation to all class I and regional railroads:

For all your new and upgraded grade crossing warning systems that include crossing gates and that are equipped with event recorders, ensure that the information captured by those event recorders includes the position of the deployed gates. (R-02-2)

The Safety Board also issued safety recommendations to the Department of Transportation, Amtrak, the International Association of Fire Fighters, and the International Association of Fire Chiefs. In your response to the recommendation in this letter, please refer to Safety Recommendation R-02-2. If you need additional information, you may call (202) 314-6607.

Chairman BLAKEY, Vice Chairman CARMODY, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

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Chairman

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