



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: July 29, 1999

In reply refer to: R-99-26

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On March 25, 1998, about 4:48 a.m. eastern standard time, southbound Norfolk Southern Corporation (Norfolk Southern) train 255L5, which was en route to Fort Wayne, Indiana, struck eastbound Consolidated Rail Corporation (Conrail) train TV 220, which was en route to Columbus, Ohio.¹ The collision occurred where the Norfolk Southern Huntington District and the Conrail Chicago main lines cross at grade at the east end of the town of Butler, Indiana. Both locomotives and five cars from the Norfolk Southern train derailed, and three cars from the Conrail train, two with multiple stacked platforms, derailed. The Norfolk Southern conductor was killed; the engineer and student engineer sustained minor injuries. The two Conrail crewmembers were not injured.

No hazardous materials were released, but both Norfolk Southern locomotive fuel tanks ruptured and released approximately 7,000 gallons of fuel oil. Norfolk Southern estimated total damages of \$264,000 (\$187,000 to equipment, \$18,000 to track and signals, and \$59,000 to cargo). Conrail estimated total damages of \$352,200 (\$314,000 to equipment, \$33,500 to track and signals, and \$4,700 to cargo).

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the engineer and conductor of train 255L5 to comply with operating rules (specifically, their failure to observe and confirm signal aspects and their failure to continuously and directly supervise the student engineer) and the failure of Norfolk Southern Corporation to ensure employees' compliance with operating rules. Contributing to the accident was Norfolk Southern Corporation's failure to ensure that its locomotive engineer training program provided effective, timely training; oversight; and feedback to ensure that students were adequately prepared for operational situations. Also contributing to the probability of this accident occurring was the failure of Norfolk Southern Corporation's signal maintenance program to respond to a reported signal deficiency.

¹ For additional information, read Railroad Accident Report—*Collision of Norfolk Southern Corporation Train 255L5 With Consolidated Rail Corporation Train TV 220 in Butler, Indiana, on March 25, 1998* (NTSB/RAR-99/02).

The Safety Board found that cab discipline, crew coordination, and communication were inadequate in the events leading up to the accident. The student engineer was not adequately supervised or instructed; further, the crewmembers' actions neither promoted compliance with the operating rules nor provided a positive model for the student engineer to emulate. For instance, contrary to operating rule 34, the engineer and conductor did not call clear signals. In addition, based on the statements of the engineer and the student engineer, all crewmember communication ceased well before the train approached the interlocking at Butler. In fact, for at least 30 minutes before the accident, the student engineer operated the train independently of the engineer and conductor. Moreover, he could not utilize their experience to help determine his location until just before the train was placed into emergency braking because he had not been provided strategies for dealing with crewmembers who knowingly disregard carrier rules and procedures. Norfolk Southern stated that student engineers could contact the dispatcher or road foreman to report problems such as the ones that occurred during the accident trip. However, an employee, particularly a trainee eager to gain operational experience, may be reluctant to challenge or report fellow crewmembers.

Effective crew coordination and communication are imperative, especially when a crewmember is receiving on-the-job training. One method of improving crew coordination and communication is through training. The Safety Board has long been a proponent of crew resource management (CRM) training in the aviation community and bridge resource management (BRM) training in the marine community. The goals of CRM and BRM are similar in that they promote safe operations by emphasizing the efficient use of all resources to achieve and maintain better coordination of activities. CRM and BRM training addresses critical areas, including:

- crewmember proficiency,
- situational awareness,
- effective communication and teamwork, and
- strategies for appropriately challenging and questioning authority.

The principles of CRM and BRM could be used to develop train crew resource management (TCRM) training for the railroad industry. The Safety Board has investigated several railroad accidents² that occurred because of inadequate communication, lack of discipline, and crewmembers' failure to function collectively as a team. In 1996, the Safety Board became aware of training developed by and for railroad employees of the former Southern Pacific Railroad (now Union Pacific) and modeled after the training provided to crewmembers at American Airlines. Union Pacific continues to provide this training to its employees and, since late 1998, has required all newly hired employees to receive it. Contact with several other Class I railroads revealed that they are not providing TCRM training. The Safety Board is not aware that the Federal Railroad

² Railroad Accident/Incident Summary Report—*Knox, Indiana, September 17, 1991* (NTSB/RAR-92/02/SUM); Railroad Accident/Incident Summary Report—*Derailment of Amtrak Train 87, Silver Meteor, in Palatka, Florida, on December 17, 1991* (NTSB/RAR-93/02/SUM); and Railroad Accident Report—*Collision and Derailment of Maryland Rail Commuter MARC Train 286 and National Railroad Passenger Corporation Amtrak Train 29, near Silver Spring, Maryland, on February 16, 1996* (NTSB/RAR-97/02).

Administration has demonstrated an interest in exploring and developing TCRM principles and training for the industry.

The Safety Board concluded that this and other accidents investigated by the Safety Board demonstrate that railroad safety would be enhanced if crewmembers received TCRM training. Therefore the Safety Board recommends that the American Short Line and Regional Railroad Association:

In cooperation with the Federal Railroad Administration, the Class I railroads, the Brotherhood of Locomotive Engineers, and the United Transportation Union, develop, for all train crewmembers, train crew resource management training that addresses, at a minimum:

- crewmember proficiency,
- situational awareness,
- effective communication and teamwork, and
- strategies for appropriately challenging and questioning authority. (R-99-26)

The Safety Board also issued recommendations to the Federal Railroad Administration, Norfolk Southern Corporation, the Class I railroads and Amtrak, the Brotherhood of Locomotive Engineers, the United Transportation Union, Harmon Industries, and the DeKalb County Emergency Management Agency.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility “to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations” (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you within 90 days regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation R-99-26 in your reply. If you need additional information, you may call (202) 314-6435.

Chairman HALL, Vice Chairman FRANCIS, and Members GOGLIA and BLACK concurred in this recommendation. Member HAMMERSCHMIDT concurred, in part, with this recommendation. (For further information, see Member HAMMERSCHMIDT’s concurring and dissenting opinion in the published report referenced on page 1 of this letter.)

By: Jim Hall
Chairman