



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: January 14, 2000

In reply refer to: H-00-03 through -05

Mr. John F. Malone, III
Chairman
Pennsylvania Turnpike Commission
Post Office Box 67676
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About 4:05 a.m. on June 20, 1998, a 1997 Motor Coach Industries 47-passenger motorcoach, operated by Greyhound Lines, Inc., was on a scheduled trip from New York City to Pittsburgh, Pennsylvania, traveling westbound on the Pennsylvania Turnpike near Burnt Cabins, Huntingdon County, Pennsylvania. As the bus approached milepost 184.9, it traveled off the right side of the roadway into an “emergency parking area,”¹ where it struck the back of a parked tractor-semitrailer, which was pushed forward and struck the left side of another parked tractor-semitrailer. Of the 23 people on board the bus, the driver and 6 passengers were killed; the other 16 passengers were injured. The two occupants of the first tractor-semitrailer were injured, and the occupant of the second tractor-semitrailer was uninjured.²

The National Transportation Safety Board determined that the probable cause of this accident was the busdriver’s reduced alertness resulting from ingesting a sedating antihistamine and from his fatigued condition resulting from Greyhound Lines, Inc., scheduling irregular work-rest periods. Contributing to the severity of the accident was the Pennsylvania Turnpike Commission (Commission) practice of routinely permitting nonemergency parking in pull-off areas within the highway clear zone.

The Safety Board’s investigation focused on the design of the emergency pull-off area and the consequences of commercial vehicles being parked in the pull-off area. Emergency pull-off areas exist along the turnpike to allow vehicles to park away from the travel lanes during an emergency. The Safety Board found, in addition to marked emergency pull-off areas, unmarked pull-off areas and picnic areas along the turnpike. This multiple-vehicle accident occurred in a marked 28-foot-wide emergency pull-off area adjacent to the westbound lanes of the turnpike.

¹ The 28-foot-wide 1,000-foot-long area off the roadway was used for vehicular parking.

² For further information, see National Transportation Safety Board. 2000. *Greyhound Run-off-the-Road Accident, Burnt Cabins, Pennsylvania, June 20, 1998*. Highway Accident Report NTSB/HAR-00/01. Washington, D.C.

The truck struck by the Greyhound motorcoach was parked about 9 to 10 feet from the edge of the travel lane.

The Commission guidelines follow the American Association of State Highway and Transportation Officials (AASHTO) recommendations for highway design. AASHTO recommends that roadways have a clear zone, which it defines as the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a nonrecoverable slope, and/or a clear run-out area. The desired width is dependent upon the traffic volumes and speeds and on the roadside geometry.³ Given that the speed limit on the accident section of the turnpike is 65 mph, the average daily traffic volume in 1998 was approximately 20,000 vehicles, and the slope of shoulder adjacent to the pull-off area is 4.2 percent (1:20), the AASHTO recommended minimum clear zone would be a width of 30 feet. Therefore, the trucks that were parked there at the time of the accident were within the clear zone. Because the accident site pull-off area has a width of 28 feet, it is too small to accommodate both a 30-foot clear zone and parking for commercial or private vehicles. The turnpike has other emergency, unmarked, and picnic pull-off areas that are also unable to accommodate both a clear zone and parking for vehicles.

The 28-foot tire mark probably made by the accident motorcoach suggests that the driver had been in the process of braking shortly before impact. The Safety Board examined what might have happened had the trucks not been in the clear zone. At the calculated minimum speed of 50 mph, the stopping distance (skid distance) would have been 150 feet. Based on a skid distance of 150 feet, the Safety Board determined that the motorcoach would have come to a stop without colliding with the embankment. However, given the same set of circumstances at a speed of 65 mph, the skid distance would have been 256 feet, and the motorcoach would have collided with the embankment at 20 mph. At 70 mph, the skid distance would have been 297 feet, and the motorcoach would have collided with the embankment at 33 mph.

The Safety Board has determined that the busdriver drifted off the roadway and then collided with the tractor-semitrailer parked within the 28-foot clear zone in the emergency parking pull-off area. Evidence suggests that the motorcoach probably would have struck the embankment had no vehicles been in the pull-off area; however, the impact speed would have been lower and the consequences less severe. The Safety Board concluded that had a clear zone been available to the Greyhound driver, he may have had the opportunity to recover.

The Safety Board understands that the Commission is examining and evaluating pull-off areas and closing those that pose a risk to the motoring public. However, a postaccident survey of the turnpike by the Safety Board suggested that it was not uncommon for trucks to park close to the travel lanes. The Safety Board therefore believes that the Commission should prohibit nonemergency parking in pull-off areas within the highway clear zone. In addition, the Safety Board believes that the Commission should provide adequate rest areas for nonemergency parking to accommodate vehicles that may be displaced by the prohibition of parking in emergency pull-off areas within the highway clear zone.

³ *Roadside Design Guide*. American Association of State Highway and Transportation Officials. 1996.

The turnpike *Incident Command System Manual*, available to the Pennsylvania State Police (PSP) Troop T and the contracted fire and emergency medical services responders, featured an accident scenario in which a Greyhound bus ran off the road and down an embankment, resulting in fatal, serious, and minor injuries. The manual discussed potential problems that might be encountered and listed emergency response units and apparatus that might be required. However, the Commission did not hold any mutual aid disaster drills to provide hands-on training on any of the scenarios presented in the manual.

According to the Commission, its subcommittees for emergency services are responsible for conducting annual informational meetings with the contracted service departments. These meetings are designed so that the PSP and turnpike personnel can discuss accident and safety procedures and any operational or protocol problems with the emergency service groups. According to the *Incident Management Program Book*, these meetings have proven invaluable as a source for improving overall communications and on-scene management and have enhanced the response to turnpike incidents. However, the Metal Township fire chief, who acted as the fire and rescue incident commander (IC) for the accident, told Safety Board investigators that these annual group meetings were not obligatory and, therefore, he had never attended.

In addition, the IC remarked that he had concerns about how the emergency response was conducted and believed that it could have been improved, especially in the area of emergency medical services. He recalled that even though the Metal Township emergency medical technician captain was tracking the ambulances and the patients being transported, the IC was not aware that one medical center could not receive any more of the injured and that they had to be transported to another hospital. He said that the situation was “chaotic” because Metal Township had never before dealt with an accident of this magnitude. Other emergency responders agreed; one paramedic recalled that the accident scene was “pretty much chaos” and everyone mostly did what they wanted. The IC also stated that he had not had bus rescue training before the accident occurred and that emergency responders should have training on commercial buses. Other emergency responders interviewed by the Safety Board after the accident stated that they believed having operational drills would be beneficial in the event of another mass casualty.

The Safety Board has long been a proponent of emergency response plans that specifically highlight multicasualty accidents involving numerous mutual aid agencies from varying jurisdictions. The disaster plan procedures should address, at a minimum, key emergency response departments, equipment, management personnel, and communication. Although the turnpike’s manual included such information, turnpike officials had not tested the adequacy of the disaster plans or the ability of contracted emergency responders to work together to carry out their assigned functions. The Safety Board concluded that because the Commission did not provide disaster drills for its contracted emergency response personnel, the Burnt Cabins emergency response was marked by communication equipment problems, delays in dispatching the appropriate heavy rescue equipment, and a lack of coordination in providing emergency medical services. Therefore, the Safety Board believes the Commission should periodically conduct disaster drills in mass casualty transportation accidents, such as the bus accident near Burnt Cabins, with contracted emergency response departments on the turnpike to assess its emergency management plan, to reinforce and evaluate emergency training, and to test communication among the responding agencies.

Therefore, the National Transportation Safety Board recommends that the Pennsylvania Turnpike Commission:

Prohibit nonemergency parking in pull-off areas within the highway clear zone. (H-00-03)

Provide adequate rest areas for nonemergency parking to accommodate vehicles that may be displaced by the prohibition of parking in emergency pull-off areas within the highway clear zone. (H-00-04)

Periodically conduct disaster drills in mass casualty transportation accidents, such as the bus accident near Burnt Cabins, with contracted emergency response departments on the Pennsylvania Turnpike to assess its emergency management plan, to reinforce and evaluate emergency training, and to test communication among the responding agencies. (H-00-05)

Also, the Safety Board issued Safety Recommendations H-00-01 and -02 to the National Highway Traffic Safety Administration; H-00-06 through -09 to Greyhound Lines, Inc.; H-00-10 to the United Motorcoach Association; and H-00-11 to the American Bus Association.

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 recommendations in this letter. Please refer to Safety Recommendations H-00-03 through -05 in your reply. If you need additional information, you may call (202) 314-6440.

Chairman HALL and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: Jim Hall
Chairman