

203 H-328 AI-4

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: March 31, 1982

Forwarded to:

Mr. David F. Girad-di Carlo, Chairman
Southeastern Pennsylvania Transportation
Authority
130 South 9th Street
Philadelphia, Pennsylvania 19107

SAFETY RECOMMENDATION(S)

R-82-21

On January 2, 1982, in Southampton, Pennsylvania, a single-unit Southeastern Pennsylvania Transportation Authority (SEPTA) commuter train struck an Atlantic Richfield Company (ARCO) tractor/cargo tank semitrailer loaded with 7,900 gallons of gasoline at a railroad/highway grade crossing. The gasoline was released upon impact and fire engulfed the front of the train, the truck, and a nearby occupied passenger vehicle. The motorman died several weeks later, and six persons suffered minor injuries. Damage was estimated to be about \$500,000. SEPTA also experienced two other fatal grade crossing accidents on January 12 and 13, 1982.

The National Transportation Safety Board has learned that SEPTA is operating commuter trains on other lines which have grade crossings. Grade crossing accidents involving trucks carrying hazardous materials and rail cars carrying large numbers of passengers could be catastrophic. One of the first accidents of this type that the Safety Board investigated occurred under similar circumstances in Everett, Massachusetts, in 1966. The same type of rail car as in the Southampton accident struck and ruptured a tank truck containing 8,300 gallons of fuel oil. Low-order explosions and a rapid spread of flames covered the forward section of the rail car. Eleven of the 28 passengers and 2 of the 3 train crewmembers were killed--all by burns or smoke inhalation rather than collision injuries. Transit authorities should review in detail the circumstances surrounding such accidents and take steps to prevent them on their properties.

During a 1-month period in the fall of 1979, the Safety Board investigated four accidents at grade crossings involving a train collision with a truck transporting petroleum products. Three of these accidents resulted in gasoline fires which engulfed the tractor/trailers and the train locomotives. While the truckdrivers were uninjured in the three accidents involving fire, five railroad employees were killed, four were injured, and the total property damage for the three accidents was estimated to be more than \$923,000. These four accidents, and five similar accidents previously investigated by the Safety Board, all involved factors that have been found to be common in accidents at grade crossings which involved trucks transporting bulk hazardous materials. Because of this accident experience, the Safety Board initiated a special study ^{1/} to determine the magnitude of the problem and the characteristics of accidents at grade crossings involving trucks transporting bulk hazardous materials.

1/ For more detailed information, read Special Study—"Railroad/Highway Grade Crossing Accidents Involving Trucks Transporting Bulk Hazardous Materials" (NTSB-HZM-81-2).

The Safety Board examined data from its accident investigations involving train collisions with trucks transporting bulk hazardous materials and reviewed accident data on this type of accident from four agencies in the U.S. Department of Transportation (DOT). The data for 1975 through 1979 revealed a yearly average of 62 accidents, 7 fatalities, 41 injuries, and \$1,670,000 in property damage from these accidents.

Shortly after the Safety Board initiated the accident investigation phase of its study in November 1980, four such accidents occurred within a 10-day period and resulted in 9 fatalities, 9 injuries, and \$718,000 in property damage. In this 10-day period, the total fatalities exceeded the yearly average, and the property damage was 43 percent of what might be expected for an entire year. Another accident investigated in 1981 resulted in the derailment of 5 locomotive units and 24 cars, 1 fatality, and \$2,748,000 in property damage—1.6 times the average annual property damage in recent years.

To reduce the number of accidents involving collisions of trains and highway vehicles at grade crossings, a uniform, coordinated effort is needed. The education, enforcement, engineering, and legislative effort that is required involves interaction among agencies that may ordinarily not become involved in each other's activities. Trucking associations, State and local departments of transportation, labor groups, enforcement agencies, legislatures, railroads, highway carriers, and shippers should participate in this effort. Many of these agencies are already working together in State "Operation Lifesaver" programs which are being coordinated by the National Safety Council. Several railroad companies already have extended their own safety programs to specifically address grade crossing accidents involving trucks carrying hazardous materials.

In May 1980, the Southern Railway System (SRS) implemented a pilot program in Alabama which was aimed directly at the trucking industry as well as State and local law enforcement groups. The SRS program involves six aspects:

- (1) Identifying all the hazardous materials bulk loading facilities near SRS trackage, which enables the SRS to pinpoint those companies where driver information programs should be concentrated, and identifies those crossings where a high density of tank truck traffic is likely. Once these locations are identified, enforcement can be concentrated or improvements in grade crossing traffic control devices and routing can be scheduled.
- (2) Holding educational meetings with the drivers, traffic managers, and other employees at bulk loading facilities. These in-plant meetings include a short introduction, a movie ("Lucky You"), a question-and-answer session, and distribution of informational reminders.
- (3) Holding personal meetings with drivers and distribution of information at nonbulk loading plants or at truckstops, accompanied by a local law officer.
- (4) Encouraging State and local law enforcement officials to enforce laws that require hazardous materials trucks to stop at crossings, through meetings held to discuss the problem and the program. The SRS has developed a form that allows a police officer who is on his/her way

to answer another call and who witnesses a truck not stopping at a crossing to record the pertinent information. The complete form is sent to the SRS which notifies the trucking company, either by phone or by personal contact, to inform it of the truckdriver's violation and of the associated hazards.


- (5) Encouraging field enforcement officers with the truck law enforcement division of the State's Public Service Commission to stop truckdrivers who are seen using crossings dangerously and to discuss the hazards with the truckdrivers. These officers explain the Operation Lifesaver program when they talk with truckdrivers at truck stops and weighing stations.
- (6) Notifying trucking companies when the SRS receives a locomotive engineer's near-collision report or a report from a law official. The trucking companies can then take the appropriate steps internally to correct unsafe driver behavior.

The collective DOT data show that SRS trains experienced 17 crossing accidents with trucks transporting hazardous materials over a 5-year period (3.4 accident/year). In a 14-month period, during most of 1980 and the early part of 1981, 48 near-collisions between SRS trains and tank trucks were reported. If SRS experience is representative, it could be estimated that for every reported accident there are at least 12 near-collisions. Nationwide, this would indicate as many as 750 near-collisions annually that jeopardize the lives of railroad personnel in locomotives, as well as nearby motorists, residents, and bystanders.

Therefore, the National Transportation Safety Board recommends that the Southeastern Pennsylvania Transportation Authority:

Develop and implement a program to reduce the likelihood of railroad/highway grade crossing accidents involving trucks carrying bulk hazardous materials and Southeastern Pennsylvania Transportation Authority commuter trains. (Class II, Priority Action) (R-82-21)

BURNETT, Acting Chairman, and McADAMS, GOLDMAN, and BURSLEY, Members, concurred in this recommendation.


By Jim Burnett
Acting Chairman