

Log R-119

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: January 10, 1978

Forwarded to:

Honorable Brock Adams
Secretary
U. S. Department of Transportation
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

R-77-37 through 39

About 8:58 a.m., on December 15, 1976, Amtrak passenger train No. 15, operating on the Atchison, Topeka and Santa Fe Railway struck a tractor-cargo tank semitrailer carrying crude oil near Marland, Oklahoma. The truckdriver and 2 train crewmembers were killed; 11 other persons on the train were injured. Property damage was estimated to be \$880,700. 1/

The investigation disclosed that the train was moving about 89.6 mph when it struck the cargo tank semitrailer and ignited its cargo of crude oil. The truck periodically used the crossing as part of the only available route to and from some nearby oil wells. Due to heavy ground fog, the driver probably could not have seen the train until it was only 6 seconds away from the crossing. The train's engineer sounded a proper crossing warning whistle signal, but this was probably masked by the sound of the truck's engine and did not appreciably add to the driver's warning time. There are no train-activated warning signals at the crossing.

Federal regulations (49 CFR 392.10) and Oklahoma law required the truckdriver to stop short of the crossing, ascertain that it was safe to proceed, and then move over the crossing in low gear. From the prescribed stopping point, the truck had to travel about 85 feet to clear the crossing. Based on various vehicle, load, and road factors, this would require about 23 seconds, whereas the train would travel the 2,300 feet of maximum available sight distance in 17 seconds. The earliest the driver could have heard the train's whistle sounded at the whistle post was 12.8 seconds before the train reached the crossing. Even in good weather, the driver could not safely use the crossing without positive assurance that a train was not approaching.

1/ For more detailed information about this accident read: "Railroad/ Highway Accident Report -- Collision of an Amtrak/Atchison, Topeka and Santa Fe Railway Train and a Tractor-Cargo Tank Semitrailer, Marland, Oklahoma, December 15, 1976." (NTSB-RHR-77-3)

It is intolerable to expect drivers to cross tracks at grade under conditions of train speed and perception of train approach which do not allow them reasonable chance of doing so safely.

In 1968, the National Transportation Safety Board recommended that the Federal Railroad Administration (FRA), among others, "consider the implications of this accident analysis 2/ for logical and necessary train operating speed reductions under restricted visibility wherever train tracks cross unprotected grade crossings...." The FRA at that time rejected reduction in speed of trains as the optimum solution to the train approach/crossing time problem. The problem was evident in the Marland accident and may be more prevalent than generally believed.

Both occupants of the locomotive cab were killed instantly, probably by flaming oil which entered the cab. Both the outer and inner nose compartment doors of the unit were insufficiently secured and were blown inward off their hinges at the time of impact. This permitted the immediate and massive entry of flaming oil into the cab.

In 1971, as a result of a multiple-fatality grade crossing accident at Loda, Illinois, 3/ the Safety Board recommended that the Federal Railroad Administration:

Consider possible changes in the design of locomotive control compartments, such as the shielding of the compartment against direct penetration of fire, the use of fire resistant materials, protection of air inlets and vents, and the strengthening of doors, that would provide greater protection to the occupants of the locomotive when a tank truck carrying flammable material is struck by the train. Such studies should include the development of escape plans and the assurance of their performance by tests. Until such regulatory changes can be implemented, the Association of American Railroads and the Federal Railroad Administration should consider interim changes to locomotives exposed to truck traffic at grade crossings that would improve the chances of fire survival of the occupants of the locomotive.

2/ "Waterloo, Nebraska, Public School School Bus/Union Pacific Railroad Company Freight Train Accident, Waterloo, Nebraska, October 2, 1967." (NTSB-SS-R/H-3).

3/ "Railroad/Highway Accident Report: Illinois Central Railroad Company Train Collision with Gasoline Tank Truck at South Second Street Grade Crossing, Loda, Illinois, January 24, 1970." (NTSB-RHR-71-1)

Even though FRA organized a Locomotive Control Compartment Committee in 1973 and awarded a contract for a study in 1974, the SDP-40F locomotive in this accident was designed, manufactured, and put into service without benefit of any constructive modifications which could have ameliorated the effect of this accident.

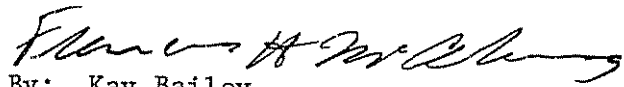
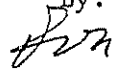
Therefore, the National Transportation Safety Board recommends that the Federal Railroad Administration:

Require all head-end locomotive units to be designed to prevent serious injury to crewmembers from penetration of flammable substances into control compartments. (Class II, Priority Action) (R-77-37)

In cooperation with the States, identify those grade crossings where inadequate warnings do not permit the prudent and careful driver to cross without risk of injury or death. (Class II, Priority Action) (R-77-38)

Undertake a program to protect the crossings which have been so identified. Consideration should be given to adequate protection or reduction of train speeds in conditions of reduced visibility and/or signals that meet real train movement situations. (Class II, Priority Action) (R-77-39)

BAILEY, Acting Chairman, McADAMS and KING, Members, concurred in the above recommendations. HOGUE, Member, did not participate.


By: Kay Bailey
 Acting Chairman