Log H-418

# NATIONAL TRANSPORTATION SAFETY BOARD
## WASHINGTON, D.C.

ISSUED: August 29, 1984

Forwarded to:
Honorable Ray A. Barnhart
Administrator
Federal Highway Administration
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)
H-84-66 through -68

About 1:10 a.m., e.d.t., on August 25, 1983, northbound National Railroad Passenger Corporation (Amtrak) train No. 88, the Silver Meteor, struck an S. L. Balogh Trucking Company, Inc., tractor-lowboy semitrailer combination truck that had become lodged on a grade crossing of the single main track of the Seaboard System Railroad in Rowland, North Carolina. The 2 locomotive units and 2 cars of the 18-car consist of the train were derailed. The truck was damaged substantially and its cargo destroyed. Two of the 365 passengers on the train were treated at the scene and 15 were taken to local hospitals; 1 passenger was admitted, and the others were treated and released. Six of the 22 train attendants also were treated and released. Amtrak reports that since the accident an additional six passengers have claimed injury. The truckdriver was not injured. There was no fire. Property damage was estimated to be about $623,399. 1/

The longest suspended span between the six axles of the combination truck was the distance of 36 feet 4 inches from the center of the tractor tandem axle tires (where the semitrailer kingpin was resting) and tires on the first axle of the semitrailer. The bottom side of the center framing of the semitrailer was only 7 inches above the roadway between those two axle locations. Because of the long span (36 feet 4 inches) and the 7-inch trailer frame-to-roadway clearance, the combination would have become lodged on any vertical curve (hump) having a radius of less than 283.17 feet. The vertical curve at the Church Street grade crossing had a radius of only 207.30 feet. As the truck-tractor passed over the track and began its travel down the east approach, the semitrailer moved across the track. The bottom side of the two low center-spaced longitudinal frame members of the semitrailer contacted the rail and stopped the unit with the forward end of the semitrailer astride the track.

Some 3 months after the Rowland accident, the Safety Board investigated a similar accident. Shortly before 3 p.m. on November 30, 1983, northbound Amtrak train No. 98 struck a C.A. Earthmover Company tractor-lowboy semitrailer combination truck that had become lodged on the Seaboard single main track at a grade crossing on county road

1/ For more detailed information read Railroad/Highway Accident Report—"Collision of Amtrak Train No. 88 with Tractor-Lowboy Semitrailer Combination Truck, Rowland, North Carolina, August 25, 1983" (NTSB/RHR-84/01).

318 at Citra, Florida. One diesel locomotive unit and four passenger cars of the nine-car train consist were derailed. The truck-semitrailer and its cargo were damaged substantially. Seven of the 96 passengers aboard the train were taken to a local hospital; all were treated and released. Twenty-nine other passengers also claimed injury. Neither the truckdriver nor his helper was injured. There was no fire.

Active warning devices were installed at the crossing in Citra. The truck was loaded properly and did not have any mechanical defects. The truck's owner had applied for and received a State of Florida permit which allowed the truck to be operated on a prescribed route. The truck was on the precribed route at the time of the accident. There was no evidence to indicate that the driver operated the truck in a manner that would have contributed to it being lodged on the crossing.

The railroad track in the Citra accident was at a higher elevation than county road 318. On the east approach, the westbound truck traveled up a grade measuring an overall average of 3.6 percent--6.5 percent over the last 26 feet. It crossed a 20-foot-wide hump containing the track and started down a grade measuring an overall average of 6.4 percent--11.9 percent in the first 31 feet. The truck-tractor moved down the 11.9 percent grade as the semitrailer traveled over the tracks. The bottom side of the low-riding sideframe members of the semitrailer contacted the crossing surface and stopped the unit with the forward end astride the track. The surface area extending about 15 feet from the track on each approach had been paved over at least twice. The layering of asphalt created the surface hump profile. Interviews with county and railroad officials revealed that neither communicated with the other about maintenance at this crossing. However, it is reasonable to assume that the railroad, as in the past, had done the paving adjacent to the track.

The Rowland and Citra accidents demonstrate the need to provide adequate vehicle ground clearance in designing and maintaining roadway profiles. Crossing profiles that consist of a vertical curve can impede the operation of a vehicle if the distance between any two axles of a vehicle span the hump and the height of the hump exceeds the vehicle's ground clearance. Grade crossings that have a roadway profile that may be hazardous to certain vehicles can be identified and, once identified, improvements can be made. Although the American Railway Engineering Association has a recommended practice on the profile and alignment of crossings and approaches stated in its "Manual for Railway Engineering," it was not followed at either the Rowland or the Citra crossings. The Safety Board is not aware of any standard highway design specifications directed to providing adequate vehicle ground clearance on highways or at grade crossings having hump profiles.

The Rowland and Citra accidents also demonstrate the need for coordination between railroads and highway departments concerning railroad/highway grade crossing maintenance. While the maintenance of the rails is the responsibility of the railroad, repaving of a crossing may be done either by the railroad or the State or local highway department, depending on agreements negotiated by the parties. Apparently, some jurisdictions do not take into consideration the fact that changes in the crossing profile may occur as a result of maintenance or that the changes in the profile may adversely affect certain vehicles that use the crossing.

In January 1984, the Florida Department of Transportation (FLDOT) created an internal committee to study the problem of hazardous grade crossing profile conditions such as those illustrated by the Citra and Rowland accidents. The formation of the committee followed the Safety Board's investigation of the Citra accident and discussions held by Board investigators with local and State officials.

The committee was mandated to pursue an aggressive program of corrective action. Its proposed broad-based actions, which will require participation by the railroads, local governments, truckers, and the FLDOT, are:

1. Developing a standard roadway (profile) design for grade crossings;

2. Identifying crossings currently not in compliance with the standard;

3. Encouraging local governments to bring crossings into compliance;

4. Suggesting to the railroads that they develop and implement a procedure for coordination and cooperation with local and State governments to assure the integrity of the profiles at grade crossings at which maintenance has been performed on the track;

5. Developing and implementing the installation of warning signs at crossings identified as having hazardous surface hump profiles; and

6. Encouraging the Florida Truck Association to inform its membership of the hazards of surface hump profiles at grade crossings.

In August 1984, the FLDOT was actively engaged in implementing all aspects of the program. Those aspects that involve participation of the railroads, truckers, and local governments have taken priority and are on-going.

There is no quantitative data that would statistically substantiate that surface hump profiles at grade crossings are a national problem. However, the circumstances in both the Rowland and Citra accidents, the actions planned by the FLDOT, and the concern expressed by other State Departments of Transportation that Safety Board investigators contacted in the course of this investigation lend support to the Safety Board's belief that the hazard is significant enough to warrant corrective measures comparable to those in the FLDOT program.

Another approach to the problem would be to establish a minimum ground clearance for all trailers. The need for adequate ground clearance in the manufacture of cargo tank vehicles is recognized in the Federal Hazardous Materials Regulations, 49 CFR 178.340(8)(d)(2), which states:

> Minimum Road Clearance. The minimum allowable road clearance of any cargo tank component or protection device located between any two adjacent axles on a vehicle or vehicle combination shall be at least 1/2 inch for each foot separating such axles and in no case less than 12 inches.

If the above regulation had been applicable to the semitrailers involved in the Rowland and Citra accidents, the ground clearance of the semitrailers would have been adequate to allow them to cross over the tracks without difficulty. At the very least, motor carriers who transport heavy equipment on vehicles with low ground clearance need to be alerted to the potential danger at some crossings.

The carrier owner knew in advance of the trip that resulted in this accident that the truck would be over the gross weight permitted in North Carolina, and he dispatched the driver with instructions to bypass the weigh scales in North Carolina. The motor carrier

did not have authority from the Interstate Commerce Commission to engage in for-hire interstate transportation. Additionally, the company failed to comply with requirements of the Federal Motor Carrier Safety Regulations (FMCSR) applicable to all interstate motor carriers of property. The carrier had no FMCSR-required driver qualification file or a current medical examiner's certificate on file for the truckdriver to assure that his background, driving experience, and physical condition qualified him to drive in interstate commerce. In further contravention of the FMCSR hours-of-service regulations, the truckdriver was not preparing a record of duty status and was permitted by the motor carrier to drive excessive hours before taking required periods of rest. In addition, his Florida driver's license was under suspension. The Bureau of Motor Carrier Safety (BMCS) had no knowledge of the motor carrier, and the owner of the carrier said that he did not believe that he was subject to the FMCSR. Even after BMCS inspectors warned the owner on December 12, 1983, that future violations of the FMCSR would result in penalties, the BMCS found one of the carrier's trucks operating in interstate commerce on December 22, 1983. These actions demonstrate the motor carrier's disposition to ignore safety and regulations promulgated to ensure safety. It dramatizes again the need for increased enforcement activity by Federal and State regulatory authorities who are responsible for ensuring the safe operation of vehicles moving in interstate commerce.

The Federal Highway Administration (FHWA) has an automated management information system (MIS) which is designed to enable the BMCS, through its regional and division offices, to identify motor carriers engaging in interstate commerce. Some of the FHWA regional offices have placed access to the MIS in some of the FHWA division offices where a BMCS officer-in-charge is located. FHWA Region IV has not implemented the MIS in its division office in Florida. Providing the MIS at the BMCS division level in each State would be an important step toward the identification of all motor carriers subject to the FMCSR because the BMCS field personnel would not only have access to the information already stored in the MIS but would be able to enter additional relevant data into the MIS as well.

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

> Issue an On Guard Bulletin alerting motor carriers of the hazards of railroad/highway grade crossings with high surface hump profiles. (Class II, Priority Action) (H-84-66)
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> Provide each Bureau of Motor Carrier Safety division office with access to the automated management information system (MIS) to facilitate identification of all motor carriers engaged in interstate commerce in their respective jurisdictions. (Class II, Priority Action) (H-84-67)
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> Develop additional information sources through which motor carriers engaged in interstate commerce can be identified and placed expeditiously into the automated management information system (MIS). (Class II, Priority Action) (H-84-68)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY and GROSE, Members, concurred with these recommendations.

By: Jim Burnett
Chairman