INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

April 14, 2006

The Honorable Jacqueline Glassman
Acting Administrator
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Federal Motor Vehicle Safety Standards; Air Brake Systems; Notice of Proposed Rulemaking; Docket No. NHTSA-2005-21462

Dear Ms. Glassman:

The National Highway Traffic Safety Administration (NHTSA) has proposed to reduce by 20-30 percent the required stopping distance for air-braked truck tractors. The Insurance Institute for Highway Safety (IIHS) welcomes the opportunity to comment on this important safety issue.

IIHS supports a 30 percent reduction in the required stopping distance for truck tractors. This would help to reduce the difference in the stopping distances of passenger vehicles and large trucks, thereby reducing the frequency and severity of crashes between these vehicles. It also will reduce the frequency and severity of other types of large truck crashes, including those involving a large truck only. Field tests have shown that a 30 percent reduction is achievable with current brake technology, and the safety benefits of this will exceed those that would be reaped from a 20 percent reduction. The larger reduction should be the goal.

Background

Large trucks account for more than their share of highway deaths, based on the number of trucks on the road and the miles they travel. In 2004 a total of 5,079 people were killed in crashes involving large trucks. Seventy-two percent of these deaths were passenger vehicle occupants, 15 percent were truck occupants, and 11 percent were pedestrians, bicyclists, or motorcyclists. In two-vehicle crashes between passenger vehicles and large trucks, 98 percent of the occupant deaths occurred in the passenger vehicles. This is mainly because of the vulnerability of the passenger vehicle occupants. Large trucks often weigh 20-30 times as much as cars. Large trucks also pose a fatality risk to occupants of other large trucks. Among large truck occupants killed in multiple-vehicle crashes in 2004, 64 percent occurred in collisions involving another large truck.

Size and weight are not the only disparities between large trucks and passenger vehicles. There also is a wide gap in stopping distance. The current federally required stopping distance for passenger

vehicles (gross vehicle weight ratings of 7,716 pounds (3,500 kg) or less) is 230 feet from 60 mph (Federal Motor Vehicle Safety Standard (FMVSS) 135). Actual stopping distances for most passenger vehicles are much shorter, typically 125-150 feet (Hachette Filipacchi Media, 2006). In contrast, the required stopping distance for fully loaded air-braked truck tractors is 355 feet from 60 mph (FMVSS 121). Actual stopping distances average 298 feet, according to the Preliminary Regulatory Impact Analysis. This disparity exacerbates the risks already associated with disparities in vehicle size and weight, and passenger vehicle occupants, pedestrians, motorcyclists, and other road users bear the brunt of the human and property damage losses.

Travel Environment

The current stopping distance standard for air-braked truck tractors has been in effect since 1995. Since then total vehicle miles traveled have increased 22 percent, and truck miles have increased 27 percent. However, there has been only a 2 percent increase in lane miles of public roads (Federal Highway Administration (FHWA), 2005a). Two out of every five urban interstate miles are considered congested (FHWA, 2005b), and travel conditions are expected to worsen by 2025. Miles traveled by heavy vehicles are expected to increase by 60-70 percent (Shaffer et al., 2005). It is estimated that the proportion of urban interstates carrying 10,000 or more trucks per day will increase to 69 percent by 2020 from 27 percent in 1998 (Hughes et al., 2005).

Higher speeds increase stopping distances for large trucks and passenger vehicles alike, and vehicle speeds on many roadways have increased dramatically during the past few years. IIHS (2003) documented the excessive travel speeds on interstates in six states. In the majority of these states more than two-thirds of vehicles on rural interstates were traveling 70 mph or faster. In two states more than one in five vehicles were traveling faster than 80 mph. Average speeds on urban interstates often were the same or higher than speeds on rural interstates. According to a recent study of truck speeds in four states with varying speed limits, about 15 percent of the large trucks were exceeding 70 mph on the rural interstate segments monitored (Johnson and Pawar, 2005).

30 Percent Reduction in Stopping Distance

The notice of proposed rulemaking documents that a 30 percent reduction in the required 60 mph stopping distance for air-braked truck tractors is achievable with current brake technology (i.e., disc brakes, larger drum brakes). This would shorten the required stopping distance from 355 to 249 feet for fully loaded tractors and from 335 to 235 feet for lightly loaded tractors. Such changes would help to reduce the difference in the stopping distances of large

trucks and passenger vehicles and almost certainly would reduce the number of deaths and serious injuries resulting from large truck crashes.

Truck stopping distance is a factor in a variety of crash types, predominantly those in which the front of a large truck strikes a passenger vehicle. NHTSA estimates that several specific crash types affected by truck stopping distance account for 26 percent of passenger vehicle deaths in large truck crashes. Other crash types that may be affected include some types of large truck-to-large truck crashes, large truck and pedestrian crashes, and single-vehicle crashes in which large trucks run off the road. Shorter stopping distances would not only reduce the severity of crashes by reducing the impact velocity but also prevent some crashes by enabling the truck to stop prior to impact or provide additional time for the truck driver to take evasive action.

A 30 percent reduction in required stopping distance would have profound effects on potential conflicts between large trucks and passenger vehicles, as illustrated by the following example. Assume that a fully loaded large truck is following a car (with an estimated stopping distance of 140 feet) by five car lengths (110 feet). Both vehicles are going 60 mph. If both drivers begin hard braking simultaneously, a truck with brakes upgraded to comply with the reduced stopping distance requirement of 249 feet would stop before striking the rear of the car. However, a truck with a stopping distance equivalent to the current standard of 355 feet would strike the car at 32 mph, producing crash forces severe enough to injure the car's occupants. A truck with a stopping distance of 298 feet, the average actual stopping distance according to the Preliminary Regulatory Impact Analysis, would strike the car at 24 mph, still producing a severe impact.

A 30 percent reduction would require most truck manufacturers to equip their trucks with higher capacity foundation brake systems. NHTSA's field tests, as well as industry tests provided to the docket, demonstrate that trucks can meet this reduction with several different types of brake systems including larger drum brakes, disc brakes, or a combination of the two. Although larger drum brakes can be used to meet the 30 percent reduction, such a requirement may encourage manufacturers to move toward disc brakes. IIHS views this as a positive development for safety. Disc brakes for large trucks are acknowledged as superior to drum brakes. They are used on almost all European trucks. Although disc brakes are more expensive than drum brakes, they offer markedly superior resistance to fade (i.e., the tendency for brakes to weaken as they heat up), which tests have shown to be particularly important when stopping from high speeds (60 mph or higher).

Because the proposed rule would apply only to new trucks, the greater cost of disc brakes relative to standard or larger drum brakes would be borne as carriers gradually replace their fleets. In addition, market forces likely would drive down the cost of disc brakes as they become more widely used.

In the Preliminary Regulatory Impact Analysis, NHTSA calculated the benefits by assuming a 30 percent reduction in stopping distance for all three types of higher capacity foundation brake systems, even though field tests showed that the actual improvements in stopping distances varied among the three systems. Thus NHTSA's estimated benefits for some of the systems may be lower than the actual benefits that would be realized.

IIHS agrees that truck tractors are the most critical type of large vehicle to address at this juncture. Seventy-four percent of deaths in large truck crashes in 2004 involved a tractor-trailer. NHTSA should monitor the effects of a 30 percent stopping distance reduction, once implemented, and move quickly to conduct research on other types of large trucks, including straight trucks.

Given the significant safety benefits achievable from this rulemaking, we urge NHTSA to move without delay to implement a 30 percent reduction in required stopping distance for air-braked truck tractors.

Sincerely,

Anne T. McCartt

Anne T. McCartt, Ph.D.
Vice President, Research

cc: Docket Clerk, Docket No. NHTSA-2005-21462

References

Federal Highway Administration. 2005a. Highway statistics, 2004. Washington, DC: U.S. Department of Transportation.

Federal Highway Administration. 2005b. Congestion management systems. Publication no. FHWA-RC-BAL-04-0015. Washington, DC: U.S. Department of Transportation.

Insurance Institute for Highway Safety. 2003. Faster travel and the price we pay. *Status Report* 38(10). Arlington, VA.

Johnson, S.L. and Pawar, N. Cost/benefit evaluation of large truck-automobile speed limit differentials on rural interstate highways. Report no. MBTC 2048. Washington, DC: U.S. Department of Transportation.

Hachette Filipacchi Media U.S., Inc. 2006. Road test summary. *Road & Track* 57(5):118-19.

Shaffer, S.J.; Freund, D.M.; Loy, L.W.; and Minor, L.W. 2005. Research required to ensure appropriate maintenance and compliance for safe operation of commercial motor vehicles (CMVs) in the year 2025. Presented at the TRB Conference on Future Truck and Bus Safety Research Opportunities. Washington, DC: Transportation Research Board.

Hughes, R.; Keppler, S.; Yeakel, S.; Deedy, C.; Moses, T.; and Carden, C. 2005. The context for commercial vehicle enforcement activity in 2020: forecast of future directions in truck safety and security. Presented at the TRB Conference on Future Truck and Bus Safety Research Opportunities. Washington, DC: Transportation Research Board.