National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 25, 2001

In reply refer to: H-01-09

Mr. Robert Shelton
Acting Administrator
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

In the past 2 years, the National Transportation Safety Board investigated nine rear-end collisions in which 20 people died and 181 were injured (three accidents involved buses and one accident involved 24 vehicles).[1] Common to all nine accidents was the rear following vehicle driver's degraded perception of traffic conditions ahead.[2] During its investigation of the rear-end collisions, the Safety Board examined the striking vehicles and did not find mechanical defects that would have contributed to the accidents. In each collision, the driver of the striking vehicle tested negative for alcohol or drugs. Some of these collisions occurred because atmospheric conditions, such as sun glare or fog and smoke, interfered with the driver's ability to detect slower moving or stopped traffic ahead. In other accidents, the driver did not notice that traffic had come to a halt due to congestion at work zones or to other accidents. Still others involved drivers who were distracted or fatigued. Regardless of the individual circumstances, the drivers in these accidents were unable to detect slowed or stopped traffic and to stop their vehicles in time to prevent a rear-end collision.

As the Safety Board reported in 1995[3] and further discussed at its public hearing, Advanced Safety Technologies for Commercial Vehicle Applications, held August 31 through September 2, 1999, existing technology in the form of Intelligent Transportation Systems (ITS) can prevent rear-end collisions. Such systems, capable of alerting drivers to slowed or stopped traffic ahead, have been available for several years but are not in widespread use. The technology to alert drivers to traffic ahead includes adaptive cruise control (ACC), collision warning system (CWS), and infrastructure-based congestion warning systems. In the nine accidents investigated

[1] The accidents occurred in Moriarty, New Mexico; Sweetwater, Tennessee; Trenton, Georgia; Sullivan, Indiana; Tinnie, New Mexico; Wellborn, Florida; West Haven, Connecticut; Elk Creek, Nebraska; and Eureka, Missouri.

[2] Driver inattention is a major causal factor in about 91 percent of rear-end crashes, as reported in: U.S. Department of Transportation, ITS Joint Program Office, *Program Area Descriptions: Motor Vehicle Crashes—Data Analysis and IVI Program Emphasis* (November 1999).

[3] National Transportation Safety Board, *Multiple Vehicle Collision With Fire During Fog Near Milepost 118 on Interstate 40, Menifee, Arkansas, January 9, 1995, and Special Investigation of Collision Warning Technology*, Highway Accident Report NTSB/HAR-95/03 (Washington, DC: NTSB, 1995).

by the Safety Board, one (and sometimes more) of these technologies would have helped alert the drivers to the vehicles ahead, so that they could slow their vehicles, and would have prevented or mitigated the circumstances of the collisions.

The work being done by private industry and the Government on vehicle- and infrastructure-based technology is encouraging, but the pace of testing and of standards development for all vehicles and of deployment for commercial vehicles is cause for concern, given the increasing number of rear-end collisions and the number of fatalities when commercial vehicles are involved. Therefore, the Safety Board has explored the issues involved in deploying technological solutions in its special investigation report *Vehicle- and Infrastructure-Based Technology for the Prevention of Rear-End Collisions*,[4] which focused on some of the challenges, including implementation, consumer acceptance, public perception, and training associated with the deployment of such systems.

Although requiring the use of the CWS is critical, consumer acceptance of the technology is equally critical. For example, educating the public of the benefits of seat belts has been as important as equipping the vehicles with or requiring the use of seat belts. The U.S. Department of Transportation (DOT) study on consumer acceptance of various automotive technologies reported that drivers, particularly older drivers, were enthusiastic about the ACC and the CWS, but were wary of how they operated and their reliability. While only 43 percent of the drivers surveyed would purchase an ACC system, 98 percent of drivers who actually drove with an ACC in the field operational test said they would purchase the system. Some drivers may be wary of new technology before using it; when air bags were first employed, people were initially apprehensive. To educate the public, the DOT and Allstate Insurance Company sponsored a demonstration of air bags using crash dummies.[5] The exhibit traveled to 100 cities over a 3-year period beginning in 1990. The purpose of the exhibit, according to Allstate's chairman and chief executive officer, was to "encourage consumers to purchase cars with air bags because we know they save lives and reduce injuries." A similar program could be developed to educate the public on the safety benefits of the CWS. The average driver, whether a passenger car or commercial vehicle driver, does not know what actually exists in the way of ITS and has never experienced what it is like to drive with some of these technologies.[6]

From August 31 through September 2, 1999, the Safety Board held the public hearing Advanced Safety Technologies for Commercial Vehicle Applications.[7] In discussing what the Government can do to promote the implementation of technology at the public hearing, a trucking company representative said that the Government could provide more information on the technologies, so that the data presented by the manufacturers is not suspect (consumers may think the manufacturer is just trying to sell something). He added that electronics in trucks is still

[4] For more information, read: National Transportation Safety Board, *Vehicle- and Infrastructure-Based Technology for the Prevention of Rear-End Collisions*, Special Investigation Report NTSB/SIR-01/01 (Washington, DC: NTSB, 2001).

[5] Insurance Institute of Highway Safety, *IIHS Status Report*, Volume 25, Number 10 (Arlington, VA: November 17, 1990).

[6] Michael A. Regan, Claes Tingvall, David Healy, and Laurie Williams, "Trial and Evaluation of Integrated In-Car ITS Technologies: Report on an Australian Research Program," *Seventh World Congress on Intelligent Transport Systems, November 5-9, 2000, Turin, Italy*.

[7] National Transportation Safety Board, Docket No. DCA-99-FH-002.

relatively new and that consumers are not yet completely comfortable with it. If the Government would publish solid data on the benefit of a certain technology, and the benefits of multiple technologies, the trucking industry may be more apt to adopt the electronics. Transmitting this information to the public is crucial to the acceptance of the ACC and the CWS technologies. The Safety Board has concluded that information concerning the use and benefits of effective CWSs and ACCs is critical to their acceptance by the driving public.

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

> Develop and implement, in cooperation with the Federal Highway Administration; the Intelligent Transportation Society of America; and the truck, motorcoach, and automobile manufacturers, a program to inform the public and commercial drivers on the benefits, use, and effectiveness of collision warning systems and adaptive cruise controls. (H-01-09)

The Safety Board also issued safety recommendations to the U.S. Department of Transportation; the Federal Highway Administration; automobile, truck, and motorcoach manufacturers; the Intelligent Transportation Society of America; the American Trucking Associations, Inc.; the Owner-Operator Independent Driver Association; and the National Private Truck Council.

Please refer to Safety Recommendation H-01-09 in your reply. If you need additional information, you may call (202) 314-6440.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

Original signed

By: Carol J. Carmody
Acting Chairman