



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 19, 2009

In reply refer to: H-09-27

Mr. Neil D. Schuster
President and Chief Executive Officer
American Association of Motor Vehicle Administrators
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The National Transportation Safety Board (NTSB) is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The NTSB is vitally interested in the recommendation because it is designed to prevent accidents and save lives.

The recommendation addresses the need for accurate tire pressure assessment on commercial vehicles. The recommendation is derived from the NTSB's investigation of the August 8, 2008, motorcoach accident that occurred in Sherman, Texas, and is consistent with the evidence we found and the analysis we performed.¹ As a result of this investigation, the NTSB issued 12 safety recommendations, 1 of which is addressed to the American Association of Motor Vehicle Administrators (AAMVA). Information supporting the recommendation is discussed below. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

About 12:45 a.m., central daylight time, on Friday, August 8, 2008, a 2002 56-passenger Motor Coach Industries, Inc., motorcoach, operated by Iguala BusMex, Inc., was northbound on U.S. Highway 75 when it was involved in a single-vehicle, multiple-fatality accident in Sherman, Texas. The chartered motorcoach had departed the Vietnamese Martyrs Catholic Church in Houston, Texas, at approximately 8:30 p.m. on August 7, 2008, with a driver and 55 passengers

¹ See *Motorcoach Run-Off-the-Bridge and Rollover, Sherman, Texas, August 8, 2008*, Highway Accident Report NTSB/HAR-09/02 (Washington, DC: National Transportation Safety Board, 2009), which is available on the NTSB website at <http://www.nts.gov/publictn/2009/HAR0902.pdf>.

onboard, en route to the Marian Days Festival in Carthage, Missouri. When the accident occurred, the motorcoach had completed about 309 miles of the approximately 600-mile-long trip.

Before the crash, the motorcoach was traveling in the right lane of the four-lane divided highway. As the motorcoach approached the Post Oak Creek bridge at a speed of about 68 mph, its right steer axle tire failed. The motorcoach departed the roadway on an angle of about 4 degrees to the right, overrode a 7-inch-high, 18-inch-wide concrete curb, and struck the metal bridge railing. After riding against the bridge railing for about 120 feet and displacing approximately 136 feet of railing, the motorcoach went through the bridge railing and off the bridge. It fell about 8 feet and slid approximately 24 feet on its right side before coming to rest on the inclined earthen bridge abutment adjacent to Post Oak Creek. As a result of the accident, 17 motorcoach passengers died; 12 passengers were found to be dead at the crash site, and 5 others later died at area hospitals. In addition, the 52-year-old driver received serious injuries, and 38 passengers received minor-to-serious injuries.

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the right steer axle tire, due to an extended period of low-pressure operation, which resulted in sidewall, belting, and body ply separation within the tire, leading to loss of vehicle control. Contributing to the severity of the accident was the failure of the bridge railing to redirect the motorcoach and prevent it from departing the bridge. The lack of an adequate occupant protection system contributed to the severity of the passenger injuries.

Following the accident, the pressure of each intact tire was measured. Compared to the recommended tire pressures on the vehicle specification plate, the left steer axle tire pressure was 2 psi below the recommended 120 psi. The pressures of three of the tires on the drive axle were above the recommended 90 psi, by values of 6 psi, 4 psi, and 3 psi.² The pressures of the two tires on the tag axle were 31 psi and 32 psi below the recommended 120 psi.

Title 49 *Code of Federal Regulations* 392.7 requires commercial drivers to examine the tires of their motor vehicles at the beginning of each trip. The driver of the accident motorcoach reported that he checked the tires, looking for protrusions, wear and tear, and discoloration, and that he kicked the tires prior to departing on the accident trip. According to the regulations, drivers are permitted to visually inspect the tires to determine if they are properly inflated; use of a tire gauge is not mandated. However, it is difficult, if not impossible, to visually determine whether a tire is inflated to the proper pressure.³ Tires designed to give a smooth ride may always look underinflated, while tires with stiff sidewalls can look properly inflated even at pressures substantially lower than those recommended. The AAMVA model commercial driver's license (CDL) manual recommends that a driver use a tire gauge to check tire inflation; however, it also states that use of a mallet to check inflation is permissible.

² The drive axle had four tires, but the right outer tire on the drive axle was found deboned as a result of the accident.

³ S. Singh, K. Kingsley, and C. Chen, *Tire Pressure Maintenance—A Statistical Investigation*, DOT HS 811 086 (Washington, DC: National Highway Traffic Safety Administration, April 2009).

Postaccident inspection of the motorcoach indicated that several of the vehicle's tires did not meet recommended inflation levels. The tires on the tag axle were more than 25-percent underinflated when examined. As demonstrated by the Sherman accident, underinflation of tires can lead to safety issues such as overloading and tire failures. It is possible that the right steer axle tire that failed, leading to the accident, was underinflated before the trip began. It is also possible that had the pressure in the motorcoach's tires been checked with a tire gauge before the accident trip began, the underinflated tires would have been detected, because a gauge would have given a specific pressure number. The Federal Motor Carrier Safety Administration (FMCSA) regulations and AAMVA guidelines that permit drivers to measure tire pressure by either visually inspecting the tire or "thumping" it with a mallet are not adequate to identify an underinflated tire. Therefore, the NTSB concluded that because underinflated tires can lead to tire failure and because the currently approved methods of visual inspection or "thumping" tires with a mallet are inaccurate, a tire pressure gauge should be used to accurately assess tire pressure. Consequently, the NTSB is recommending that the FMCSA require that tire pressure be checked with a tire pressure gauge during pretrip inspections, vehicle inspections, and roadside inspections of motor vehicles.

Also, as a result of this investigation, the NTSB makes the following recommendation to the American Association of Motor Vehicle Administrators:

Revise the model *Commercial Driver's License Manual* to stipulate that tire pressure be checked with a tire pressure gauge during pretrip inspections, vehicle inspections, and roadside inspections of motor vehicles. (H-09-27)

The NTSB also issued safety recommendations to the Federal Highway Administration, the Federal Motor Carrier Safety Administration (FMCSA), the National Highway Traffic Safety Administration (NHTSA), the American Association of State Highway and Transportation Officials, and Motor Coach Industries, Inc. The NTSB also reiterated previous recommendations to the FMCSA and NHTSA.

In response to the recommendation in this letter, please refer to Safety Recommendation H-09-27. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox procedures. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Member SUMWALT concurred in this recommendation.

[Original Signed]

By: Deborah A.P. Hersman
Chairman