



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: August 4, 2003

In reply refer to: H-03-23

Ms. Linda Lewis
President and Chief Executive Officer
American Association of Motor Vehicle Administrators
4301 Wilson Boulevard
Arlington, Virginia 22203

The National Transportation Safety Board 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 Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses the need for guidance concerning tire condition, inspection, and maintenance. The recommendation is derived from the Safety Board's investigation of the May 8, 2001, rollover of a 1993 Dodge 15-passenger van on U.S. Route 82 near Henrietta, Texas, and the July 1, 2001, overturn of a 1989 Dodge Ram 15-passenger van on U.S. Route 220 near Randleman, North Carolina,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued 16 safety recommendations, 1 of which is addressed to the American Association of Motor Vehicle Administrators. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On May 8, 2001, about 8:57 a.m., central daylight time, a 1993 Dodge 15-passenger van was eastbound on U.S. Route 82 near Henrietta, Texas, en route from Burkburnett, Texas, to an outlet mall in Gainesville, Texas. The driver and 11 passengers, all members of the First Assembly of God Church, occupied the van. As the vehicle approached milepost 538 in the left lane, at a calculated speed of 61 to 67 mph, the left rear tire experienced a tread separation and blowout; subsequently, the van departed the roadway and rolled over at least two times in the median, ejecting seven passengers before coming to final rest. The driver and three of the ejected passengers sustained fatal injuries, and eight passengers sustained serious injuries.

¹ For additional information, read National Transportation Safety Board, *Dodge 15-Passenger Van Rollover on U.S. Route 82 Near Henrietta, Texas, on May 8, 2001, and Dodge 15-Passenger Van Overturn on U.S. Route 220 Near Randleman, North Carolina, on July 1, 2001*, Highway Accident Report NTSB/HAR-03/03 (Washington, DC: NTSB, 2003).

On July 1, 2001, about 2:30 p.m., eastern daylight time, a 1989 Dodge Ram 15-passenger van was northbound in the left lane on U.S. Route 220, near Randleman, North Carolina, en route from Myrtle Beach, South Carolina, to Roanoke, Virginia. The van, owned by Virginia Heights Baptist Church of Roanoke, Virginia, was occupied by the driver and 13 passengers, ages 13 to 19. As the vehicle approached the Level Cross, North Carolina, exit, at a witness-estimated speed of 65 mph, the left rear tire experienced a tread separation and blowout; subsequently, the van moved from the left lane into the right lane, then back into the left lane, where it overturned and came to rest in the travel lanes. During the accident sequence, four passengers were ejected, one of whom was fatally injured and three of whom sustained serious injuries; the driver and the other nine passengers sustained injuries ranging from none to serious.

The National Transportation Safety Board determined that the probable cause of the accidents was tire failure, the drivers' response to that failure, and the drivers' inability to maintain control of their vans. Contributing to the accidents was the deteriorated condition of the tires, as a result of the churches' lack of tire maintenance, and the handling characteristics of the vans. Contributing to the severity of the injuries was the lack of appropriate *Federal Motor Vehicle Safety Standards* applicable to 15-passenger vans in the areas of restraints and occupant protection.

Two of the Henrietta van's four tires, including the tire that suffered the tread/belt separation, were original tires (8 years old). Three of the four tires on the Randleman van were more than 8 years old. When not in use, both vans had been parked in the unprotected parking lots of their respective churches since purchase. The tires were subject to the ozone and ultraviolet light present outdoors, which can degrade the tire rubber, leading to dry rot and weather checking. These phenomena are typical of a sedentary vehicle; during normal use, anti-degradants introduced during the tire manufacturing process are released and brought to the surface of the tire. When a vehicle is not driven extensively (the Henrietta van averaged 5,500 miles per year and the Randleman van averaged about 7,000 miles per year), this release does not occur. Visual inspection of the two original tires on the Henrietta van and all the tires on the Randleman van revealed that the tires were drying out and that the rubber was rotting and cracking. These conditions can lead to tire failure. The sidewall and tread groove cracking on the tires of both vans was evidence of this degradation due to weather.

Neither the degradation of the tires from weather nor the underinflated pressure of the left rear tire by itself is likely to have caused the tire failure on either van. Nonetheless, they were contributory factors. Also, a small hole extending through all the tire components of the Henrietta tire may have allowed air to penetrate the tire, thereby degrading its structural integrity. The Safety Board concludes that a combination of underinflation, degradation from weather, and, in the case of the Henrietta van tire, a possible infiltration of air through a small puncture, is likely to have led to the rapid air loss and tread/belt separation on both the Henrietta and the Randleman left rear tires.

In addition, the right rear tire on the Randleman van was underrated for the accident vehicle, that is, the tire could not carry the maximum load required for the vehicle. An underrated tire flexes too much and can lead to failure. The required tire rating is printed in the owner's manual and can also be found on the tire. A replacement tire should always have the

same or greater load rating as the original. The owner could provide no information on why an underrated tire had been placed on the Randleman van.

Both accident vehicles had undergone recent State safety inspections; the Henrietta van passed a Texas inspection on October 23, 2000, and the Randleman van passed a Virginia inspection in December 2000. The Texas criteria included visual inspection of tire pressure, as well as identification of tread or sidewall cracks and cuts or snags of more than 1 inch that were deep enough to expose the body cords. The Virginia criteria included checking for cuts in tire fabric, for wear so extensive that the fabric or steel cord is visible, and for knots or bulges in the sidewalls, broken belts, or tread separation from the fabric. Neither State's criteria included excessive cracking and weather checking, a defect on five of the eight tires on the two accident vehicles. Nor did either State require inspectors to make sure that proper load-rated tires were on the vehicle or that tires were inflated to the manufacturer-recommended pressure. While none of these conditions alone was responsible for the tire failures in these accidents, the weather checking and underinflation were contributory factors, and the improperly rated tire on the Randleman accident van could have created an unsafe condition.

The American Association of Motor Vehicle Administrators (AAMVA) inspection handbook recommends that vehicle inspections include measuring tire pressure and, as necessary, correcting deficiencies if the owner agrees. The guidelines do not address weather checking and cracking as criteria for rejection during an inspection. The Safety Board concludes that the AAMVA guidelines for vehicle safety inspections are not thorough enough because they exclude factors such as weather checking and tire rating.

Therefore, the National Transportation Safety Board recommends that the American Association of Motor Vehicle Administrators:

Revise your *Passenger Vehicles and Light Trucks Inspection Handbook* to provide guidance on inspecting and failing tires for extensive weather checking or deterioration and on examining tires to ensure that they have the proper load rating. (H-03-23)

The Safety Board also issued safety recommendations to the National Highway Traffic Safety Administration, the Federal Motor Carrier Safety Administration, the 50 States and the District of Columbia, the American Driver and Traffic Safety Education Association, the American Automobile Association, the National Safety Council, Ford Motor Company, and General Motors Corporation. In your response to this letter, please refer to Safety Recommendation H-03-23. If you need additional information, you may call (202) 314-6177.

Chairman ENGLEMAN, Vice Chairman ROSENKER, and Members GOGLIA, CARMODY, and HEALING concurred in this recommendation.

By: Ellen G. Engleman
Chairman