

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: April 4, 1979

Forwarded to:

Mr. David Humphreys
President
Recreation Vehicle Industry
Association
14650 Lee Road
Chantilly, Virginia 22021

SAFETY RECOMMENDATION(S)

H-79-13

The National Transportation Safety Board undertook its special study "Safety of Multipurpose Vans"^{1/} for the following reasons:

- o There were 740 persons who died in van accidents in 1977; by comparison, 655 persons died in air carrier accidents, 653 died in railroad accidents, 43 died in pipeline accidents, and 216 died in commercial marine accidents.
- o To determine the injurious effects of custom interior furnishings and structural modifications to customized vans.
- o To determine the injurious effects on occupants of custom vans because certain Federal Motor Vehicle Safety Standards (FMVSS) do not apply to vans.
- o To provide actual crash data to the National Highway Traffic Safety Administration for its on-going and planned accident studies to support the extension of existing FMVSS's to light trucks and vans.

The Safety Board investigated 18 accidents involving 19 vans and analyzed injury-producing environments, restraints, crashworthiness, and ease and difficulty of escape, and postcrash fire.

^{1/} For more information read "Special Study -- Safety of Multipurpose Vans" (NTSB-HSS-79-1).

The Safety Board found that in most accidents at least some interior furnishings, such as chairs, couches, beds, cabinets, and appliances, came loose from their securements. In one head-on crash, two occupants seated in the living area of the van were killed. The refrigerator, stereo components, paneling, shower components, and an unsecured couch and chair were suspected of causing or contributing to the deaths. In a rear-end collision, a custom couch reportedly came forward and struck a sink/icebox combination cabinet. As a result of the crash, the driver was driven backward into his seat causing the seat to fail rearward and the driver to strike his head on the upper cabinet of the sink/icebox. The driver sustained a cerebral concussion and amnesia. Examination of the couch revealed that it was toe-nailed with small nails at the front into the 1/8-inch wall paneling. The lower cabinet containing the sink/icebox had been secured to the paneled wall of the van by four nails which all pulled out.

In other accidents, although occupants were not injured, the injury potential was obvious. For example, in one crash a large wooden spool, normally used to ship industrial cable, was used as a table. The spool was propelled forward against the right front seat and damaged the backrest. An unsecured object such as this, even though padded, could cause crushing injuries to a small child or elderly person.

In another crash the importance of interior construction features was shown. A series of 1-inch by 2-inch transverse wooden members were used as a base to which paneling could be attached. In the crash, one of these wooden members came forward 12 inches into the driver's seating area. Although it is not known if the wooden members actually caused the driver's fatal injury, they certainly could have done so.

In another report^{2/} the Safety Board recommended that the Recreation Vehicle Industry Association (RVIA) determine the best methods of securing appliances in recreational vehicles and amend its standards. On May 27, 1976, the RVIA responded that it intended to conduct crash tests to develop construction guidelines to assist its members in meeting FMVSS-301--Fuel System Integrity. Along with these same crash tests, the RVIA stated that it would develop recommendations for appliance anchorage standards and would recommend that they be proposed for adoption in Standard NFPA 601C/ANSI A119.2; this was the intent of the Board's original recommendation. Since that time, the RVIA has conducted the crash tests and has published a manual, "Guidelines for Conformance--FMVSS-301." In the manual, securement of appliances is addressed

2/ "Highway Accident Report--Collision of Winnebago Motor Home with Bridge Column, near Monroe, Michigan, July 1, 1975" (NTSB-HAR-76-2).

from the standpoint of how appliance movement might damage the fuel systems and thereby constitute noncompliance with FMVSS-301. These are excellent examples of how to determine the forces on the appliance attachments from an engineering viewpoint. Although the RVIA is to be commended for developing and publishing these much needed data, it still does not meet the intent of the Safety Board's original recommendation, and there is no indication that the guidelines will be adopted as standards.

Therefore, more work must be done in the area of securements. The RVIA has taken the important first step in publishing the preliminary work on determining the forces acting on appliance attachment points during an accident, but needs to go farther in determining the best methods for securing appliances. Then, its standards must be amended.

The RVIA, the largest organized body representing recreational vehicle interests, has demonstrated that it is capable of completing this work. Since the small independent custom shops do not have the capability or resources to take on such a project, the RVIA will be serving two purposes: (1) it would provide the securement information for small independent customizers and individual van owners who do their own customizing and (2) it would provide the information for its members, some of whom do van conversions.

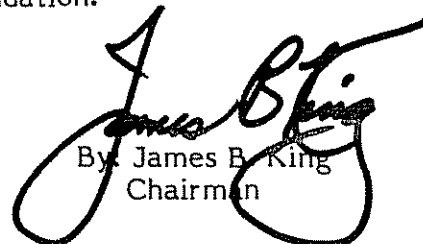
As a result of this special study, the National Transportation Safety Board reiterates a recommendation previously made to the Recreation Vehicle Industry Association and extends that recommendation to vans:

"Conduct an engineering study through its membership to determine the best methods of securing appliances in recreational vehicles and amend the Standard for Recreational Vehicles (A119.2) to specify these methods." (H-76-9)

The Safety Board further recommends that the Recreation Vehicle Industry Association:

Conduct an engineering study through its membership to determine the best methods of securing furnishings, such as custom beds, seats, couches, and paneling, and to amend the Standard for Recreational Vehicles (A119.2) to specify these methods. (Class II, Priority Action) (H-79-13)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendation.


By: James B. King
Chairman