

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

SP-10  
Ray 1852

ISSUED: December 17, 1985

Forwarded to:

Mr. Edward W. Stimpson  
President  
General Aviation Manufacturers  
Association  
1400 K Street, N.W. Suite 801  
Washington, D. C. 20005

SAFETY RECOMMENDATION(S)

A-85-126

The National Transportation Safety Board has concluded its General Aviation Airplane Crashworthiness Project. Detailed findings of the project, in which the Safety Board examined over 500 relatively severe general aviation airplane accidents to determine what proportion of the occupants would have benefitted from the use of shoulder harnesses and other crashworthiness improvements, are presented in a series of three reports. 1/ The Safety Board found that 20 percent of the fatally-injured occupants in these accidents could have benefitted from the use of shoulder harnesses and that 88 percent of the seriously injured could have had significantly less severe injuries with the use of shoulder harnesses. The Safety Board concluded that shoulder harness use is the most effective way of reducing fatalities and serious injuries in general aviation accidents.

During the in-depth investigations of general aviation accidents, many examples of good seat and restraint designs were found as well as many examples of very poor designs. In some accidents, the Safety Board found restraint systems which were adequate when new but which had deteriorated with age to the point that they could no longer fulfill their intended functions. In many accidents, the seats did not remain attached, derogating any benefit which a restraint system might have contributed.

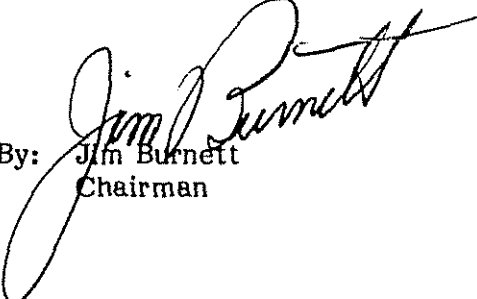
As a result of its safety study, the National Transportation Safety Board recommends that the General Aviation Manufacturers Association:

Encourage its members to evaluate the design of the seat/restraint systems in those models of airplanes in wide use to identify additional weaknesses which could be easily correctable. Definitive actions should be taken to implement the corrections, including installing the many modifications and retrofit kits that are presently available for the installation of shoulder harnesses and for the strengthening of seat feet. (Class II, Priority Action) (A-85-126)

1/ Safety Studies--"General Aviation Crashworthiness Project, Phase One," June 27, 1983 (NTSB/SR-83/01); "General Aviation Crashworthiness Project, Phase Two, Impact Severity and Potential Injury Prevention in General Aviation Accidents," March 15, 1985 (NTSB/SR-85/01); "General Aviation Crashworthiness Project: Phase Three--Acceleration Loads and Velocity Changes of Survivable General Aviation Accident," September 4, 1985 (NTSB/SR-85/02).

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation A-85-126 in your reply.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in this recommendation.

By:   
Jim Burnett  
Chairman