Y06 2513A SR-1

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: June 28, 1994

In reply refer to: A-94-123

Mr. Phil Boyer, President
Aircraft Owners and Pilots Association
421 Aviation Way
Frederick, Maryland 21701

The National Transportation Safety Board has investigated several general aviation airplane accidents in which pilots and passengers sustained serious injuries or were killed because their upper bodies were not restrained by shoulder harnesses. The Board believes that many of these injuries and deaths would have been averted had the seats been equipped with shoulder harnesses. Two recent accident investigations have again illustrated the need for shoulder harnesses at front seats:

On April 25, 1993, a Cessna TU206D sustained a total loss of engine power while in cruise flight about 2,000 feet over Culebra, Puerto Rico. The private pilot reported his in-flight emergency to San Juan Center Radar Approach Control (CERAP), and received vectors to Culebra Airport, San Juan, Puerto Rico. The pilot ditched the airplane in Flamingo Bay about 1 1/2 miles from shore. The airplane was not equipped with shoulder harnesses. The pilot was fatally injured, the passenger sustained minor injuries, and the airplane was destroyed. The passenger stated that after informing the CERAP of the emergency, the pilot attempted to restart the engines without success. When the airplane hit the water, the pilot was thrown into the instrument panel and the windshield. The passenger exited the airplane via the broken windshield and was assisted to shore by swimmers who had observed the ditching. The pilot did not escape.

On March 7, 1993, a Piper PA-28-140 crashed shortly after takeoff from Kissimmee Airport, Kissimmee, Florida. No shoulder harnesses were installed in the airplane. The pilot and only passenger struck the instrument panel and sustained serious injuries. The airplane was destroyed.

Previous accidents illustrating the need for shoulder harnesses at all passenger seats include two accidents that resulted in fatal injuries to children being held on adults' laps and restrained by the adults' safety belts. The children sustained fatal injuries when the adults were thrown on top of them, causing the children to strike articles in front of them. The Safety Board issued recommendations to the Federal Aviation Administration

(FAA), the General Aviation Manufacturers Association, and the Aircraft Owners and Pilots Association on the danger of children being held and being restrained by an adult's safety belt and the benefits of children occupying FAA-approved restraint systems, i.e., car safety seats.[1] Although the recommendations did not address the lack of shoulder harnesses as contributing to the severity of the children's injuries, the Safety Board believes that had the adults' upper torsos been restrained, the children may not have sustained fatal crushing injuries to their heads.

For many years the Safety Board has advocated and recommended the installation of shoulder harness retrofit kits at all seats in in-service airplanes. However, retrofit is not required by the FAA.

Between 1983 and 1985, the Safety Board conducted a "General Aviation Airplane Crashworthiness Project," which examined more than 500 general aviation accidents and, in part, addressed occupant restraint systems.[2] The results of the project clearly showed significant benefits of having shoulder harnesses at all seats. For instance, in survivable accidents, pilots' and passengers' unrestrained upper torsos were thrown forward at impact causing injuries to their chests, faces, and heads when they struck instrument panels, glare shields, and windshields.

Fortunately, progress has been made by the general aviation community to voluntarily retrofit older airplanes with shoulder harnesses. However, the continued incidence of preventable injuries clearly indicates the need to consider ways to encourage owners to install shoulder harnesses. One possible incentive would be for the insurance industry to offer reduced premiums, which would help offset the cost of a shoulder harness retrofit on all seats.

The Safety Board believes that increased awareness of the importance of shoulder harness installation and usage on all seats as well as some incentive to install shoulder harness retrofit kits will help reduce preventable injuries. Retrofit shoulder harness kits are available from several manufacturers at costs ranging from $350 to $1,000 per airplane, depending on the number of seats. A reduced insurance premium could help offset the cost of the kits and thereby provide an additional incentive.

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[1]Safety Recommendations A-93-106 through 109, August 31, 1993.

[2]NTSB No. SR 83/01, 85/01, and 85/02 General Aviation Crashworthiness Project Phases I, II, and III (NTIS PB83-917004, PB85-917002, and PB85-917016).

In view of the foregoing, the National Transportation Safety Board recommends that the Aircraft Owners and Pilots Association:

> Encourage its member aviation insurance underwriters to provide reduced insurance premiums to airplane owners who equip their airplanes with shoulder harnesses at all seats. (Class II, Priority Action) (A-94-123)

Also a result of the above information, the Safety Board issued Safety Recommendation A-94-122 to the Aviation Insurance Association.

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-94-123 in your reply.

Acting Chairman HALL, and Members LAUBER, HAMMERSCHMIDT, and VOGT concurred in this recommendation.

By: Jim Hall
Acting Chairman