NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 A.M., E.D.S.T., JUNE 2, 1975

ISSUED: June 2, 1975

Forwarded to:

Honorable James E. Dow
Acting Administrator
Federal Aviation Administration
Washington, D. C. 20591

SAFETY RECOMMENDATION(S)

A-75-50 & 51

The National Transportation Safety Board's investigation of a Piper Seneca (PA-34-200) accident near Taos, New Mexico, on February 17, 1974, disclosed an unsafe seat design condition which should be corrected. Four standard passenger seats and one smaller passenger seat (7th seat), which were installed behind the pilot and copilot seats, separated from their attachments during the crash sequence and were found in a pile in the forward part of the cabin. These seats were attached to the floor by means of "quick disconnect" fittings so that the seats could be removed. Although the seatbelts were attached to the aircraft floor, none had been fastened around the empty seats.

During the crash sequence, deceleration forces were relatively moderate, based on the crash path and the aircraft damage. Additionally, autopsy findings and damage to the aircraft's instrument panel indicate that the pilot would have survived if he had been wearing the shoulder harness that was available. Nevertheless, the five unoccupied passenger seats came loose, were propelled forward in the cabin, and probably contributed to his injuries.

The Safety Board has learned from Piper Aircraft Corporation that these "quick disconnect" seats and their attachments have been tested statically and that the seats comply with 14 CFR 23 strength requirements. However, during the accident, the seats pulled out of their attachments under moderate dynamic loads.

Furthermore, Safety Board personnel inspected in-service aircraft with the "quick disconnect" seat installation and

determined that a slight jerk upward with one hand on the back of the seat will dislodge the aft fasteners; the seat was then free to rotate out of its forward fasteners. Although static tests for this seat installation showed that it would sustain 60 pounds ultimate upward load, an unoccupied, unbelted seat could easily be pulled loose.

During its investigation, the Safety Board learned that the FAA is also concerned about these seat failures and that an FAA Southern Region representative had contacted Piper Aircraft Corporation about the problem. On September 19, 1974, Piper reported to FAA's Southern Region that it had instituted several changes to correct the problem. These changes included an improved seat latching device on newly manufactured aircraft and revisions to the Owner's Handbooks, Pilot's Checklists, and Pilot's Operating Manuals of in-service aircraft to specify that seatbelts be fastened around unoccupied seats. Despite these actions, the Safety Board is concerned that the problem has not been solved.

Although the Safety Board believes that Piper's "improved new design unlocking device" will help to prevent seats on newer Piper aircraft from unlatching, the Board believes that the other actions will not prevent seats on in-service aircraft from coming loose. The same conditions which could cause the seat to come loose when empty could also cause it to come loose when the seatbelt is loosely fastened around an empty seat or an occupant. In view of the above, the Safety Board believes that this design deficiency should be corrected by a design change on in-service airplanes, as well as the design change on newly manufactured airplanes. The change to the Pilot's and Owner's Manuals by Piper is commendable; however, we consider it adequate only as an interim measure until a retrofit is accomplished.

The Safety Board also questions the adequacy of 14 CFR 23 certification criteria for static testing of seats and restraint devices. The seat attachments in this case, which had been certificated under 14 CFR 23, were not adequate and had to be redesigned. The Safety Board, therefore, reiterates its belief that crashworthiness standards for small aircraft should include dynamic testing of aircraft seats as a part of the certification requirements. The Safety Board further believes that the mechanism which caused the "quick disconnect" seats to fail would have been identified in the certification process if realistic dynamic tests had been made.

In a letter dated August 28, 1970, to the FAA Administrator, the Safety Board recommended dynamic testing of aircraft seats as part of a comprehensive crashworthiness program. The FAA responded on September 3, 1970, that they were contemplating rulemaking action, and on November 7, 1972, that sufficient data were not available to support a requirement that aircraft seats be dynamically tested. The latter response indicated that rulemaking would be undertaken as soon as data were available to support such action. The Safety Board believes that considerable data are available to show that dynamic testing of aircraft seats is necessary and can be accomplished with relatively simple equipment. For example, FAA report NA-69-5, "Dynamic Test Criteria for Aircraft Seats," shows explicitly that such tests are necessary and can be accomplished easily. The Safety Board believes that amendments to aircraft certification regulations requiring dynamic testing of seats to improve crashworthiness are necessary.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

1. Issue an Airworthiness Directive to require that an improved latching device be installed on all Piper aircraft designed with "quick disconnect" seat installations. (Class II)

2. Amend 14 CFR 23.785(f) to require dynamic testing of seats to insure more realistic protection of occupants from serious injury in a minor crash. (Class III)

REED, Chairman, McADAMS, THAYER, BURGESS and HALEY, Members, concurred in the above recommendations.

By: John H. Reed
Chairman

THIS RECOMMENDATION WILL BE RELEASED TO THE PUBLIC ON THE ISSUE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THE CONTENTS OF THIS DOCUMENT SHOULD BE MADE PRIOR TO THAT DATE.

Safety Recommendation Reiteration List

SR Number	Reiteration Number	Report Number	Report Date	Accident Description	Accident City	Accident State	Accident Date
A-75-051	1	AA-80-15	12/9/1980	Air Wisconsin, Inc., Swearingen A-226 Metro, N650S	Valley	NE	6/12/1980