

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 1, 1978

Forwarded to:

Honorable Langhorne M. Bond
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-78-35 and -36

On May 23, 1977, a "Zuni" glider, N101AT, a high-performance racing glider manufactured by Aero Tek, crashed when its wings separated in flight at Moriarty, New Mexico. The wings failed at their attachment fittings under a high positive overload during a "racing porpoise" maneuver. Although the pilot was able to get out of the cockpit, his parachute did not open.

On July 31, 1977, another Zuni prototype glider, N22HL, was heavily damaged when it ground looped while on tow for takeoff. Water ballast sloshing was a possible factor. The flight was reportedly for proficiency training. In January 1978 near Genoa, Nevada, still another Zuni prototype glider was involved in an incident when the pilot experienced 1 1/2 seconds of aileron flutter, pitching oscillations accompanied by vertical accelerations, and wing flutter. Inspection of the glider revealed delaminations in the wing. The wing and control surfaces had been constructed of fiberglass.

These three gliders were being operated under experimental airworthiness certificates for the purposes of "racing and exhibition" and were restricted by the limitations of 14 CFR 91.42.

During the course of our investigation of these cases, it became apparent that the current guidance material contained in the basic glider criteria handbook are inconsistent and may not be equivalent to the airworthiness provisions in 14 CFR 23 relating to normal, utility, and acrobatic category airplanes. A technological gap appears to exist, especially in regard to high performance fiberglass gliders such as the Zuni. Moreover, our accident experience in connection with high performance fiberglass gliders has prompted concern in several areas including structures, vibration and flutter, and stability and control.

The lack of a unified set of specific requirements relating to glider design is probably a primary factor in explaining why the Zuni

was not type certificated in a standard category at the outset. It appears to be considerably more difficult to certificate an aircraft such as the Zuni in the United States than in Europe for two reasons: The high cost and the amount of time involved. Both constraints appear to stem directly from the lack of specific regulatory requirements governing glider design.

Currently, European manufacturers dominate the high performance glider market, primarily because of an efficient regulatory process combined with their technical expertise in advanced glider design. Similarly, the development by FAA of a set of modern unified regulations governing glider design would lend significant impetus to the development of safe high performance gliders in this country. Such a set of requirements would also serve as a further means of more accurately assessing the airworthiness of foreign gliders imported into this country under FAR 21.29--"Issue of Type Certificate: Import Products."

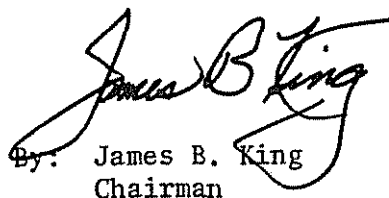
Investigation of these cases also revealed that none of the gliders involved had been certified in the experimental category for the purposes of "research and development" or for "showing compliance with regulations." At the time of the first accident, however, 1 other Zuni glider was operational and 14 others were being manufactured. Based on 14 CFR 21.191, each purchaser could obtain experimental certificates for the purpose of air racing, which could be renewed annually. Conceivably, any manufacturer could mass-produce "air racing" gliders and sell them to the public without submitting the engineering data and conducting flight tests necessary to verify airworthiness of the aircraft and determine safe limits. The Safety Board believes that this is an abuse of the experimental certificate.

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

Issue, as soon as possible, comprehensive regulations for the design and construction of gliders which reflect the current state of the art and are consistent with the regulatory requirements for other types of aircraft. (Class II, Priority Action) (A 78-35)

Amend current regulations to prevent issuance of experimental certificates for the purposes of exhibition and/or air racing to purchasers of newly manufactured production aircraft (Class II, Priority Action) (A 78-36)

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


By: James B. King
Chairman