Log 1466

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: August 31, 1982

Forwarded to:
Honorable J. Lynn Helms
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-82-90

On October 1, 1981, a Piper Model PA-38-112 Tomahawk, N2491C, crashed at Gadsden, Alabama, killing both persons aboard. The private pilot, a student in the Gadsden State Junior College flight training program, was practicing approach to landing stalls in accordance with the prescribed school syllabus when the accident occurred. A ground witness, who heard the sounds of aircraft engine power being reduced, looked up and saw N2591C in straight and level flight in a slightly noseup attitude. As he watched, the sounds of engine power increased and the aircraft entered a steep, fast-rotating spin to the right which continued until the aircraft struck the ground.

All PA-38-112 aircraft are configured with flow strips on the outboard leading edges of the wing. These strips, according to Piper, were placed at this particular wing location for the specific purpose of enhancing the Tomahawk's spin recovery characteristics. However, beginning on January 25, 1979, PA-38-112 aircraft were manufactured with flow strips installed on both the outboard and inboard leading edges of each wing. The purpose of the added inboard flow strips was to improve the operational stall characteristics of the Tomahawk. On April 12, 1979, in Service Letter No. 876, Piper announced the availability of the added inboard flow strips in kit form to accommodate the retrofit of PA-38-112 aircraft manufactured before January 25, 1979, and recommended that they be installed at the next scheduled inspection. Although this Service Letter was applicable to N2591C, the added inboard flow strips had never been installed.

Flight instructors, fixed-base operators, and civil aviation authorities in countries which import the aircraft have described the stall characteristics of PA-38-112 aircraft configured only with the outboard flow strips as abrupt, presumably because such characteristics include more than the usual propensity for loss of lateral directional control or an inadvertent spin as the stall occurs. In Australia, for example, installation of the added inboard flow strips is mandatory for Australian certification of the PA-38-112. The effect of the inboard strips is to alleviate or "soften" stall abruptness, particularly accelerated stalls. Pilots familiar with the Tomahawk report significantly improved lateral directional stalling characteristics when the added inboard strips are installed.

As a result of the Board's investigation of the above accident, it is clear that the pilot of N2591C entered an inadvertent spin as he attempted to recover from an approach to landing stall. The Board believes that the spin was precipitated by the abrupt stall characteristics typical of PA-38-112 aircraft which do not have the inboard flow strips installed. Other fatal or serious spin accidents involving PA-38-112 aircraft without the inboard flow strips occurred at Smiths Station, Alabama, on June 18, 1981; at Cullman, Alabama, on September 13, 1981; at Chesterfield, Virginia, on September 26, 1979; near Bellevue, Idaho, on July 14, 1979; near Romeo, Michigan, on August 17, 1978; near Las Cruces, New Mexico, on November 25, 1978; and at Park City, Utah, on April 7, 1978. It is estimated that there are at least a thousand PA-38-112 aircraft which have not yet had the inboard flow strips installed.

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

> Issue an Airworthiness Directive requiring installation of inboard flow strips on all Piper PA-38-112 aircraft manufactured before January 25, 1979, that have not been modified with these flow strips in accordance with the provisions of Piper Service Letter No. 876. (Class II, Priority Action) (A-82-90)

BURNETT, Chairman, GOLDMAN, Vice Chairman, McADAMS, BURSLEY, and ENGEN, Members, concurred in this recommendation.

By: Jim Burnett
Chairman