

Log 1410

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 11, 1984

Forwarded to:

Honorable Donald D. Engen
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-84-66

The National Transportation Safety Board has investigated one incident and has received a report of another incident involving unwarranted actuation of the stall avoidance system (SAS) in Fairchild Swearingen Models SA 226 and SA 227 airplanes.

The first incident occurred on June 23, 1981, in which the pilot of a Fairchild Swearingen Model SA 226TC experienced an unwarranted actuation of the airplane's SAS during landing. The actuation of the system gave the airplane a nose-down pitch command during the landing flare at Chicago O'Hare Airport. To counter the nose-down pitch command, the pilot overpowered the flight controls and made a safe landing on runway 14R. This incident occurred at a height of 5 to 10 feet above the runway, which left the pilot with no time to deactivate the system.

Maintenance personnel determined that the SAS angle of attack vane, located on the right wing tip, was out of adjustment, and readjustment of the vane and calibration of the system's computer were necessary to return the system to the required functional specification. Further checks made of the system indicated that the potentiometer which provides the wing flap position signal to the SAS also was out of adjustment. After these adjustments were made, a flight test was performed, and the SAS operated satisfactorily. Since the angle of attack vane had been replaced recently, it was concluded that the system probably had not been calibrated properly after replacement of the vane.

The second incident was reported to have occurred on September 28, 1982, during an ILS approach in very poor weather conditions to the Muskegon County Airport, Muskegon, Michigan. The stick pusher of the SAS actuated several times before the copilot deactivated the SAS. The airplane was landed without further incident; maintenance personnel determined that the SAS clutch servo was defective.

The SAS is designed to provide an aural stall warning and a forward (nose down) control column movement just before the airplane reaches an aerodynamic stall. The pilot must exert a 60-pound pull force on the control wheel to counteract the nose-down command of the SAS. The SAS normally is checked during the pilot's preflight before the first flight of the day. In the above incidents, the checks apparently failed to identify the problems.

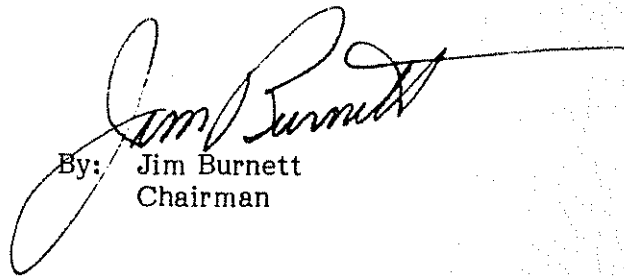
A review of the FAA's service difficulty reports disclosed that, during the 5-year period preceding March 1984, there were 14 other incidents in which the SAS's have caused unwarranted nose-down commands on SA 226 or 227 airplanes during takeoff or landing.

Currently, the Safety Board is investigating an airplane accident which involved a Britt Airways, Inc., Fairchild Swearingen Model SA 226 airplane on January 30, 1984. The airplane crashed in a steep nose-down attitude shortly after takeoff into instrument meteorological conditions from Hulman Regional Airport, Terre Haute, Indiana. The three persons aboard the airplane were killed, and the airplane was demolished. There is little physical evidence available to assist in determining why the airplane crashed. However, the Safety Board is concerned that there could be a relationship between this accident and previous incidents of unwarranted actuation of the SAS on Swearingen Model SA 226 airplanes.

The Safety Board believes that the hazard of an unanticipated airplane nose-down command during takeoff or landing must be eliminated. Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Review the design, the installation, and the maintenance requirements for the stall avoidance system on Fairchild Swearingen Models SA 226 and SA 227 airplanes to verify system reliability and maintainability, and take action as needed to preclude unwarranted actuations of the system that could present hazards to the airplanes. (Class II, Priority Action) (A-84-66)

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

A handwritten signature in black ink, appearing to read "Jim Burnett", is written over a horizontal line. The signature is stylized and cursive.

By: Jim Burnett
Chairman