

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**WASHINGTON, D.C.**

ISSUED: November 9, 1981

-----  
 Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-81-153

-----

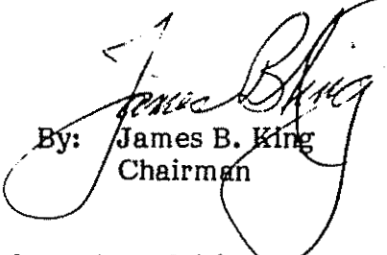
On February 13, 1981, a Swearingen SA-226 Metro II airplane, operated by Britt Airways, Inc., made an unintentional nose gear-up landing at Indianapolis International Airport. The airplane came to rest on the runway with both main landing gears fully extended and the nose gear partially out of the wheel well. Investigation of this incident by the National Transportation Safety Board found no discrepancies in the landing gear position indicating and warning system. The reason for the failure of the landing gear to extend could not be determined. There was minor damage to the airframe but there were no reported injuries among the five passengers or two crewmembers. During recovery operations, the nose of the airplane was lifted by a hoist and an attempt was made to extend the nose gear by manually pulling it down. The downward force on the nose gear exerted a retraction force on the main gears due to the hydraulic interconnect between the landing gear actuators. The left main gear ultimately collapsed, causing further airplane damage.

The SA-226 is configured so that when the landing gears are extended and normal hydraulic pressure is not available (engines shut down/electrical power off), the landing gear hydraulic selector valve closes to hydraulically lock all three gear actuators utilizing the trapped hydraulic fluid within the landing gear actuators and the hydraulic lines. This feature is provided as a redundancy to the gear down-lock mechanism once the airplane systems have been shut down. If one or more gears are partially extended and the selector valve has been closed, an external downward force on the partially extended gear will cause the trapped hydraulic fluid to exert a retraction force on the other gears. To avoid inadvertent gear collapse in this situation, external down-locks should be installed and all three gears should be extended to the down and locked position by use of the emergency hydraulic handpump.

It is believed that the foregoing gear collapse during the recovery operations was an isolated case. However, a review of the Swearingen SA-226 Series Airplane Maintenance Manual, Chapter 7, "Lifting and Shoring," revealed that there is no information or precaution provided to maintenance personnel about the potential of inadvertent gear collapse. Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Require the revision of the FAA-approved maintenance manual for all Swearingen SA-226 airplanes to include a precaution concerning inadvertent gear collapse when the aircraft is being lifted or hoisted when all three gears are not fully extended. (Class II, Priority Action) (A-81-153)

KING, Chairman, DRIVER, Vice Chairman, and McADAMS, and BURSLEY, Members, concurred in this recommendation. GOLDMAN, Member, dissented.

  
By: James B. King  
Chairman

James B. King, Chairman, filed the following additional comments:

While safety will be served by sending this recommendation, considering the recommendation's narrow application it could have been sent directly to the manufacturer.

Patricia A. Goldman, Member, filed the following additional comments:

The incident which prompted this recommendation was an isolated case which involved only minor property damage. Therefore, I do not believe a recommendation to the FAA is justified. I would have preferred to see it addressed directly to the manufacturer.