

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

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ISSUED: July 8, 1985

Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-85-50 through -52

On January 8, 1985, about 0853 eastern standard time, a Fairchild Swearingen model SA-227, N31107J, operating as Comair Flight 1602, a regularly scheduled commuter flight with 11 passengers and 2 pilots aboard, lost power from both engines during an approach for landing at Greater Cincinnati International Airport, Covington, Kentucky. The flight had originated at Lexington, Kentucky. Before the incident, the airplane had been cruising at 6,000 feet mean sea level (m.s.l.), and it had been in and out of clouds. When the flight was cleared by Air Traffic Control (ATC) to descend for landing at Greater Cincinnati International Airport, it broke out of the clouds into clear weather near 3,500 feet m.s.l.

The flightcrew stated that they had encountered icing conditions during the flight and that they had activated the deicing boots twice to remove ice buildups. The captain stated that after breaking clear of the clouds, he checked the engine propeller spinners for indications of ice, and since he observed only a small buildup, he elected to turn off the deicing and anti-icing equipment. The engine "continuous" ignition system was turned off by placing the ignition switch in the "NORM" position. The flightcrew stated that shortly thereafter, when they were about 1 to 1 1/2 miles from the airport and about 1,000 feet above ground level (a.g.l), the right engine stopped without any noticeable warnings sounds. The copilot feathered the right propeller, and the approach was continued. The captain increased power on the left engine to maintain the approach path, and as the airplane passed over the approach lights at 200 feet a.g.l, the left engine stopped, also without warning. The airplane was landed on the runway without further incident, and the passengers were deplaned onto the runway as a precautionary measure. There were no injuries; the airplane was not damaged.

4152/117

Following the incident, the airplane fuel system and engines were examined and no discrepancies were noted. The engines were tested both on the ground and during a flight test and they operated normally. There were 550 pounds of fuel available to each engine at the time of the incident.

In postincident interviews the flightcrew stated that they had encountered "minimal" inflight icing during the flight. The airline's chief pilot, who arrived at the airplane shortly after the incident, stated that he observed ice lying on the ground under the wings which had fallen onto the runway surface after the landing. He said that there "was not very much" ice there.

The Safety Board's investigation of this incident revealed that the auto ignition system checklist in the airplane flight manual for the SA-226 states that engine ignition should be turned off ("NORM"), "After departing icing conditions and airframe ice has shed." The flight manual for the SA-227 does not contain a similar notation.

The Safety Board believes that the engines on Comair Flight 1602 ingested ice during the descent for landing. The ice disrupted the airflow to the engines, and the lack of continuous ignition allowed the engines to flame out. Although the flightcrew intentionally turned off the engine's continuous ignition system when the airplane was still contaminated with ice, the Safety Board believes that the absence of the notation in the SA-227 flight manual was the underlying factor in their actions. The Safety Board believes also that the potential for unexpected engine stoppage is sufficiently serious to require the inclusion of a specific "warning" to that effect in the airplane flight manual.

The Safety Board's investigation also revealed that the Fairchild Swearingen model SA-227 engine ignition system is configured differently than that of the model SA-226. On the model SA-227, the ignition system has a three-position switch labeled, "NORM" "CONT" - "OVRD." The "NORM" position is used for normal engine start on the ground. In the "CONT" position, which is used for takeoff and landing on wet slush-covered runways, there is continuous ignition while the airplane is on the ground. To obtain continuous ignition in flight, the switch must be in the "OVRD" (override) position. However, on the Swearingen model SA-226, while the ignition switch labeling is almost identical, the functions are different. That is, the "NORM" position is used for ground engine starting, but the "AUTO/CONT" position provides continuous ignition while the airplane is on the ground as well as when it is airborne if the engine power drops below 90 percent RPM. Essentially, in flight it is an "automatic" system which is in standby when engine RPM are above 90 percent. The "OVRD" position on the model SA-226 provides continuous ignition in flight at all times, similar to model SA-227. Although not a factor in this case, the Safety Board believes that the labeling of the engine ignition switch of the model SA-227 is misleading and potentially is a serious safety hazard which should be corrected.

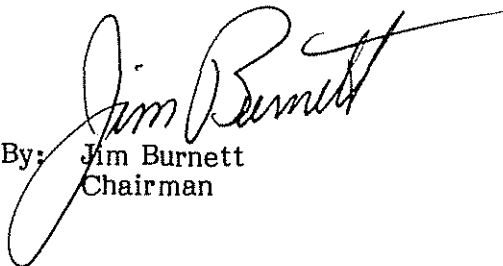
In view of the above, and the fact that Swearingen Model SA-226 and SA-227 are widely and interchangeably used in commuter airline operations, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Airworthiness Directive (AD) to: (1) require the labeling of the Fairchild Swearingen model SA-226 ignition switch to read, "start", "ground/automatic", and "continuous" and (2) require the labeling of the Fairchild Swearingen model SA-227 ignition switch to read "start", "ground", and "continuous". (Class II, Priority Action) (A-85-50)

Issue an Air Carrier Operations Bulletin to require that principal operations inspectors for Fairchild Swearingen SA-226 and SA-227 air carrier operators advise operators to leave the engine ignition system in the "continuous" mode (presently labeled as OVRD) during flight conditions into visible icing, heavy rain or moisture, and if icing is encountered, to leave the ignition system in the "continuous" mode until assured that the airframe and engine structures are free of ice. (Class II, Priority Action) (A-85-51)

Require the manufacturer of the Fairchild Swearingen SA-226 and SA-227 airplanes to revise the airplane flight manuals to include a specific "warning" to place the engine ignition system in the "continuous" mode, (presently labeled OVRD) during flight in icing conditions and after departure from the icing conditions until both the airframe and engine structure are completely free of ice. (Class II, Priority Action) (A- 85-52)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in these recommendations.

  
By: Jim Burnett  
Chairman