National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 21, 2004

In reply refer to: A-04-55

Honorable Marion C. Blakey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On July 13, 2003, about 1530 eastern daylight time, Air Sunshine, Inc. (doing business as Tropical Aviation Services, Inc.), flight 527, a Cessna 402C, N314AB, was ditched in the Atlantic Ocean about 7.35 nautical miles west-northwest of Treasure Cay Airport (MYAT), Treasure Cay, Great Abaco Island, Bahamas, after the in-flight failure of the right engine. Two of the nine passengers sustained no injuries,[1] five passengers and the pilot sustained minor injuries, and one adult and one child passenger died after they evacuated the airplane. The airplane sustained substantial damage. The airplane was being operated under the provisions of 14 *Code of Federal Regulations* Part 135 as a scheduled international passenger commuter flight from Fort Lauderdale Hollywood/International Airport, Fort Lauderdale, Florida, to MYAT. Visual meteorological conditions prevailed for the flight, which operated on a visual flight rules flight plan.

The National Transportation Safety Board[2] determined that the probable cause of this accident was the in-flight failure of the right engine and the pilot's failure to adequately manage the airplane's performance after the engine failed. The right engine failure resulted from inadequate maintenance that was performed by Air Sunshine's maintenance personnel during undocumented maintenance. Contributing to the passenger fatalities was the pilot's failure to provide an emergency briefing after the right engine failed.[3]

[1] Four of the nine passengers were children; one of the children was under 2 years of age and was seated on an adult passenger's lap during the flight.

[2] Under the provisions of Annex 13 to the Convention on International Civil Aviation, the investigation of an airplane crash is the responsibility of the state of occurrence (the state or territory in which an accident or incident occurs, which in this case was the Bahamas). However, the state of occurrence may delegate all or part of an investigation to another state by mutual arrangement or consent. At the request of the Bahamian Government, the Safety Board assumed full responsibility for the investigation. The Bahamian Government designated an accredited representative to the investigation.

[3] For more information about this accident, see National Transportation Safety Board, *In-Flight Engine Failure and Subsequent Ditching, Air Sunshine, Inc., Flight 527, Cessna 402C, N314AB, About 7.35 Nautical Miles West-Northwest of Treasure Cay Airport, Treasure Cay, Great Abaco Island, Bahamas, July 13, 2003*, Aircraft Accident Report NTSB/AAR-04/03 (Washington, DC: NTSB, 2004).

Emergency Briefings

Air Sunshine's Federal Aviation Administration (FAA)-approved General Operations Manual stated that, before a ditching, the pilot should review the emergency ditching evacuation procedures with the passengers and instruct them to don their personal flotation devices (PFD) without inflating them in the airplane. The manual added that the pilot should also review with the passengers how to operate the PFDs.[4] Because these instructions were also contained in the company's operations specifications, the instructions were required to be performed by the pilot.

In a 1985 safety study titled, *Air Carrier Overwater Emergency Equipment and Procedures*,[5] the Safety Board concluded that "the ability of flight and cabin crewmembers to assist passengers effectively during ditchings and following inadvertent water impacts may be the single most important factor in the survival outcome." During postaccident interviews, passengers reported that, after the right engine failed, the pilot did not tell them to retrieve or don their PFDs before the airplane contacted the water. The passengers stated that the only time the pilot addressed them after the right engine failed and before the airplane contacted the water was to tell them to "calm down."

According to the Safety Board's airplane performance study, the airplane was airborne for at least 7 minutes after the right engine failed and before it contacted the water. Even though the pilot did not instruct the passengers to retrieve their PFDs, 4 of the 10 PFDs installed on the airplane were retrieved and used by the passengers. An adult passenger, who was holding a child on her lap, retrieved the PFD from under her seat, and another adult passenger retrieved three PFDs and put them on the children accompanying her. None of the other passengers or the pilot attempted to retrieve their PFDs before the airplane contacted the water. After the airplane was in the water, several of these passengers tried to retrieve their PFDs, but none was successful.

If the pilot had instructed the adult passengers to retrieve and don their PFDs and had reviewed how to operate the PFDs shortly after the right engine failed, all of the passengers would have had adequate time to retrieve and don their PFDs before the airplane contacted the water. The Safety Board is aware that, subsequent to the accident, Air Sunshine amended its emergency ditching procedures by adding the instruction that all occupants should don PFDs as soon as any emergency occurs during overwater operations.

The Safety Board concludes that, after determining that he was going to ditch the airplane, the pilot failed to conduct an emergency briefing, which was required by the emergency ditching procedures contained in Air Sunshine's General Operations Manual, and that this failure contributed to passenger fatalities. The Safety Board further concludes that the passengers would have had sufficient time to retrieve and don their PFDs if the pilot had instructed them to do so shortly after the right engine failed.

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[4] The accident airplane was equipped with 10 PFDs. The PFDs were vests with two separate symmetrically arranged chambers and a retention strap. The PFD is donned when a user inserts its head through a hole in the PFD and fastens the retention strap around its waist. A PFD is inflated when the user pulls an inflation ring that discharges carbon dioxide cartridges into the two chambers. The user can also inflate a PFD by blowing into a tube that is located at each chamber.

[5] For more information, see National Transportation Safety Board, *Air Carrier Overwater Emergency Equipment and Procedures*, Safety Study NTSB/SS-85/02 (Washington, DC: NTSB, 1985).

Previous Part 135 Ditching Events

On January 1, 2002, a Piper PA-31 operated by Air Taxi, Inc., was ditched in the Atlantic Ocean after fuel exhaustion. Three passengers and the pilot sustained serious injuries, and one passenger died. According to the surviving passengers, the pilot did not conduct a preflight briefing or an emergency briefing before the ditching. None of the PFDs on board the airplane were retrieved until the airplane was in the water.

In contrast, on August 20, 2000, a Piper PA-31 operated by Big Island Air was ditched in the Pacific Ocean after a loss of engine power. All of the passengers retrieved their PFDs before the ditching. The passengers reported that, shortly after the engine problem occurred, the pilot instructed them to retrieve and don their PFDs and assume a crash position. As indicated by this event, if passengers aboard flights that operate over water are adequately briefed and have time to prepare during an emergency, deaths may be prevented. The Safety Board concludes that having pilots provide adequate emergency briefings to passengers is an important survival factor.

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

> Issue a flight standards information bulletin to principal operations inspectors of all Part 135 single-pilot operators that carry passengers and operate over water, which familiarizes them with the circumstances of the Air Sunshine flight 527 accident and emphasizes the need for pilots to provide timely emergency briefings. The bulletin should state that these briefings should include, at a minimum, information about the location and operation of the on-board emergency equipment and exits. (A-04-55)

Chairman ENGLEMAN CONNERS, Vice Chairman ROSENKER, and Members CARMODY, HEALING, and HERSMAN concurred with this recommendation.

Original Signed

By: Ellen Engleman Connors
Chairman