National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: April 8, 2005

In reply refer to: A-05-08 through -10

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, Treasure Cay, Great Abaco Island, Bahamas, after the in-flight failure of the right engine. Two of the nine passengers sustained no injuries, 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* (CFR) Part 135 as a scheduled international passenger commuter flight.

The National Transportation Safety Board 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.[1]

Federal Aviation Administration Oversight of Part 135 Maintenance Operations

During the investigation of the October 25, 1999, accident involving a Learjet 35 operated by Sunjet Aviation, Inc., a Part 135 operator, Safety Board investigators found that Sunjet Aviation failed to maintain pilot discrepancy records and operated unauthorized flights with deferred maintenance items, indicating that the company's procedures for identifying, tracking, and resolving repetitive maintenance items and adverse trends were not adequate. In the aircraft accident report,[2] the Board noted that these shortcomings were not discovered before the

[1] 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).

[2] See National Transportation Safety Board, *Crash of Sunjet Aviation, Learjet Model 35, N47BA, Aberdeen, South Dakota, October 25, 1999,* Aircraft Accident Brief NTSB/AAB-00/01 (Washington, DC: NTSB, 2000).

accident by Federal Aviation Administration (FAA) oversight. Specifically, the Board stated, "the ineffectiveness of the FAA's surveillance of Sunjet Aviation raises concerns about the effectiveness of FAA surveillance of other 14 CFR Part 135 commercial operators." Therefore, the Board issued Safety Recommendation A-00-118, which asked the FAA to do the following:

> Increase the frequency of unannounced inspections of Part 135 operators to verify the accuracy and adequacy of pilot discrepancy and maintenance logbook record-keeping procedures and entries.

On November 15, 2002, the FAA issued Flight Standards Information Bulletin for Airworthiness 02-11, "Increase in Unannounced Inspections for Part 135.411(a)(1) Operator Maintenance Logbooks, Maintenance Entries, and Pilot Discrepancies." The bulletin directed principal avionics and principal maintenance inspectors (PMI) to increase the frequency of unannounced inspections of 14 CFR Part 135 operators and to verify the accuracy and adequacy of pilot discrepancy and maintenance logbook record-keeping procedures and entries. In a May 6, 2003, letter, the Safety Board classified Safety Recommendation A-00-118 "Closed—Acceptable Action."

During the investigation of the Air Sunshine flight 527 accident, the Safety Board found numerous maintenance-related safety issues at the company. For example, the investigation revealed that Air Sunshine's maintenance records had numerous discrepancies, some of which indicated that company maintenance personnel had conducted undocumented maintenance. Further, the company's 6-phase, 60-hour Approved Aircraft Inspection Program (AAIP), which the FAA approved on January 9, 2000, required that engine differential compression checks be conducted every 360 hours instead of the manufacturer-recommended interval of 180 hours. The investigation also revealed that Air Sunshine allowed an assistant mechanic, who did not hold an airframe and powerplants certificate and who had never previously performed engine compression checks, to perform the checks by himself without supervision. Further, the investigation determined that Air Sunshine was using an antiseize compound on its engines that was not in accordance with Teledyne Continental Motors (TCM) Service Bulletin 96-7B and not recommended by the compound manufacturer (Permatex) for use in high-vibration environments because it could contribute to the loss of torque.

At the time of the accident, Air Sunshine was operating its engines at a time between overhaul (TBO) of 2,400 hours. TCM Service Information Letter 98-9A recommends that TSIO-520-VB engines have a TBO of 1,600 hours. Air Sunshine applied to the Fort Lauderdale Flight Standards District Office (FSDO) for the extensions per the procedures outlined in FAA Order 8300.10, *Airworthiness Inspector's Handbook,* and the PMI approved the extensions. However, in light of the maintenance deficiencies found during the flight 527 investigation, the Safety Board is concerned that the PMI approved the extensions when Air Sunshine's maintenance program was not adequate to maintain and operate its engines to the extended interval.

A review of FAA records indicated that the PMI conducted an inspection of Air Sunshine's Fort Lauderdale, Florida, facility from March 25 to 27, 2003. In an April 1, 2003, letter to the company, the PMI stated that he found five Maintenance Manual-related discrepancies during the inspection. The review also indicated that the PMI conducted an

inspection of Air Sunshine's San Juan, Puerto Rico, facility from July 8 to 10, 2003. In a July 15, 2003, letter to the company, the PMI stated that he found three Maintenance Manual- and three aircraft records-related discrepancies.

After the accident, the FAA conducted a focused inspection of Air Sunshine (from July 22 to August 29, 2003). During these inspections, the FAA determined that the company's record-keeping system was inadequate, its maintenance program was deficient, its passenger briefing card and overwater safety briefing needed to be revised, its pilot training needed to be revised, and its engine compression check interval was too high. The FAA reported to the Safety Board that it had sent a letter to Air Sunshine in which all of the maintenance discrepancies were addressed and that all of the company's corrective actions in response to these discrepancies had been documented in the FAA's Program Tracking and Reporting System. The Board is concerned that safety issues existed at Air Sunshine and were identified by the FAA before the accident but were not corrected and still existed after the accident.

On the basis of its findings during the flight 527 accident, the Safety Board concludes that the actions taken by the FAA in response to Safety Recommendation A-00-118 were not sufficient to ensure that its surveillance of Part 135 operators is adequate and, therefore, that the FAA needs to reevaluate its oversight of Part 135 operators. Therefore, the Safety Board believes that the FAA should review the procedures used during its oversight of Air Sunshine, including those for the Surveillance and Evaluation Program (SEP) and Regional Aviation Safety Inspection Program, to determine why the inspections failed to ensure that operational and maintenance issues that existed at the company were corrected. On the basis of the findings of this review, modify Part 135 inspection procedures to ensure that such issues, including maintenance record-keeping and practices, are identified and corrected before accidents occur.

Federal Aviation Administration Criteria for Increased Oversight

Since March 26, 1987, Air Sunshine has experienced four incidents and six accidents, including the flight 527 accident. Three of the accidents, including the accident flight, resulted in fatalities. On January 23, 1992, a Cessna 402C crashed near Clewiston, Florida, and two people were killed.[3] On February 8, 1987, a Cessna 402C crashed into the Atlantic Ocean while on final approach to Cyril E. King Airport, Charlotte Amalie, Virgin Islands, and two people were killed.

In March 2004, the FAA briefed Safety Board staff on its Air Transportation and Oversight System (ATOS) and SEP. The briefing indicated that the FAA considers an operator's accident history when determining what level of oversight to conduct. However, ATOS and SEP do not have specific criteria regarding how many accidents and/or incidents would indicate to the FAA that a systemic problem might exist at an operator and cause it to conduct additional oversight. The Safety Board concludes that Air Sunshine's accident and incident history before the flight 527 accident should have indicated to the FAA that a systemic problem might have existed at the company and caused an increase in its oversight. Therefore, the Safety Board believes that the FAA should develop specific criteria regarding the number of accidents and/or incidents that would cause an increase in oversight of an operator.

[3] The description of this accident, MIA92FA067, can be found on the Safety Board's Web site at <http://www.ntsb.gov>.

Transfer of Responsibility for Federal Aviation Administration Surveillance

Correspondence from late 1997 to March 1998 between Air Sunshine and its consultants and the Fort Lauderdale FSDO show that, in late 1997, the company requested that its operating certificate be transferred from the FAA's Fort Lauderdale FSDO to its San Juan FSDO. In a January 14, 1998, letter, the Fort Lauderdale FSDO asked Air Sunshine to provide a transfer plan, which listed the location of the maintenance base, including scheduled maintenance and associated records; operations and associated records; and operational control and associated records. The FSDO also asked the company where its Director of Maintenance, Director of Operations, chief pilot, and other pertinent personnel would be located.

A February 20, 1998, interoffice memorandum from the Fort Lauderdale FSDO White Team Leader to the San Juan FSDO stated that, based on information provided previously by Air Sunshine, he could not recommend that the certificate be transferred to the San Juan FSDO because of the inefficiency of managing a certificate in which most, if not all, of the elements required for the company's operations would be kept and maintained in Fort Lauderdale. In a March 16, 1998, letter to the Fort Lauderdale FSDO White Team Leader, Air Sunshine's consultants stated that (1) the company's main and principal base of operations would be in San Juan, and all records would be maintained there; (2) the company's basic maintenance would be conducted in San Juan, except for major repairs or alterations, which would be handled in Fort Lauderdale; and (3) management personnel and/or its representatives would be located in San Juan, unless their presence was needed in Fort Lauderdale. Subsequently, the FAA granted the request, and the transfer took place on June 2, 1998. The company's operating certificate was under the jurisdiction of the San Juan FSDO when the company applied and was approved to change its AAIP.

Air Sunshine's Director of Maintenance stated that, at the time of the accident, company maintenance was conducted in both Fort Lauderdale and San Juan. According to the director, if an airplane is in Fort Lauderdale when an inspection becomes due, the inspection is conducted there. He stated that, because most of the flights conducted on its Cessna 402 airplanes originated in San Juan, most of the inspections of these airplanes were conducted there. However, Air Sunshine's General Manager reported to Safety Board investigators that the company conducted 45 inspections of its Cessna 402C airplanes in Fort Lauderdale and 17 inspections of its Cessna 402C airplanes in San Juan between January 1 and July 13, 2003.

Additionally, Air Sunshine's President stated that extensive maintenance and sheet metal work was conducted in Fort Lauderdale because the company owned a hangar at Fort Lauderdale/Hollywood International Airport (FLL), Fort Lauderdale, Florida. He stated that inspections conducted in San Juan were typically conducted on the ramp and that, if an airplane needed to be "placed on jacks," the company would obtain hangar space at Luis Munoz Marin International Airport (SJU), San Juan, Puerto Rico. According to the FAA PMI for Air Sunshine, airplanes that are based at FLL are maintained there, and airplanes that are based at SJU are maintained there. The PMI, who is based in San Juan, reported that he scheduled three to four trips a year to FLL as part of his work program.

Although the Fort Lauderdale FSDO has no maintenance oversight responsibilities for Air Sunshine, according to an aviation safety inspector from Fort Lauderdale, after the accident, the Fort Lauderdale FSDO manager contacted the San Juan FSDO manager to advise him that

the Fort Lauderdale FSDO wanted to conduct additional surveillance of Air Sunshine. A review of FAA records indicated that, from July 14 to September 30, 2003, personnel from the Fort Lauderdale FSDO conducted 2 facility inspections, which found scales that were out of calibration and cargo that was not secured; 21 ramp inspections, which found numerous maintenance-related discrepancies with Air Sunshine's Cessna 402C airplanes; and 5 spot inspections, which found numerous maintenance-related discrepancies.

According to the FAA, after the accident, the San Juan FSDO increased surveillance of Air Sunshine in all areas. The FAA stated that, from July 14, 2003, to February 25, 2004, the San Juan FSDO conducted 45 inspections of the company. Further, as noted previously, during a focused inspection of the company in July and August 2003, the FAA determined that the company's maintenance program was deficient.

As evidenced by the Fort Lauderdale and San Juan FSDOs' postaccident oversight findings, the oversight of Air Sunshine was not effective after the transfer of its operating certificate from the Fort Lauderdale to the San Juan FSDO. The Safety Board is concerned that the process by which Part 135 air carrier operating certificates are transferred from one FSDO to another is not adequate to ensure efficient and effective surveillance of these carriers, especially of the companies' maintenance programs. In the case of Air Sunshine, it is not clear who made the decision to transfer the company's operating certificate from the Fort Lauderdale to the San Juan FSDO. According to the FAA, the decision was "probably" made by its Southern Region office at the request of the Fort Lauderdale and San Juan FSDOs;[4] however, the FAA could not provide any documentation to confirm this statement and stated only that "both offices did not object to the transfer." Additionally, the FAA did not provide the Board with adequate documentation to justify its approval of the transfer nor did it provide adequate data to assess the transfer's impact on safety.

The Safety Board notes that the current FAA *Airworthiness Inspector's Handbook* states the following:

> Regional Flight Standards Divisions shall specifically determine which district office will be assigned…Part 135 operators…[the Regional Office] must consider all factors involved when determining which district office will be assigned certificate holding responsibilities…[including the] location of the maintenance base and maintenance systems control center.

The Safety Board is concerned that the process by which a Part 135 air carrier's request to transfer its operating certificate from one FSDO to another is granted does not provide adequate documentation to justify a transfer. The Board is also concerned that the FAA has granted some transfers without considering the geographical location of the FSDO in relation to the air carrier's maintenance operations.

The Safety Board concludes that the actions taken by the FAA to transfer Air Sunshine's operating certificate from the Fort Lauderdale to the San Juan FSDO were not sufficient to

[4] In a January 22, 1998, letter to Air Sunshine, the Fort Lauderdale FSDO stated, "we have sent information [to] you…provided…to our Regional Office (RO) for disposition. Until such time as a decision is made by the RO, you will continue to be the responsibility of this office."

ensure that the surveillance of the company, especially of its maintenance operations, was adequate. Additionally, the Safety Board concludes that the FAA did not adequately document its justification of the transfer. Therefore, the Safety Board believes that the FAA should review and revise the process through which the transfer of a Part 135 air carrier's operating certificate from one FSDO to another is granted to ensure the adequate oversight of such carriers. Further, the FAA should ensure that, before granting an operator's request to transfer an operating certificate, appropriate geographic oversight is in place at the new office and that the justification for the transfer is adequately documented and reviewed.

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

> Review the procedures used during its oversight of Air Sunshine, including those for the Surveillance and Evaluation Program and Regional Aviation Safety Inspection Program, to determine why the inspections failed to ensure that operational and maintenance issues that existed at the company were corrected. On the basis of the findings of this review, modify Part 135 inspection procedures to ensure that such issues, including maintenance record-keeping and practices, are identified and corrected before accidents occur. (A-05-08)
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> Develop specific criteria regarding the number of accidents and/or incidents that would cause an increase in oversight of an operator. (A-05-09)
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> Review and revise the process through which the transfer of a Part 135 air carrier's operating certificate from one Flight Standards District Office to another is granted to ensure the adequate oversight of such carriers. Further, ensure that, before granting an operator's request to transfer an operating certificate, appropriate geographic oversight is in place at the new office and that the justification for the transfer has been adequately documented and reviewed. (A-05-10)

Acting Chairman ROSENKER and Members CARMODY, ENGLEMAN CONNERS, HEALING, and HERSMAN concurred with these recommendations.

[Original Signed]

By: Mark Rosenker
Acting Chairman