



## Publications

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### **NATIONAL TRANSPORTATION SAFETY BOARD Public Meeting of January 28, 2009 (Information subject to editing)**

#### **Aircraft Accident (Summary) Report In-Flight Fire, Emergency Descent and Crash in a Residential Area Cessna 310R, N501N Sanford, Florida, July 10, 2007 NTSB/AAR-09/01**

### **EXECUTIVE SUMMARY**

On July 10, 2007, about 0835 eastern daylight time, a Cessna Aircraft Company 310R, N501N, part of the fleet operated by the National Association for Stock Car Auto Racing (NASCAR) corporate aviation division, crashed while performing an emergency diversion to Orlando Sanford International Airport, Orlando, Florida. The two pilots on board the airplane (a commercial pilot and an airline transport pilot) and three people on the ground were killed. Four people on the ground received serious injuries. The airplane and two homes were destroyed by impact forces and a postcrash fire. The personal flight was operating under the provisions of 14 Code of Federal Regulations Part 91 on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident.

The National Transportation Safety Board determines that the probable causes of this accident were the actions and decisions by NASCAR's corporate aviation division's management and maintenance personnel to allow the accident airplane to be released for flight with a known and unresolved discrepancy, and the accident pilots' decision to operate the airplane with that known discrepancy, a discrepancy that likely resulted in an in-flight fire.

### **CONCLUSIONS**

1. The weather radar system anomaly that was experienced and formally documented by

the National Association for Stock Car Auto Racing company pilot the day before the accident could have developed at that time into a significant in-flight smoke and fire event; however, the anomaly was temporarily alleviated when the company pilot pulled the related circuit breaker.

2. Without examining the weather radar system, and then either removing the airplane from service or placarding the airplane and collaring the circuit breaker, as well as making a maintenance records entry, it was not permissible to fly the airplane under Federal regulations.
3. The airline transport pilot and the commercial pilot had sufficient information about the weather radar discrepancy and the burning smell to determine that the condition constituted a hazard to flight and to refuse the airplane unless and until additional actions were performed by maintenance personnel.
4. The pilots accepted the airplane as made available by National Association for Stock Car Auto Racing management and maintenance personnel, despite the fact that no diagnostic, corrective, or interim maintenance action had been taken to address the discrepancy.
5. There was insufficient evidence to conclusively determine the origin of the in-flight fire.
6. It is likely that one of the pilots, consistent with routine and/or the "Before Starting Engines" checklist for the accident airplane, reset the weather radar circuit breaker, which restored electrical power to the weather radar system's wiring and resulted in the in-flight fire.
7. After analyzing the available evidence, it was not possible to definitively determine the events that led to the accident airplane's maneuvers away from Orlando Sanford International Airport.
8. Existing guidance regarding the resetting of circuit breakers contained in manuals provided by general aviation airplane manufacturers often does not consider the cumulative nature of wiring damage and that the removal of power only temporarily stops the progression of the damage.
9. If general aviation pilots, maintenance personnel, and operators had a more thorough understanding of the potential hazards of a reset circuit breaker (as outlined in Advisory Circular 120-80), they would be less likely to reset a tripped circuit breaker without knowing what caused that circuit breaker to trip.
10. Identification, by an aircraft's manufacturer or those responsible for postmanufacture modifications, of which of an aircraft's systems are critical to a flight (or to a realm of flight) would enable pilots to make better-informed decisions regarding which circuit breakers they should or should not attempt to reset before or during flight.
11. More thorough and continually updated guidance and information regarding maintenance and inspection of airplane electrical systems and wiring for general aviation maintenance personnel would increase the likelihood that they will be aware of current industry wiring-related concerns, such as deteriorated (aging) wiring; corrosion; improper wire installation and repairs; and contamination of wire bundles with metal shavings, dust, and fluids and would greatly increase the likelihood that their work will comply with current best practices.

12. Although National Association for Stock Car Auto Racing's corporate aviation division's standard operating procedures included procedures designed to ensure that airplane maintenance discrepancies would be properly addressed and airplane airworthiness maintained, there was no formal method for determining and ensuring that an airplane was safe for flight; thus management, maintenance, and flight operations personnel allowed the operation of an airplane with a known and unaddressed discrepancy.
13. Safety Management System programs would provide corporate flight departments a formal system of risk management, safety methods, and internal oversight programs that could improve safety.

## PROBABLE CAUSE

The National Transportation Safety Board determines that the probable causes of this accident were the actions and decisions by National Association for Stock Car Auto Racing's corporate aviation division's management and maintenance personnel to allow the accident airplane to be released for flight with a known and unresolved discrepancy, and the accident pilots' decision to operate the airplane with that known discrepancy, a discrepancy that likely resulted in an in-flight fire.

## RECOMMENDATIONS

The National Transportation Safety Board recommends that the Federal Aviation Administration:

1. Develop a safety alert for operators informing general aviation pilots and maintenance personnel of the circuit breaker policy contained in Advisory Circular 120-80. (A-09-XX)
2. Require that the contents of the safety alert for operators requested in Safety Recommendation [1] be included in initial and required biennial training for general aviation pilots and maintenance personnel. (A-09-XX)
3. Require aircraft manufacturers and those responsible for postmanufacture modifications to improve existing guidance, or create new guidance, regarding which circuit breakers pilots should and should not attempt to reset before or during flight and to disseminate the resultant guidance to airplane mechanics, pilots, and owners. (A-09-XX)
4. Require that initial and recurrent training for maintenance personnel working on general aviation aircraft include the most current "best practices" regarding inspection and maintenance of electrical systems, circuit breakers, and aging wiring. (A-09-XX)
5. Develop a safety alert for operators encouraging all 14 Code of Federal Regulations Part 91 business operators to adopt Safety Management System programs that include sound risk management practices. (A-09-XX)

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