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On July 10, 2007, a Cessna 310R, operated by the National Association for Stock Car Auto Racing's (NASCAR) corporate aviation division crashed while performing an emergency diversion to Orlando Sanford International Airport (SFB) after an in-flight fire.

The National Transportation Safety Board determined that one probable cause of this accident was the actions and decisions made by the corporate aviation division's management and maintenance personnel, which resulted in the release of the aircraft to fly with a known and unresolved discrepancy that likely resulted in the in-flight fire. The NTSB investigation did a splendid job in looking beyond the all too common "pilot error" or "technical malfunction" question. The investigation peeled back the organizational layers to reveal the underlying reasons that enabled, in the words of a National Board Member, "this tragic and unnecessary crash".

The NTSB stated numerous references to FAA guidance material (advisory circulars) containing information that, if considered and applied, might have prevented the accident. The investigation, however, dug deeper and asked *why* some of this information had not been applied.

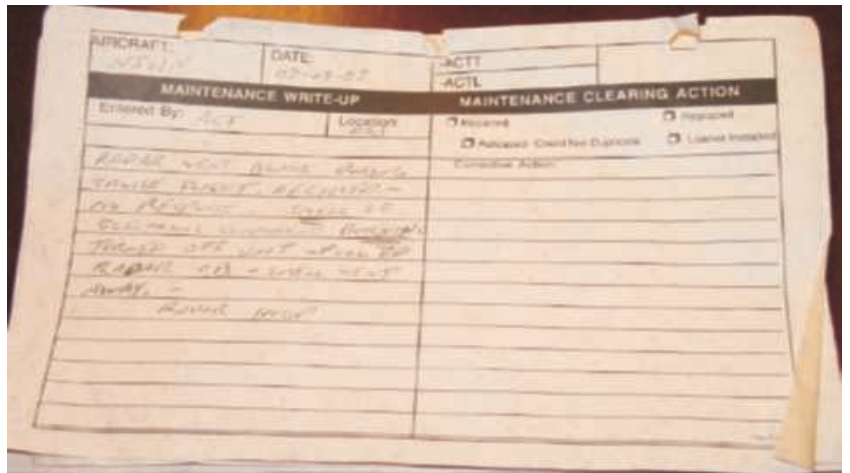
INCONGRUITY

NTSB investigators found pilot-recorded maintenance discrepancies.

In short, although most legal requirements had been fulfilled for a Part 91 operator, NASCAR's standards were nowhere near "industry best practices". In addition to stating that "a for-



LEARNING FROM NASCAR'S LEARNING



mal SMS [Safety Management System] program [...] likely would have prevented the accident airplane's release to flight", the NTSB refers to the IS-BAO program.

In this Safety Sense, we'll focus on the safety issue of establishment of safety management systems in Business Aviation and discuss how a program like IS-BAO enables corporate aviation operators to demonstrate achievement of these high standards.

Some Facts and Findings

The accident occurred while the pilots performed an emergency diversion to SFB. Both pilots and three people on the ground were killed. Four

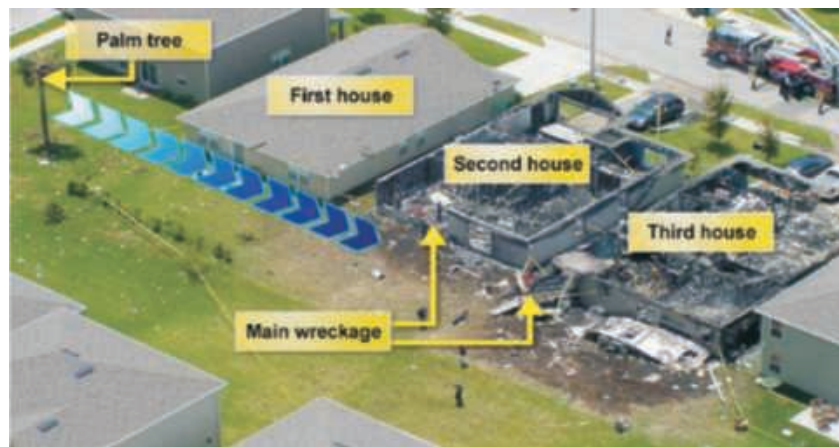
people on the ground received serious injuries. The airplane and two homes were destroyed by impact forces and a post-crash fire. Visual meteorological conditions prevailed at the time of the accident.

NTSB investigators recovered six original (white) pages with pilot-recorded maintenance discrepancies. The entries date from March 14, 2007 to July 9, 2007. The last entry, made on the day prior to the accident date, addressed the weather radar system. The pilots had encountered a malfunction of that system and noticed a "smell of electrical components burning" and pulled the CB. The smell went away. After landing, the pilot who experienced the weather

radar system anomaly placed the binder with the white copy of the discrepancy report on the throttle quadrant and provided the yellow copy and a verbal briefing to the Director of Maintenance (DOM) and the maintenance technician who had primary responsibility for the accident airplane. The NTSB investigation found that the DOM, the chief pilot and the aviation director discussed the weather radar discrepancy write-up and that none of these individuals took actions to ensure the discrepancy was addressed before agreeing that the airplane could be flown. No one examined the aircraft to investigate the discrepancy. The aircraft was not removed from service, nor was any action taken to prevent the weather radar system from being reactivated.

Even so, the crew had access to the information that there was an issue with the weather radar, through the discrepancy report on the aircraft, and by verbal information to one of the pilots. Apparently (although this could not be positively determined due to fire damage) the crew had reset the CB by habit as part of the "Before Starting Engines" checklist.

Figure 1 Source:
NTSB Aircraft Accident Report



From Flying Club to Aviation Department

Although not required for FAR Part 91 operators, NASCAR's corporate flight department did have Standard Operating Procedures (SOP), but they were not consistently updated or adhered to by company personnel. Furthermore, they were not readily accessible to company personnel and were not often referenced. SOPs were mostly used as a "training tool".

The NTSB went on to state that the SOP lacked crucial specifics. They did not contain any specific information about the methods, procedures or tools to be used for scheduling or tracking airplane maintenance, and evidence indicates that maintenance information was not accessible to NASCAR aviation division personnel. The NTSB found out that NASCAR did not have a communication procedure for providing flight operations personnel (pilots and schedulers) with airplane airworthiness information. The communication on safety critical information between the director of maintenance and the director of operations was mostly based on informal exchanges instead of formalized procedures. Poor discipline in following SOPs, inadequate procedures and unclear allocation of authority and competences led to a false sense of confidence by personnel.

NASCAR's corporate flight department was operating seven corporate jets in addition to the C310 and made some efforts by going beyond the basic legal requirements (e.g. by defining SOPs), but the organization's standards were nowhere near "industry best practices".

In the Board Member Statement attached to the NTSB Summary Report, the question is asked: "Do you want a

professionally run aviation department or do you want an expensive flying club?" What does it take to transform an organization that resembles more of the former to the latter?

NASCAR's corporate aviation division has learned its lessons and changed its approach to safety of operation. It voluntarily established an SMS program as required by ICAO Annex 6 Part 2 for corporate aviation operations (but not yet mandated by

the FARs). As the NTSB report states, such a formal SMS program "would have helped ensure that NASCAR aviation division personnel adhered in practice to their established processes and procedures and likely would have prevented the accident airplane's release for flight without corrective maintenance or ensured the placarding and deactivation of the circuit breaker".

NASCAR's SMS implementation involved an extensive review of and changes to their procedures, manuals, safety systems and culture. The changes were assessed and verified by determining compliance with IS-BAO. After implementation, the NASCAR aviation department successfully completed an extensive registration audit by IS-BAO SMS auditors.

IS-BAO was developed by IBAC. It provides business and corporate aviation operators with a set of international standards to facilitate, standardize and promote the introduction of professional methods in ensuring safety and operational efficiency. IS-BAO is recognized by several Civil Aviation Authorities as an acceptable means to show compliance with the new safety management standard introduced by ICAO.

Implementing a SMS and SOPs transforms corporate aviation organizations from an expensive flying club into a professionally run flight department. Successful completion of an IS-BAO registration audit demonstrates to the competent authority, upper level management and the corporate customers that the flight department is indeed professionally run to the highest safety standards.

Michael R. Grüninger is the Managing Director of Great Circle Services (GCS) Aviation Safety Advisors. GCS assists in the whole range of planning and management issues, offering customized solutions to strengthen the position of a business in the aviation market. Its services include training and auditing (IS-BAO and other standards), consultancy, manual development and process engineering. He can be reached at michael.grueninger@gcs-safety.com or +41-79 442 44 89. His column, Safety Sense appears regularly in BART International.

