

Aviation Human Factors Industry News

Volume VII. Issue 07, February 18, 2011



From the sands of Kitty Hawk, the tradition lives on.

Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

★ No U.S. airline fatalities in 2010

★FAA: Operations and maintenance errors behind SkyWest fine

★FRONTLINE Investigative Report

★Report questions safety at ST Aerospace Mobile, company says report unfair

★For Lack of a Locking Screw, a Crashed Airplane Could Not be Found Quickly

★NTSB Probable Cause Report

No U.S. airline fatalities in 2010

U.S. airlines did not have a single fatality last year. It was the **third time in the past four years** there were no deaths, continuing a dramatic trend toward safer skies.

Years without deaths have occurred sporadically since the dawn of the jet age, but never have so many occurred in so short a period, according to an analysis of data from the National Transportation Safety Board.

The average number of deaths fell from about 86 a year in the 1990s to 46 a year since 2000, a **46% drop**.



Last year also marked the **first time** that there were no passenger fatalities on any airline based in developed nations, says Arnold Barnett, a professor who specializes in accident statistics at the Massachusetts Institute of Technology's Sloan School of Management.

"In the entire First World, fatal crashes are at the brink of extinction," Barnett says.

Dozens of safety improvements that have gradually eliminated whole categories of crashes, says John Cox, a consultant who previously served as head of safety for a major pilots' union.

"The proof of those steps is results like this," Cox says.

Last year, U.S. carriers flew more than 10 million flights and hauled more than 700 million passengers, but only 14 people suffered serious injuries, according to the NTSB. There also were no major accidents, the most serious category under the NTSB's definitions.

The last fatal accident occurred Feb. 12, 2009, when a Colgan Air Bombardier Q400 turboprop plunged into a neighborhood near Buffalo, killing 49 people on board and a man on the ground. That broke a 2 ½-year stretch of no deaths dating to Aug. 27, 2006, when a Comair regional jet tried to takeoff on a closed runway in Lexington, killing 49.

Although the NTSB data analysis is cause for celebration, it also highlights the [remaining risks in the system](#). In some cases, there has been a fine line between a fatal accident and an incident with no injuries.

For example, a US Airways Express Bombardier regional jet narrowly avoided tragedy on Jan. 19, 2010, when its pilots bungled a takeoff and skidded off the runway. The airport is built on a plateau and the terrain plunges after the runway, but the jet was stopped by a bed of hard foam designed just for such emergencies.

Safety analysts, such as Cox and the Federal Aviation Administration, credit the improving safety record to [scores of initiatives](#) that have gone into place in recent decades. Among the most critical enhancements: technology that has nearly wiped out collisions with the ground and other aircraft, improved training and data collection that identifies hazards before they cause accidents.

Many of these improvements were done voluntarily through a decade-long cooperative effort between industry and the FAA, says Administrator Randy Babbitt.

"We have identified and eliminated many of the major risks in the system and we will continue to act on the remaining safety challenges and keep air travelers safe," Babbitt says.

FAA: Operations and maintenance errors behind SkyWest fine

The US FAA is proposing \$359,000 in fines against Utah-based SkyWest Airlines for three separate violations the agency says took place between July 2009 and July 2010.

Separate from the FAA fines, SkyWest is the focus of six ongoing National Transportation Safety Board (NTSB) investigations that involve [cabin door maintenance deferral procedures, ramp incidents and landing gear problems](#).



The largest of the three fines, \$220,000, is linked to five flights between April and May, 2010. FAA states SkyWest [failed to "document](#) heavy checked bags, motorized mobility aids and a heavy shipment" carried in cargo.

"As a result, the company operated the aircraft with [incorrect weight and balance data](#)," says the FAA, adding that the violations allegedly occurred "because the carrier's employees [failed to follow required procedures](#) for documenting cargo carried on revenue passenger flights."

A proposed civil penalty of \$70,500 is linked to allegations that SkyWest employees failed to follow the [company's continuous airworthiness maintenance program](#) (CAMP) and the [Bombardier](#) maintenance and inspection manual for its regional jets "during five attempts by mechanics to correct an avionics system cooling problem on one aircraft." The FAA says SkyWest operated the aircraft on "at least five" revenue passenger flights from 15-21 July 2009.

The FAA is proposing a \$68,500 fine in response to allegations that SkyWest operated another non-complying Bombardier jet on eight revenue passenger flights between 30 May and 1 June 2010.

The agency says mechanics in that case [failed to follow the carrier's CAMP](#) when replacing the right air conditioning pack's pressure-regulating and shutoff valve.

SkyWest, which has 30 days to respond to the proposed fines, says it is "disappointed with the FAA's assessment" and looks forward to meeting with the agency's representatives "to review the findings" in detail.

"Safety of flight was not compromised and we are disappointed with the FAA's decision to issue a notice of proposed civil penalty," says the carrier.

FRONTLINE

INVESTIGATIVE
Reporting Workshop
AMERICAN UNIVERSITY SCHOOL OF COMMUNICATIONS

FLYING CHEAPER

A decade ago aircraft repairs were mostly done by the airlines flying the planes. Today, carriers are outsourcing the bulk of heavy maintenance. Should we worry? A co-production with the Investigative Reporting Workshop.

watch this 17 min. video.

<http://www.pbs.org/wgbh/pages/frontline/flying-cheaper/>

Report questions safety at ST Aerospace Mobile, company says report unfair

A Public Broadcasting Service investigative report and a fine by the Federal Aviation Administration have raised questions about ST Aerospace Mobile and a sister facility in San Antonio.

The FAA on Thursday proposed a \$1 million fine against ST Aerospace San Antonio for **failing to ensure new hires weren't using illegal drugs**. ST Aerospace Mobile, the airplane overhauler at Brookley Aeroplex, figured prominently in an 18-minute report aired Tuesday on many PBS stations.

Officials of the company, a unit of Singapore Technologies Engineering, said the television report was shallow, biased and sensationalized, and the drug-testing problems in Texas have long been fixed.

The PBS "Frontline" report, anchored by Miles O'Brien and produced in part by American University's Investigative Reporting Workshop, alleged that:

- Workers falsified records to cover jobs left undone, and otherwise did shoddy work, all to meet aggressive schedules.
- The firm failed to follow FAA rules to track parts, including hiding some in an off-site warehouse.



--Some employees brought from outside the United States can't understand enough English to do their jobs, and that even American employees don't get enough supervision and training to ensure quality work.

Local managers at the 1,500-employee Mobile site deny the claims, saying that they're committed to quality and safety and would never tolerate falsified records. There was nothing sinister about an effort to sort through old parts inventory, they said, and international employees are qualified and tested for English.

They also defended the decision by U.S. airlines to outsource work, turning away from unionized airline mechanics. Critics claim that as airlines try to save money, cost and schedule pressures lead third-party providers to cut corners. [ST Aerospace is the world's largest contract maintenance firm.](#)

"We are very disappointed that 'Frontline' portrayed contract maintenance, and specifically, STA Mobile, in the worst way possible," local President Joseph Ng and Vice President Bill Hafner wrote in a letter to employees. "Their very shallow, biased story attempted to discredit the hard work performed by you and many others."

The PBS report, quoting internal company safety briefings, discussed several problems on planes serviced in Mobile, including issues with fuel tanks.

Ng, in an interview Thursday, said that the company returned three Airbus A330s to US Airways with leaking fuel tanks in the tail. Hafner said a contractor serviced the tanks, and workers closed access panels with the [wrong hardware](#), causing the leaks.

An ST Aerospace supervisor signed off on the work without inspecting it, Hafner said, as inspections were not required at the time. Hafner said ST Aerospace fired the contractor and now does the work itself. Inspections are now required, he said.

The report quoted an anonymous employee claiming managers, [under pressure](#) to improve housekeeping and follow federal rules for tracking individual parts, shipped parts to a nearby warehouse in early 2010. The worker claimed that some parts were brought back after an FAA audit.

Ng said the move was an effort to cull through \$7 million in old parts the facility had accumulated.

Ng and Hafner said there has been a problem correctly tagging parts taken off planes, but downplayed its seriousness.

"The allegation that we moved parts out to hide them from the FAA, it sounds incredible," Ng said. He said ST Aerospace Mobile is constantly being inspected, and it would be nearly impossible to change work habits for all the audits.

Hafner defended the qualifications of the 10 percent or fewer workers brought in from abroad, saying their English is tested, and that many have years of experience. Ng said foreign workers cost more because ST pays them the same amount as local workers, plus pays recruiters.

"Aviation is not an American business," Ng said. "It's an international business."

FAA spokeswoman Kathleen Bergen said that [if](#) FAA inspectors "determine that a repair station is not complying with federal air safety regulations, they require the company to immediately correct any safety problems."

Spokeswoman Valerie Wunder said US Airways is committed to safety, and described as "wrong" the idea that third-party maintenance is riskier than work done by airlines.

"We've worked with STA for about eight years and we don't have any plans to change at this time," she said.

Thursday, the FAA proposed a civil penalty of \$1,025,000 against ST Aerospace San Antonio for [failing to drug-test](#) dozens of job candidates in 2007 and 2008, contrary to federal rules.

ST Aerospace said it was "disappointed" with the fine, but now has a system to keep it from recurring.

"There are no allegations of current compliance issues," a statement said.

The firm has 30 days to respond, and can request a settlement or go to federal court if it doesn't want to pay.

[For Lack of a Locking Screw, a Crashed Airplane Could Not be Found Quickly](#)

[The DHT-3T Otter of the type that crashed](#)

A [futile shout](#) from the crash scene that would-be rescuers never heard may be the equivalent to the [radio severed](#) from its antenna; the message may be as dire as possible, but it never gets beyond the cable connecting radio to antenna.



That's what happened to the Emergency Locator Transmitter (ELT) shakily installed on the de Havilland DHT-3T Otter seaplane that crashed 9 August 2010 in Alaska, killing former Sen. Ted Stevens and badly injuring former Navy Secretary Sean O'Keefe. Of the nine people aboard the downed plane, four were killed and five received serious injuries.

The ELT was broadcasting the airplane's identity and location, but the connection to the antenna had been broken in the crash. Result: [messages sent but not received](#). Search parties did not receive a single electron. It took about five hours to scour the area around Alaska's Lake Nerka before the wreckage was discovered visually in steep, wooded terrain about 19 miles from the plane's takeoff point.

"In this case, the airplane was equipped with a functioning 406 megahertz ELT, which can be a tremendous aid to search and rescue operations," noted Deborah Hersman, chairman of the National Transportation Safety Board (NTSB). "But this vital life-saving technology won't do anyone any good [if it doesn't stay connected](#) to the antenna."

The NTSB is investigating the crash. On 5 January the NTSB sent a letter to the Federal Aviation Administration (FAA) about the ELT installation on the accident airplane.

The airplane was flying from a fishing lodge on Lake Nerka to a remote camp about 52 miles distant to the southwest. The airplane hit a ridgeline in what appears to be a classic case of [controlled flight into terrain](#) (CFIT).

Because of foggy, misty weather and the approach of night, para-rescue personnel were unable to reach the accident site until the following morning. If the ELT's initial broadcasts had been picked up, the five-hour delay between impact and discovery would have been much reduced – probably enabling evacuation of survivors before nightfall.

All airliners and general aviation aircraft are required to be equipped with functioning ELTs. The ELT is activated by the G-forces of a crash and broadcasts to satellites overhead, and that message is relayed to rescue organizations. In addition, the ELT transmits a "homing signal" that can be detected by rescue personnel using a compatible receiver.

The NTSB wants [all ELT installations on general aviation \(Part 91\) aircraft to be inspected](#) for the soundness of their mounting. In addition, the safety board recommends that the FAA determine if the mounting requirements for ELTs are adequate.

During the mission at the wreck site, a para-rescuer found the ELT [loose on the aft floor of the airplane](#) and switched to “ON” to indicate it had been automatically activated after the crash. The rescuer also noted that the switch cable had been pulled out.

The ELT was normally mounted in a tray on the right sidewall of the aft cabin, with a nylon strap and Velcro fastener holding it in place. The installation is typical of many ELT installations. In its letter to the FAA, the NTSB concluded that [the method of mounting could be prone to loosening](#):

“Although the FAA requires an annual ELT inspection to check for proper installation, these inspections [may not detect subtle changes in strap tightness or misalignment](#) ... In this situation, the inadvertent detachment problem that occurred in this accident could occur in others. For example, the NTSB is concerned that a sidewall-mounted ELT may be subject to vertical loads during landing or turbulence, which may progressively loosen the strap.”

The NTSB mentioned that ELTs are supposed to be tested and installed in accordance with Technical Standard Orders (TSOs) C91a and C126. The installation must be drop-tested to ensure that the ELT will not break loose from its mounts under impact conditions.

However, the test does [not account for](#) the Velcro strap loosening over time.

The use of a nylon belt and Velcro fastener seems highly questionable. For one thing, in the event of a post-crash fire, the assembly would burn and the ELT would likely fall out. Thus, even if the ELT “survived” crash impact and was broadcasting the location, the signals would be lost as soon as the connection with the antenna was severed.

A stainless steel strap with a screw-type fastener to tighten and lock the ELT in place seems far more suitable and effective.

As the saying goes, [for want of a screw, an airplane was lost for hours](#).

The NTSB asked for a review of the TSO mounting requirements but was too kind – not pointing out that every household electrician knows the virtue of a steel strap and a screw-type fastening/locking mechanism.

NTSB Probable Cause Report

Lack of oil in the engine coupled with a mechanic [failing to follow proper procedures](#) led to a fatal crash of a private plane last year in Gilford, federal investigators have concluded. The National Transportation Safety Board on Monday released its probable cause finding about the plane crash which occurred during Bike Week 2009, reporting there was a lack of engine oil that caused the plane to lose power and the [improper protocol](#) following the annual inspection.



Federal safety officials made their final determination on what may have been the contributing factors of the crash. Officials concluded the plane lost power because of the lack of oil from a leak. In addition the mechanic's [sign-off and release of the airplane without performing the required engine run-up following an annual inspection](#).

On June 13, 2009, just after 4 p.m., a small, single-engine Cessna 177RG took off from the Laconia Municipal Airport with the intention of proceeding to Portland International Jetport. Just over a mile away from the airport, owner and pilot Stephen D. Cardelli, 50, of South Portland, Maine, was forced to make a crash landing and [ultimately died](#) from his injuries when the aircraft hit a tree adjacent to the Margate parking lot.

According to the report, the NTSB determined that there was "a loss of engine power due to oil exhaustion from the [fracture of the nipple](#) for the engine oil cooler return line." It was mentioned in the report that oil [was noticed](#) on the taxiway near the maintenance facility, in the engine run-up area and a section leading to the runway.

During the investigation, officials found that "the oil cooler return line attach nipple" had been fractured and "gouges were noted that were caused by an [inadvertent contact by a wrench slipping off of a nearby bolt or nut and striking the surface of the hose end socket](#)."

Data recovered from the monitoring system of the plane indicated that about 45 seconds before the crash, oil and cylinder head temperatures were increasing.

At 30 seconds before the crash, the cylinder head temperature showed signs of decreasing; however, the oil temperature continued to increase to 195 degrees and sustained that temperature until the crash. An oil temperature alarm was set at 230 degrees F.

Investigators found that the main landing gear was in the up and locked position while the nose landing gear was in the down and unlocked position. The cockpit throttle, mixture and propeller controls were all in the full forward position. The narrative stated that the oil filter, which had an install date of June 1, 2009, had remained attached to the engine case. After cutting the filter open, there was [little oil saturation found inside](#).

The NTSB also determined that another possible factor of the crash was the release of the plane [without performing the required engine run-up](#) following an annual inspection.

The factual report released in October stated that the plane's windshield had been replaced the day before the crash and the maintenance facility did not want to conduct an engine run-up without a windshield. The facility's A&P mechanic offered to perform the required engine run with Cardelli on Saturday, according to the report, but Cardelli [came in early and asked the lineman to take the plane out of the hangar](#).

Investigators said the repair station's policy was, "if there is something left to be done, the work order is placed on top of the airplane logbooks" and left on desk of the inspector authorization (IA) or the mechanic performing the work. The owner of the facility told investigators after the accident that he and the other personnel looked for the logbooks but could not find them [and assumed](#) the pilot "must have come in and got them."

According to the probable cause report, "Federal Aviation regulations did not allow delegation of authority with regards to the inspection and that the IA must perform the inspection prior to approving the airplane for return to service." Officials found that the pilot had arrived earlier than the mechanic, retrieved the logbooks that had been signed off and departed.

Stated in the factual report, around five minutes after the pilot pulled the plane out, the lineman heard Cardelli attempt to start the engine several times and reported that the engine "backfired or popped" twice. As the lineman returned to his work, [he did not see](#) Cardelli taxi to the runway for takeoff.

Testing by the Medical Examiner during the autopsy showed signs of [marijuana](#) and [amphetamine](#) in the blood. The results of toxicology testing performed on Cardelli by the Federal Aviation Administration's Civil Aerospace Medical Institute "were consistent with recent use of marijuana and amphetamine," according to the probable cause report, however, it could not be determined whether impairment from the use of such drugs played a role in the crash.

According to the factual report, Cardelli held an Airline Transport Pilot certificate with a rating for airplane multiengine land, and a commercial pilot certificate with a rating for airplane single-engine land. The document stated that his most recent FAA first-class medical certificate was issued on Dec. 5, 2008, and, at that time, Cardelli reported a total flight time of 6,820 hours.