

# Aviation Human Factors Industry News

*Volume VIII. Issue 05, February 03, 2012*



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

Hello all,

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## Bad bolt led to fatal 2010 helicopter crash

An **improperly manufactured steel bolt** that sheared off in flight has been fingered as the likely cause of a June 2010 helicopter crash that killed a CareFlite pilot and mechanic. The National Transportation Safety Board has yet to issue a final report on the investigation, but NTSB documents show that the crash probe quickly centered on a **fractured drive pin**, similar to an everyday bolt.



The bolt in question was one of two that anchor the complex mechanism that operates the helicopter's rotor blades, transmitting the pilot's flight commands to the blades that control the aircraft's direction.

Bell Helicopter, which manufactured both of the drive pins used in the Bell Model 222 helicopter's rotor control assembly, has already reached out of court financial settlements with the families of the victims.

Dallas attorney Jon Kettles declined to disclose details of the settlements, but said once the likely cause of the accident became clear Bell officials quickly agreed to compensate the families.

Complete story in Wednesday's Star-Telegram. Attached at the NTSB documents.

[Download NTSB Materials Lab report](#)

[Download NTSB Investigator's factual report](#)

## Miscues behind US Airways Dash 8 damage

**Miscommunication** between pilots, a ramp agent and a de-icing truck driver led to an accident that caused "**significant**" damage to the horizontal stabilizer and elevator of a Piedmont Airlines Dash 8 Q100 (N839EX) at the Tri-State airport in Huntington, West Virginia on 16 January, according to a US National Transportation Safety Board preliminary report. The pilots of Piedmont flight 4117, operating as US Airways Express from Tri-State to Charlotte with 36 passengers and crew on board, had taxied out short distance from the gate for de-icing before departure as part of a new off-gate de-icing procedure at the airport.



**Several miscues** then took place, according to the NTSB. An agent walking with the aircraft to verify its wing had cleared nearby obstacles during the taxi, gave a thumbs-up signal to the pilots that the aircraft was clear. The de-icing team, operating a vehicle with a boom used to spray de-icing fluid on the aircraft, **mistook the agent's thumbs-up** as approval to approach the aircraft from behind the left wing and begin spraying.

Meanwhile the pilots radioed the agent who earlier had coordinated the off-ramp de-icing procedure with the de-icing team and asked if the aircraft was in the correct location to receive the spray. That agent, **now back inside** the airport working the radios, assumed the Q100 was still at the gate, told the pilots to taxi "50 feet or so and stop", the NTSB said.

"The flight crew initiated taxiing and almost immediately felt a bump, then stopped," the report stated. "After seeing the aircraft start to move, the bucket operator **yelled to the driver** to back up and tried to lower the boom, but the aircraft struck the boom arm."

No one was injured in the incident.

Preliminary Report: [http://www.nts.gov/aviationquery/brief.aspx?ev\\_id=20120118X91324&key=1](http://www.nts.gov/aviationquery/brief.aspx?ev_id=20120118X91324&key=1)

## Factory, design flaws caused A380 cracks

Airbus blamed a combination of [manufacturing and design flaws](#) as more examples of wing cracks arose during checks on the A380, while analysts said its bare-all strategy of addressing the problems in public should limit any lasting damage. A top executive at the European planemaker said it had established how to repair the cracks found on a small number of parts inside the superjumbo's wings, which prompted European safety authorities to order inspections last week.



Airbus and one of the leading operators, Singapore Airlines, confirmed a Reuters report that more examples of the cracks had been discovered during compulsory inspections.

Airbus moved to shore up confidence in the world's largest jetliner amid a drip-feed of disclosures about cracking on components used to fix the outside of the wing to its ribcage.

"The A380 is safe to fly," Tom Williams, executive vice president of programs at Toulouse-based Airbus, said.

Williams flew to Dublin to give an unscheduled address at an industry conference to dampen any concerns about safety.

Crucially, he said engineers had ruled out metal fatigue on the youthful aircraft which first entered service in 2007.

Unusually detailed briefings marked a different response from the blowout of an engine on a Qantas A380 in Nov. 2010 when engine maker Rolls-Royce was criticized by the industry and investors for not giving enough information.

"[This is a game-changer](#) in getting out information that in the past we weren't told. You can't dismiss these things, but it is not a serious issue and they have a solution at hand," said Howard Wheeldon, senior strategist and aviation specialist at brokerage BGC Partners.

The cracks have tested morale at EADS subsidiary Airbus just as it recovers from years of production delays, having hit its A380 delivery target for the first time in 2011.

The mammoth double-decker was conceived as a European bid to outdo the Boeing 747, but [became mired in development problems](#) that caused a near-riot in the French parliament and a rift between France and Germany.

BGC's Wheeldon said engineering flaws rarely affected the contest between Airbus and Boeing in the \$100 billion jet market, which is determined more by fuel economy, performance and delivery timescales.

### TRIO OF MISTAKES

Developed at an estimated cost of 12 billion euros in Britain, France, Germany and Spain, the A380 has room on its wingspan of 79.8m (261ft 10in) to park 70 cars.

Airbus has sold 253 of the long-range aircraft, listed at \$390 million each, and 68 A380s are currently in service.

[It blamed the cracks on three errors](#) -- designers' choice of aluminum alloy for some of the 4,000 brackets inside the wings, the use of a type of bolt that strained the metal and a way of closing tiny gaps that put more stress on a handful of parts.

Airbus is changing a manufacturing processes to ensure smooth operation until at least the next four-year check-up.

Longer term, it plans to switch to a different alloy, restoring the aircraft to its normal lifespan of 25 years-plus. The wings were designed and built in Britain, which prides itself on state-of-the-art wing assembly. Unions there recently complained about the outsourcing of some work to South Korea.

## Marine helicopter mechanic in Afghanistan saves lives with maintenance discovery

CAMP LEATHERNECK, Afghanistan- Lt. Col. Ian Clark, left, the commanding officer of Marine Light Attack Helicopter Squadron 369, pins the Navy and Marine Corps Achievement Medal on Sgt. Christopher Lemke during a ceremony at Camp Bastion, Afghanistan, Jan. 12. Lemke, a mechanic with the squadron, and a native of Macomb, Mich., discovered a previously



unknown issue with the UH-1Y Huey helicopter that represented an extreme risk to the aircraft and.

A Marine Corps sergeant in Afghanistan who unearthed [a never-before-seen maintenance issue](#) in a UH-1Y Huey was recently awarded by the Marine Corps for his potentially lifesaving find.

The sergeant was awarded the Navy and Marine Corps Achievement Medal in a ceremony at Camp Bastion, Afghanistan, Jan. 12.

Sgt. Christopher Lemke, a mechanic with Marine Light Attack Helicopter Squadron 369, nicknamed the "Gunfighters," regularly conducts inspections on the squadron's UH-1Y Hueys and AH-1W Super Cobra attack helicopters.

But during a routine phase inspection of a Huey in late December, Lemke, a native of Macomb, Mich., uncovered something that could save countless lives. Phase inspections are regular checks on an aircraft's various components to ensure they are safe.

Underneath the UH-1Y Huey, in the aircraft's transmission compartment – an area so difficult to reach that maintainers call it the "hell hole" – Lemke [found something wrong](#).

"When two metals rub together, it creates this black liquid, and that's what I found," Lemke said.

The transmission pylon beam and the main beam joint, which secure the aircraft's transmission to the airframe, were disintegrating.

"This failure represented an extreme risk to the aircraft and aircrew," his award citation reads.

The citation goes on to state that Lemke's finding led to a Corpwide inspection, resulting in an engineering advisory report addressing a [manufacturing defect](#) found on multiple UH-1Y aircraft.

"No one else had ever found such an issue, but when we looked at another aircraft we had in phase, it had the same problem. [There was a fault in the design of the aircraft](#)," Lemke said.

Lemke was not scheduled to inspect that part of the helicopter as there had never been an issue in the history of the aircraft, but he explained that Marine Corps aircraft maintenance [demands more than completing the minimum requirements](#).

"That's how I was trained – it's the Gunfighter way," Lemke said of his squadron. "Our job isn't just replacing things. If we don't do it right, that's someone's life."

Lemke's leadership said that they are hardly surprised by his diligence.

“It’s no surprise to me, he’s always gone in there **and done his job the right way,**” said Staff Sgt. Ricardo Paez, Lemke’s supervisor, and a native of Austin, Texas.

Lemke said he hopes younger mechanics in the squadron – the privates first class, lance corporals and corporals – see that as aircraft maintainers, they hold lives in their hands.

“I’m 24 years old and the responsibility we hold for our age is astronomical,” Lemke said. “I hope the junior guys around me realize that and go out and provide combat-capable aircraft for the Marines on the ground.”

## **Qantas explosion caused by defect - ATSB preliminary report**

A **defective pipe triggered the chain of events** that resulted in a mid-air explosion on a Qantas superjumbo, a preliminary report has found.

The 2010 explosion tore through the aircraft's second engine about 15 minutes after the Sydney-bound QF32 plane carrying hundreds of passengers took off from Singapore's Changi Airport. In the report made

public last week, the Australian Transport Safety Bureau (ATSB) said the **manufacturing defect** in the pipe caused an oil fire, starting a "sequence of events" that ultimately led to engine failure.

"That defect resulted in fatigue cracking in the pipe, so that oil sprayed into an engine cavity where it ignited because of the high air temperature," the report said.

The oil fire then weakened a turbine disc in the aircraft's second engine, the investigation found: "As a result, the disc separated from its shaft, increased its rotation speed and broke into several parts."

Sections of the fractured disc and other engine components went on to penetrate the aircraft's left wing, along with other areas of the plane, causing major structural damage.

The plane's engine manufacturer Rolls-Royce said it was working closely with the ATSB to make sure that all issues were effectively addressed.



"Each time an incident happens the [aviation industry learns lessons](#)," Rolls-Royce spokesman Richard Hedges said.

"These are embedded in the rigorous safety procedures and standards of regulation which make flying an extraordinarily safe form of transport."

The report said Rolls-Royce had already revised manufacturing procedures and risk assessment, and the investigation would monitor the progress of those initiatives.

The explosion rained debris on a populated area on the Indonesian island of Batam but the pilots were able to turn back to Singapore trailing smoke and land safely.

None of the 433 passengers or 26 crew members were injured, nor any people on the ground safely in the November 4 emergency.

The final ATSB report on the incident is expected to be released in May.

The aircraft is currently in Singapore awaiting repair.

Qantas grounded its entire superjumbo fleet following the incident while it carried out its own investigation.

## **Foundation's ASW Publishes First-Hand Account of Qantas Flight 32, Story and Video**

In an article appearing on January 20, 2012 in the latest issue of AeroSafety World (available at [flightsafety.org](http://flightsafety.org)), editor J. A. Donoghue writes about Qantas Flight 32, as told by pilot-in-command Richard de Crespigny. Capt. de Crespigny was the keynote speaker at the Foundation's International Air Safety Seminar in Singapore last November and sat down with ASW for a lengthy interview. QF 32 took off from Singapore's Changi Airport on November 4, 2010 and experienced an uncontained engine failure as it climbed through 7,000 feet. With the effort of the four other pilots who were in the cockpit with him, Capt. de Crespigny successfully landed the damaged A380 back at Changi; no one was injured.



“While we’ve all read the investigative reports and the news articles about this incident, hearing about the entire experience directly from the pilot-in-command is not to be missed,” commented Mr. Donoghue.

Mr. Donoghue’s entire interview with Capt. de Crespigny is available for viewing on the Foundation's Web site. “In addition to the gripping story from Capt. de Crespigny, we also were able to sit down with Qantas Customer Service Manager Michael Von Reth,” Mr. Donoghue said. “His story is about keeping 469 passengers and crew members informed about the situation and calm. His actions leading the cabin crew were remarkable. His interview is available for viewing as well.”

The article can be downloaded here: <http://flightsafety.org/aerosafety-world-magazine/december-2011-january-2012/a-black-swan-event>

The videos of the interviews can be seen here: <http://flightsafety.org/media-center/news>

## **AirTran Ordered To Rehire Whistleblower Pilot**

One of the pillars of modern aviation safety, **cockpit resource management** was introduced to commercial aviation more than two decades ago. Among other things, CRM was meant **to draw the curtain** on the era of the submissive copilot and flight engineer cowed by an overbearing “gear up, shut up” captain. It also addressed the disturbing incidence of three-pilot airline crews, nursing deep grievances born of unwanted post-deregulation mergers, refusing to speak to each other on the flight deck. In aviation, silence is golden only under the flight path and in the comforts of an aircraft’s cabin, and **CRM encourages everyone in the cockpit**, regardless of seniority, to work together and speak up if they see something that strikes them as amiss, questionable, wrong, illegal, stupid, negligent or any other troubling adjective that could create a hazard or confusion. Post-9/11 security billboards have adopted this theme too: **“If you see something, say something.”**



All of this well intentioned stuff, along with the OSHA-enforced whistleblower provision of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR21), serves as backdrop to a recent OSHA decision that ordered AirTran Airways (the former ValuJet of Everglades inferno infamy) to rehire a pilot it fired in 2007 following what it described [as a sudden spike in his mechanical-malfunction reports](#). A week after the airline hauled the pilot in for a 17-minute hearing on the matter, it fired him for not adequately explaining the surge in reported squawks. OSHA disagreed, asserting that the airline's decision to fire the pilot [was retaliatory](#), and ordered AirTran to pay the pilot more than \$1 million in back wages, plus interest and compensatory damages.

[“Airline workers must be free to raise safety and security concerns](#), and companies that diminish those rights through intimidation and retaliation must be held accountable,” said David Michaels, the head of OSHA.

Since news of the agency's decision broke, discussion among those with careers in cockpits has run the gamut: to some, this pilot deserves admiration for taking a stand; others question why only he among all AirTran's pilots seemed to find so much wrong with his airline's equipment; others label him a troublemaker; others wonder if he has won this game but spectacularly lost the wider set and match of a long and rewarding piloting career, suggesting he may never find another piloting job beyond AirTran and Southwest, which bought AirTran last May.

Labor Department policy prohibits it from releasing the AirTran pilot's name, but it'll percolate out through other channels. If you were running a flight department, would your gut regard him as a courageous whistleblower or a malcontent? Would you at least interview the fellow? Or would you reject him out of hand because he was fired by an airline?