

Aviation Human Factors Industry News

Volume VII. Issue 20, June 03, 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:

★FAA MX Fatigue Focus Newsletter
- Latest Issue!

★The (Stealth) Blackhawk Crash

★Make Them Uncomfortable

★Failure to redistribute passengers
caused serious A320 tailstrike

★Air Berlin faces investigation over
engine oil leak

★Indicted in 1996 ValuJet Crash,
Airline Mechanic Still on EPA's
Most-Wanted List

★Jury awards \$48 million in
skydiving plane crash

FAA MX Fatigue Focus Newsletter - Latest Issue!



In this issue

Fatigue Countermeasure Training Course

AVS MX Fatigue Workshop

Safety Culture for Fatigue: Do You Have One?

Worker Fatigue, Problem Procedures or Both?

Safety, Economic and Health Consequence of Fatigue in Shift Work

<https://hfskyway.faa.gov/HFSkyway/FatigueNewsletter.aspx>

The (Stealth) Blackhawk Crash

The reason a stealthy version of the MH-60 Blackhawk crashed during the May 1 raid that killed Osama bin Laden includes [the vortex ring state phenomenon](#), according to officials, but helicopter crashes in the Middle East are far from uncommon. Hot air close to the ground and the aircraft's proximity to the high walls of the compound could have caused that thin, hot air to be driven by

propwash up the walls and then down through the rotor, causing the vortex ring state. With those conditions, the helicopter would have lost lift and settled with power, which is what officials say happened. The resulting hard landing immediately altered the original plan for SEALs to fast rope to the ground from a hovering aircraft. They fared better than they might have. In Iraq, only IED and being shot by the enemy rank higher than U.S. helicopters for killing American soldiers, according to the Armed Forces Journal. And 80 percent of the helicopter accidents occur [without the intervention of hostile forces](#). said, the military helicopter crash rate is actually better than that of GA aircraft.



The non-hostile, non-combat accident rate for military helicopters currently stands near 2.1 per 100,000 hours while flying in some of the least hospitable conditions available to helicopters. Meanwhile, the accident rate for GA aircraft stands at 6.86 per 100,000 hours. The military helicopter pilots are most often brought down due to a combination of weather conditions and terrain. Night vision goggles have improved matters, but dust storms, brownouts caused by rotor wash, wire strikes and controlled flight into terrain are still problems the military and Congress hopes to better address. Proposed fixes include [terrain avoidance avionics](#) that would warn pilots of potential hazards. That specific technology would not have helped during the bin Laden raid, for which the mission profile put the aircraft in a hover at treetop level. Three-dimensional radar, also a proposed fix, penetrates brownouts and could have produced a synthetic image of the landing zone, but may not have saved the aircraft from vortex ring state.

Make Them Uncomfortable

Complacency has been called “[the silent killer](#)” and “the greatest threat to the survival of organizations today.” It seeps quietly into maintenance hangars over time as technicians become more comfortable in their jobs and begin taking shortcuts, such as not using checklist or using an out-of-date tool rather than making the trek to get a serviceable replacement. And complacency spreads; other technicians witness these shortcuts and figure they can get away with them too.

“Complacency is the deadliest of the Dirty Dozen,” warns Dr. Terry Tolleson, founder of Blue Tuna Training and Documentation, human factors specialist that train and consult to repair stations globally. The Dirty Dozen are the 12 most common root causes of human error in the maintenance workplace; complacency is the worst of them because it is the most common contributor to accidents and incidents. Numerous studies point to unsafe acts as the reason behind workplace accidents in 80-90% of cases. “Every day in the U.S.,” Tolleson adds, “on average 15 workers lose their lives as a result of injuries or illnesses related to their work. The single most common cause is complacency-and the attitude that “it won’t happen to me.”



Complacency takes the firmest hold on jobs that require repetition, which is why it’s such a common problem in maintenance. Repetition lends itself to automation, and automation can result in “the narrowing of focus and the loss of situational awareness” says Tolleson. “As knowledge increases and training curve flatten out, confidence sets in. Before long, tasks are being performed in mental autopilot.”

It’s that autopilot mode of contentment and familiarity that leads to mistakes. When technicians find themselves thinking, ‘I don’t need to check the manual because I’ve done this procedure a thousand times,’ or “I don’t need to wear safety glasses because the last hundred times I did this, nothing happened,” they could be in danger.

“It’s not about skill level; it’s about mental attentiveness,” says Tolleson. When you’ve done something again and again, “there is a tendency to see what you expect to see.” And that’s a recipe for error.

Complacency is often hard to pinpoint because it can be masked by other factors or can disguise itself as problems such as distraction or lack of communication. “It’s one of the harder problems to identify,” says Tolleson. “We can walk away from a meeting agreeing there’s a lack of communication or that certain skills need to be better, but complacency is intangible.”

Still, signs that it may be a problem in your organization can manifest in myriad ways. FAA Inspectors tell Tolleson they see complacency in the form of maintenance organizations that do not follow their own manuals or that indicate certain items will be documented in a specific way but do not follow through. Other tell-tale signs include maintenance manuals not being used because technicians have performed a job so many times before or shelf-life sensitive items not being managed in a shop.

On quality manager says he looks at this organization's mule to determine whether workers are getting complacent: when workers slack on plugging hydraulic mule lines filling out the mules logs, he knows he needs to address the issue of complacency.

To fight complacency, pay attention to technical workload. Mental underloading and mental overloading can both lead to complacency. By ensuring workers have the right balance of work-not too much, not too little-and that they move to new tasks and new types of work often, they'll stay mentally stimulated. In addition, create a professional development plan and continually challenge technicians with new responsibilities and new skill development opportunities.

"Get people out of their comfort zones," Tolleson urges. "I call it jump-starting the heart.

Another way to fight complacency is simply to talk about it. At your next all-hands meeting, bring up the issue of complacency in the interest of having a discussion on a very common, normal issue that affects everyone.

"When I start talking about complacency, people listen because it's one of those human elements that is inside all of us," says Tolleson. "All our minds disconnect one time or another."

And that's dangerous, both for workers and for the organization as a whole. As Victor S. L. Tan, CEO of KL Strategic Change Consulting Group put it in a recent article on the topic, "The greatest threat hovering above an organization today is not competition. Neither is the increase demands placed by customers. Nor is it the pace of change brought about by globalization. The greatest threat to the survival of organizations today is the complacency of people inside organizations." [If that isn't a wake-up call, you might be feeling too complacent.](#)

<http://www.bluetunadocs.com/>

Failure to redistribute passengers caused serious A320 tailstrike

Failure to redistribute passengers on an Airbus A320 led the aircraft to strike its tail on take-off from Verona, the ANSV has found.

The Bulgarian-registered twinjet (LZ-BHC) had been operating a wet-lease service from Hurghada, Egypt, to Rome Fiumicino via Verona on 1 September 2009.



Eighty-seven Rome-bound passengers were seated mainly aft on departure from Hurghada, while 77 Verona-bound passengers occupied the forward cabins.

Baggage had been loaded with a similar layout in the hold, which meant that the aircraft's centre of gravity shifted rearwards, outside of the operating envelope limit, once passengers and luggage were offloaded in Verona.

Despite the captain's receiving and approving a trim sheet which detailed a "considerably different" seating arrangement for the transit passengers heading for Rome, ANSV says this redistribution "was not detected or not considered" by the captain.

"Passengers remained in the same seats they had occupied in the previous flight," it states. As soon as the thrust levers were advanced to the 'flex' position for take-off, the A320 began an uncommanded early rotation, hitting and damaging its rear fuselage.

It lifted off at 113kt and a stall warning immediately followed. Flight control had degraded, says ANSV, to alternate and direct law. The "extensive" structural damage to the jet had compromised the pressurized area and the crew, having received a pressurization system warning, returned to Verona.

ANSV says the incident highlights the vulnerability, particularly of charter flights operating onward sectors, to undetected changes in mass balance and is recommending that a "positive check" procedure be implemented to ensure necessary loading changes are carried out.

Air Berlin faces investigation over engine oil leak

Air Berlin is facing multiple investigations into problems with one of its [Airbus A330](#)-200s, which resulted in the German airline conducting a passenger flight with an engine showing clear signs of oil leakage. The aircraft, registration D-ALPD, suffered multiple oil contamination events around 8-9 April. On the third of these, flight AB7152, between Munich and Bangkok, the crew noticed a strong smell of oil shortly after take-off.

According to information obtained, the captain contacted the airline's operations centre and suggested a return to Munich, as the aircraft would have to be thoroughly inspected before its next flight. Sources say the crew was advised to continue to its destination.

On arrival at Bangkok, [Air Berlin's](#) designated maintenance contractor, [Thai Airways](#), inspected the aircraft and found evidence of oil leaks at several locations on the [A330's](#) right-hand Pratt & Whitney 4168A engine

Maintenance documents and photographs obtained by Flight International say that oil leaks were located on "the inlet cones, the anti-ice vent holes, the fan blades and bleed vent areas" as well as "puddles of oil" found at the bottom of the fan case.

These are "consistent with the failure of the No 1 carbon bearing seal" on the engine. The Airbus/Pratt & Whitney troubleshooting manual clearly states that in such situations the engine must be replaced before its repair.

Nonetheless, following inspection by Air Berlin Technik, which discovered what it describes as "a slight oil leak" on the engine, the aircraft was released back into service and conducted a revenue flight back to Düsseldorf as flight AB7151. There the engine was exchanged as a precaution.

However, three separate inquiries have been launched into the incident and a related fume event on the same aircraft the day before on a flight to Mombasa, Kenya.

The BFU, the German air accident investigation branch, confirms it is probing the fume incident, although it says the continued use of the engine is no longer a subject of investigation.



Investigations have also been launched by the Luftfahrtbundesamt, the German civil aviation authority, and the employer's mutual insurance association. A report filed with the insurer confirms that "a fume event" had been encountered.

It further says: "The strong oil smell propagated through the entire aircraft [during climb for about 20min - before approach to Bangkok about 10min]". It also points out that the entire crew encountered "nausea", "illness" and "headaches".

The report also suggests that "contamination of the crew and the aircraft with the neurotoxin TCP, tricresylphosphate, has to be considered".

According to the German government, in a ruling published in September 2010, the aircraft operator is required to inform passengers in the event of a fume event.

Indicted in 1996 ValuJet Crash, Airline Mechanic Still on EPA's Most-Wanted List

Fifteen years ago this month, ValuJet Flight 592 left Miami International Airport en route to Atlanta for what turned out to be a brief and tragic journey.

Shortly after takeoff, a fire broke out on board the 27-year-old DC-9 aircraft and, within minutes, the plane plummeted into the Everglades. The death toll: all 105 passengers and five crew members. For Marilyn Chamberlin, whose daughter, Capt. Candalyn Kubheck, was the plane's pilot, the memory of that day still stings.

"Fifteen years, you never get closure," Chamberlin said. "I don't care what they say, it's always an open wound. So you just live the best you can."

But Chamberlin, whose daughter was 35, said she got some small comfort this week from learning that [U.S. EPA has not given up its hunt for the lone suspect from a criminal investigation](#) of the crash who never saw the inside of a courtroom.

Mauro Valenzuela is among 17 fugitives being sought by EPA for alleged environmental crimes. His wanted poster, which includes a physical description and a rundown of his alleged violations, appears on EPA's online fugitive



Oxygen canister like ones on board during the crash (CNN)
Oxygen canister. Source: <http://www.cnn.com/US/9611/18/valujet.advancer/canister.jpg>; accessed June 22, 2006.

directory -- www.epa.gov/fugitives -- that has been operated through the agency's Office of Criminal Enforcement, Forensics and Training since 2008.

Valenzuela was a mechanic for the now-defunct airline maintenance contractor SabreTech, the focus of [what became the first ever criminal prosecution over a U.S. airline crash](#).

According to EPA, Valenzuela [allegedly helped certify that a set of cabin oxygen generators had been properly removed and replaced](#). His actions, the agency said, caused those generators to be loaded on ValuJet Flight 592 [without proper markings, safety caps, packaging and other safety measures](#). Those oxygen generators played a key role in the fire that caused the crash.

If caught, Valenzuela could be charged with the illegal transportation of hazardous materials aboard a commercial aircraft, making false statements, conspiracy and a slew of other charges related to his decision to flee rather than face his indictment.

"I hadn't realized they were even pursuing him. I'm delighted to hear they are," Chamberlin said this week from her home in California. "I appreciate there's still some interest, most people have long forgotten it. ... I just thought he probably outsmarted them like everyone else did and got ahead of the law."

['Everything that could go wrong, did'](#)

While the ValuJet investigation resulted in a landmark criminal prosecution focusing on SabreTech, Chamberlin and other family members of those who died remain disappointed in the end result.

A National Transportation Safety Board report from 1998 found that the fire started as a result of the ignition of one or more of the more than 100 oxygen generators that [were improperly carried](#) in Flight 592's forward cargo hold.

The board found SabreTech had improperly prepared, packaged and identified the unexpended chemical oxygen generators.

Investigators showed that a [cheap set of safety caps](#) could have prevented the generators from exploding.

The NTSB report also noted that ValuJet [had not properly overseen its contract maintenance program](#) to ensure compliance with hazardous materials requirements and practices. It was determined the crash may have been prevented had the Federal Aviation Administration required smoke detection and fire suppression systems in aircraft Class D cargo compartments -- a safety measure that has subsequently become standard in the United States.

"With the Valujet crash everything that could go wrong, did go wrong, and [there were so many broken rules](#) it was unbelievable," Chamberlin said.

In July 1999, the U.S. Attorney's Office for the Southern District of Florida filed a 24-count indictment against SabreTech and three of its former employees, Danny Gonzalez, who served as the company's director of maintenance, and mechanics Eugene Florence and Valenzuela.

But that fall, as the trial approached, Valenzuela, a native of Chile, fled.

Valenzuela's departure allowed him to avoid prosecution but, in retrospect, he might have been better off had he gone to trial.

What if Valenzuela returned?

After several weeks of trial later that year, a jury acquitted both Gonzalez and Florence on all charges. SabreTech was acquitted on charges of conspiracy and violating hazardous material regulations but it was found guilty on nine charges involving the [reckless transportation of hazardous materials and failing to properly train its employees](#). On appeal, a U.S. circuit court threw out eight of those charges and only upheld the charge regarding improper training.

Had Valenzuela gone to trial, he would have been acquitted too, said Jane Moscowitz, who was Valenzuela's lawyer until he fled the country. The Miami attorney also defended Florence, who faced nearly the exact same charges as Valenzuela.

[Jury awards \\$48 million in skydiving plane crash](#)

A jury has awarded \$48 million to relatives of five people killed when a skydiving plane crashed shortly after takeoff from a rural Missouri airport in 2006.

The jury in Union, Mo., sided against London-based Doncasters Inc., ordering the company to pay \$4 million to each family, and another \$28 million in punitive damages to be split among the families.

"[Lives will be saved because of what this jury did,](#)" said Gary Robb, the Kansas City attorney for the victims' families, of Thursday's verdict. "Aviation safety will be improved because manufacturers [will not cut corners](#), because if they do they will be caught."



An attorney for Doncasters did not return phone and email messages seeking comment.

The right engine of a DeHavilland DHC-6 Twin Otter plane blew up shortly after takeoff on July 29, 2006, at the Sullivan airport, about 60 miles southwest of St. Louis. Six people were killed, though relatives of one of the victims were not part of the lawsuit.

Cowan and his brother, Jim, co-owned Quantum Leap Skydiving Inc. of Sullivan, and was piloting the plane, which crashed within about 10 feet of a house. No one on the ground was injured.

Testimony indicated that Doncasters used a [different alloy material](#) than called for by the engine manufacturer, Pratt & Whitney Canada. Jurors heard testimony from crash investigators, metallurgists and aircraft design engineers. Evidence was presented [suggesting that eight other airplane engine failures were believed to be due to the same faulty part](#) made by Doncasters.

The family more than anything wants them to take this defective part off the market,