

Aviation Human Factors Industry News

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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:

★Air Accidents Investigation
Branch's 2016 Report Issued

★Professionalism, Integrity and
Videotape

★Ex-Avantair DOM Sentenced for
Obstructing NTSB, FAA

★Erratic control preceded military
Tu-154's fatal descent

★From curry powder to coin-
thrower to dirty dancer: Weird
reasons for flight delays

★How Biomedical Engineering Is
Improving Workplace Safety

★3D expertise in non-destructive
testing in aerospace

★And Much More

Air Accidents Investigation Branch's 2016 Report Issued

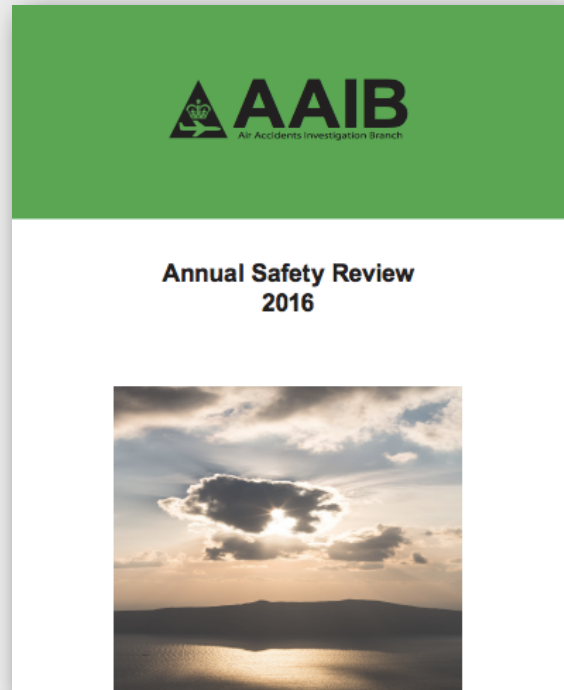
The report includes information on the [occurrence factors](#) established from the AAIB investigations and articles on AAIB's use of simulators and drones in accident investigations.

England's Air Accidents Investigation Branch (AAIB) recently published its [Annual Safety Review for 2016](#), reporting on its activity during 2016 and reviewing the 57 Safety Recommendations and Safety Actions it published. Board personnel deployed to conduct field investigations 38 times, including 14 times for fatal accidents in the United Kingdom, and 208 correspondence investigation reports were made during the year, Chief Inspector of Air Accidents Crispin Orr noted in his introduction to the report. Orr joined AAIB in January 2017.

The report includes information on the occurrence factors established from the AAIB investigations and articles on AAIB's use of simulators and drones in accident investigations.

Orr wrote that "2017 heralds major changes for the UK and its international relationships. However, the continual pursuit of aviation safety [transcends national boundaries](#) and the AAIB will continue to work very closely with regional and global partners not only to investigate specific accidents and serious incidents under the International Civil Aviation Organization (ICAO) framework but also to develop agile, responsive investigation capability to meet the challenges of tomorrow."

Loss of control in flight of general aviation aircraft was the [most prevalent factor](#) in fatal accidents during 2016, he wrote, adding that two fatal accidents were attributed to medical incapacitation and the 24 deployments to non-fatal occurrences "were mostly to serious incidents involving commercial air transport, where system, component failure, or malfunction did not result in an accident.



" And the board deployed to six accidents overseas, including to Nepal, Norway, Dubai, and Colombia, and participated in 87 other international investigations.

Encouragingly, there was a significant increase in 2016 in the Safety Actions taken by organizations prior to the publication of the AAIB report on their incidents -- 90 did so compared with 34 in 2015, Orr wrote. He said this improvement reflects the open dialogue with AAIB inspectors "and the appetite of regulators and operators to take immediate positive action." However, there 36 of the responses to the 57 Safety Recommendations are still classified as "partially adequate" or "not adequate."

https://assets.publishing.service.gov.uk/media/594a62dfed915d0baa00001a/AAIB_Annual_Safety_Review_2016.pdf

Professionalism, Integrity and Videotape

by [John Goglia](#)

Like many of you, I've been shaking my head at the recent viral videos of passenger encounters with airline and airport personnel. Starting with the violent removal of a doctor from a United flight, videos have emerged—and gone viral—of an American Airlines crew encounter with a tearful mother with infants, and a Delta flight attendant threatening a passenger with jail because he wanted to use a seat he had paid for to transport his infant in an approved child seat. This last incident particularly infuriated me because of my long-time position on the importance of proper child restraints for children under the age of two. Not only was the flight attendant unprofessional, but the claim that infants are required to travel as lap children and are safer that way is particularly galling. But even before this recent spate of airline-contempt-for-passenger videos, there were other memorable videos for those of us who make our livelihoods in aviation.



A number of videos have been posted on YouTube over the years of baggage handlers tossing and kicking passenger bags, in the U.S. and this past March in the UK. Many maintenance workers on the ramp are clearly visible from aircraft cabins and the terminals themselves. Just the other day at a major mid-Atlantic airport, there were far too many examples of [unprofessional conduct](#) by maintenance workers to list here. Among them, I noted a maintenance worker shaking a ladder with a worker on it—hard enough that the worker dropped his tool. Judging from the animated response from the worker on the ladder, which I could see but not hear, the worker was not pleased. Whatever the point of shaking the ladder (perhaps trying to get the worker's attention?), it was inappropriate and unprofessional.

My point here is not how many instances of unprofessional behavior are out there but, rather, how important it is in this age of ubiquitous video recording [to be professional and demonstrate integrity](#). It used to be taught to all aspiring aviation workers—from the cockpit to the hangar to the ticket counter—that it is always important to do the right thing even when no one is looking. For years, I have taught this mantra to my aviation safety classes and in appearances before aviation groups. But I've always known—as you all know—that it's an easy thing to say but difficult to do with the constant pressure of moving aircraft. [Cutting corners can quickly become the norm](#). Threatening passengers to the point that every incident becomes a security threat, with calls to airport police for enforcement, has become the far too frequent response to passengers who are the least bit assertive.

ACT AS IF YOU HAVE AN AUDIENCE

If we needed reminding, the recent rash of viral videos has done just that. Certainly those in the industry who are the face of aviation to customers should know that passengers are watching them. And that at the first sign of a problem, they're whipping out their phones and taping. (I was on a flight the other day where my seat mate checked his phone to make sure he had enough battery life—"in case I need to video anything." [That's the new norm](#), I guess, for air travelers: check your cellphone for enough battery to record an in-cabin outrage.) And, yes, another viral video captured a United Airlines ticket agent canceling a passenger's ticket for taping her at Louis Armstrong International Airport in New Orleans, claiming, incorrectly, that taping her in a public place was somehow illegal.

But those who work out of view of passengers are also under constant surveillance by cameras of all kinds in almost all places. Certainly the airports themselves, large and small, are under video surveillance. Hangars and baggage areas are as well. And while few cockpits have cameras now, many—corporate jets among them—have voice recorders, with cameras likely in the future. The NTSB has been pushing for cameras in airliners for years. In the aftermath of the Gulfstream accident at Hanscom Field in Bedford, Mass., in which the NTSB determined the long-time corporate pilots [routinely failed to do critical flight-control checks](#), I myself have recommended cameras in corporate aircraft to help ensure that safety procedures are routinely followed.

The question now becomes doing the right thing when you're pretty sure at least someone or something is watching...and recording. So what should aviation workers do, knowing both that they're judged by their employers on how quickly and efficiently they move aircraft and knowing that sometimes speed and efficiency don't either jibe with the regulations or provide the best customer experience?

For one, employees should follow procedures. But not so mechanically that when a difficult situation presents itself—especially one involving an unusual circumstance—they don't stop and seek further guidance. The [just-get-it-done mentality](#) needs to slow down when there are changes in normal circumstances. This applies to every aspect of the operation and is a good thing to do from a safety perspective, in any event.

And if, in the wake of all this bad publicity over viral videos, managers and supervisors don't do this on their own, I would recommend that unions and other employee groups address this concern to management so that individual employees, under the pressure of a quick turn-around, aren't stuck making these decisions at the risk of their and the company's reputation. Employees should have [clear instructions](#) on how to address unusual circumstances and guidelines on how to elevate concerns to supervisors and company management quickly when a situation they're uncomfortable with begins to develop. Yes, this might mean slowing down sometimes. But clearly a little time up front can save lots of time and money down the road. I bet the CEO at United would agree.

Ex-Avantair DOM Sentenced for Obstructing NTSB, FAA



Former Avantair director of maintenance David Esteves was sentenced late last month by a Tampa federal district court to eight months of house arrest, three years of probation and a \$2,000 fine [for obstructing the NTSB and FAA](#) during an aircraft accident investigation. That investigation was the result of a July 28, 2012 incident in which an elevator fell off of an Avantair Piaggio Avanti as it was departing Camarillo, California. The airplane landed in San Diego, picked up passengers and then took off for Henderson, Nevada, with its left elevator missing. During the flight to Henderson, the pilot reported problems that were captured by the cockpit voice recorder (CVR).

After the aircraft landed in Henderson, but before the arrival of NTSB and FAA investigators, Esteves was found [to have instructed a contractor](#) to remove the nuts, bolts and right elevator to intentionally prevent the investigators from examining the condition of the right elevator. In addition, the court ruled that Esteves instructed the contractor to power up the airplane to erase the CVR data.

Erratic control preceded military Tu-154's fatal descent

Documents apparently extracted from the Russian investigation into the military Tupolev Tu-154B crash in the Black Sea have given a [more detailed insight](#) into the circumstances of the accident.

Investigators have signaled that [spatial disorientation contributed](#) to the fatal crash, which occurred just 1min 13s after departure from Sochi on 25 December last year.

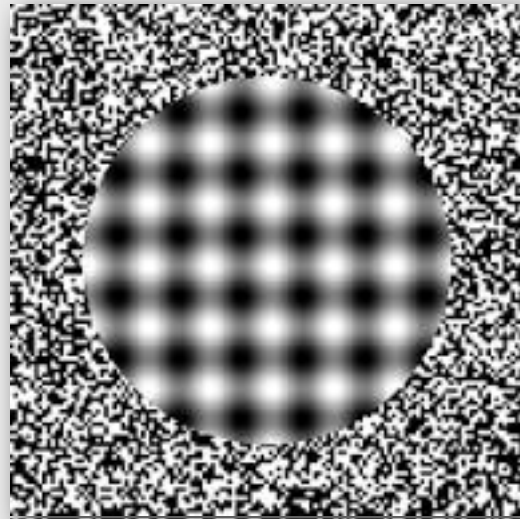
The document extract – which carries no official markings but appears consistent with the format of Russian government inquiries – has not been independently authenticated by FlightGlobal. But it states that the aircraft (RA-85572), arriving from Chkalovsky airfield near Moscow, had been parked at Sochi for nearly 4h for refueling before departing for Latakia in Syria.

The captain of the aircraft, while taxiing out, had experienced ["difficulty"](#) in determining location on the airport, the document adds, owing to the ["complex" taxiway system](#) and the two intersecting runways at Sochi.

Take-off commenced from runway 24 at 05:24 with a heading of 238°.

But just 7s into the roll, with the Tu-154 traveling at 38kt (70km/h), the captain started remarking – [with a degree of stress](#) – about the take-off heading.

Use of ["abnormal vocabulary"](#) and heightened ["emotional tension"](#) in this early phase resulted in the captain's reduced control of take-off parameters and the "diversion" of the crew from its functional duties, says the document.



After a 34s run, the Tu-154 lifted off with a pitch of 4° at a speed of 162kt (300km/h). The captain increased the pitch to 15° after retracting the undercarriage, then pushed the control column forward.

The captain ordered the flaps retracted at a height of 157m, which was a "departure" from the 500m agreed before flight, the document states.

While the flaps were being retracted and the stabilizer adjusted, the captain [continued to push the control column forward](#). The aircraft reached 231m and started descending.

As it passed 218m – just 1min 3s into the flight – it was flying at 201kt, pitched 1.5° nose-down, and the descent rate of 1,180-1,575ft/min [triggered the aircraft's hazardous approach warning system](#), designed to prevent a collision with terrain.

The document says the activation of the warning coincided with "erratic" movement by the captain of the control wheel, which was rolled 10.7° to the right then 53.5° left, while the left foot pedal was pressed and the control column was pulled. It states that the Tu-154 started banking sharply to the left, adding that the captain was [experiencing spatial disorientation](#).

Crew members [informed the captain](#) about the hazardous approach warning and the loss of altitude. But by the time the aircraft was just 90m above the surface of the sea, it was descending at over 3,900ft/min at 250kt, with a 27° left bank, and unable to avoid impact with the sea.

The bank increased to 35° at 67m and the crew received a left-bank angle warning which prompted, at 34m, a hard maximum deflection of the control wheel to the right. But the Tu-154 struck the water with a bank of 50°, on a north-easterly heading, at nearly 6,000ft/min.

None of the 92 occupants survived the impact, some 1,270m from the coast and 340m to the left of the extended runway 24 centerline.

The document says the "absence of an adequate reaction" from the captain to the crew's remarks, as well as audio and visual signals, as well as the lack of flight control to correct the descent led to the crash.

From curry powder to coin-thrower to dirty dancer: Weird reasons for flight delays

Shanghai: An 80-year-old Chinese woman delayed a domestic flight from Shanghai this week for nearly six hours after throwing coins into an engine of the plane supposedly for good luck.

Shanghai police later said they would take no further action against the woman -- said to be a Buddhist -- due to her age, although Chinese Internet users were far less forgiving.

AFP looks at flights across the world that were delayed or failed to reach their destinations for unusual reasons.



Passengers rebel against drunk pilot

Passengers in Moscow demanded that the pilot for their Aeroflot flight to New York be removed because he was drunk. The first sign of trouble came when the pilot slurred his words during the pre-flight announcement, The Moscow Times said in February 2009.

At a time when Aeroflot's reputation was already at rock-bottom due to a series of safety incidents, one passenger told the newspaper: "The first thought that occurred to me was, 'This guy is drunk'. His speech was so slurred it was hard to tell what language he was speaking."

The pilot emerged from the cockpit of the Boeing 767 red-faced with bloodshot eyes and appeared unsteady on his feet. The crew was replaced and the flight later departed safely.

Fiery curry powder sparks smoke alert

An Air India passenger jet heading to Frankfurt was forced to return to Mumbai after a bag of curry powder set off smoke and fire alarms. Pilots on the Boeing 747 activated fire extinguishers after receiving a cockpit warning about a fire in the cargo hold in June 2009.

But on the plane's return to India engineers said the alert had been triggered by a leaking bag containing curry powder. The bag was removed before the plane took off again after a 12-hour delay.

Passengers stung by delay

Snakes, rats, mice and scorpions have all prevented planes from taking off, but in January last year a bee delayed an Indonesian passenger plane for four hours after getting stuck in vital equipment and causing a problem with the aircraft controls. The flight, operated by Indonesian flag carrier Garuda, was scheduled to take off from the western island of Sumatra and head for Jakarta.

But the pilot of the Boeing 737, which was carrying 156 passengers, decided not to take off after noticing a problem with the controls. The airline did not say whether the bee survived the ordeal.

'Dirty dancer' forces flight back

Sleepy early-morning passengers on a flight from Moscow to London may have thought they were dreaming when a drunken Russian woman staged erotic dances on the plane in August 2011. But the flight crew decided to return to Moscow as the woman, 39, was deemed to be causing an inconvenience to passengers, the RIA Novosti news agency said.

"The woman was in a state of insobriety, inconveniencing the passengers, taking off their glasses and dancing erotic dances," a spokesman for transport police said, quoted by the news agency. The woman was arrested on arrival.

Pilot loses artificial arm & control

A pilot for a British budget airline briefly lost control of a flight after his artificial arm came loose during landing. The Flybe plane carrying 47 passengers was coming in to land at Belfast City Airport from Birmingham in February 2014 when the pilot's prosthetic forearm became detached from a special clamp fitted to the plane's yoke. This caused the plane to land with a "bounce", but no one was injured. Flybe said it was proud to be an equal opportunity employer. The captain pledged to be more careful in future about checking the attachment on his artificial limb.

'I'm not qualified to land plane'

Another British passenger plane was forced to turn back minutes before landing in Paris in 2008 because the pilot of 30 years' experience was not qualified to land in fog.

Speaking over the address system as the Flybe flight approached Charles de Gaulle airport, the pilot announced to startled passengers "I am not qualified to land the plane" and turned back to Cardiff. The Civil Aviation Authority described the incident as "quite unusual but probably not unheard of".

How Biomedical Engineering Is Improving Workplace Safety

Every year, U.S. businesses spend hundreds of millions of dollars on workplace-related injuries. Although most of us think of workplace injuries as falls and other accidents, the majority of injuries actually develop over time as the result of **repetitive small movements**. Repetitive stress injuries, such as carpal tunnel syndrome, affect hundreds of thousands of American workers — and businesses can be held liable for the injuries and the costs associated with treating them. Because workplace injuries are so common, safety and prevention efforts have become a vital part of the employment landscape.



Most companies offer some type of training and support to prevent injuries, from voluntary [ergonomics](#) evaluations and training to formal safety programs. These programs do not occur on their own, though, and are based on both best practices developed over time, and the latest biomedical and biomechanical research. In fact, it may be surprising, but biomedical research and engineering is on the forefront of improving workplace safety.

3D expertise in non-destructive testing in aerospace

Airlines, as well as maintenance, repair and overhaul (MRO) service companies, can efficiently perform the evaluations of in-service aircraft safety with the company's inspection solutions

Leading company in portable and 3D-measurement solutions and engineering services, Creaform, has announced that the company's non-destructive testing (NDT) will now be used in the aerospace industry. With its inspection solutions, airlines as well as maintenance, repair and overhaul (MRO) service companies, can perform the evaluations of in-service aircraft safety efficiently, [while cutting costs and saving downtime](#), Creaform says. “As predictive maintenance becomes more, aviation maintenance professionals and aircraft MRO providers are increasingly on the lookout for innovative methods that enable quicker and safer decisions to be made on the outcome of part defects,” says Steeves Roy, NDT product manager at Creaform. “The mapping of external surface defects on aircraft parts, which can prove difficult to obtain using traditional methods, namely [hail damage, bird impacts and lightning strikes](#) on the fuselage and wings, can be assessed with 3D scanning. When paired with advanced inspection tools, such a solution cuts down on the operator’s impact on measurements, shortens time to get the final report, and reinforces decision-making,” Roy noted.

The image shows the letters "NDT" in a large, bold, serif font, centered on a white rectangular background. This background is set against a light gray gradient backdrop.

To ensure that the solution matches aviation maintenance industry requirements and properly reflects the market needs, Creaform is partnering with major aircraft manufacturers for beta testing. It stated that the surface inspection solution for aerospace applications is set for release in October 2017.

Earlier this year, Creaform announced that the company's Handy-Scan 3D metrology-grade laser scanner had made its first major step into the aerospace industry. It was added to the Airbus Technical Equipment Manual (TEM) that is referenced in the Airbus Structure Repair Manual (SRM).

According to the company, its NDT solution is well-known in the oil and gas industry. This is comprised of its Handy-Scan 3D portable metrology-grade scanner and its Pipecheck NDT software, both of which allow automatic on-site inspection, detection and characterization of pipeline defects. With traceable and repeatable inspection data and results, operators can [access critical information for making safer decisions](#).

EASA Publishes Safety Info on Wake Vortex

The European Aviation Safety Agency has published safety information bulletin SIB 2017-10 to remind pilots and air traffic controllers about the risks associated with [wake turbulence encounters at high altitude and applicable precautionary measures](#).



“With the increase in overall volume of air traffic and enhanced navigation precision, wake turbulence encounters in the en route phase of flight have progressively become more frequent in the last few years,” the bulletin said. The document comes just six months after a Bombardier Challenger 604 at FL340 was severely damaged and its occupants injured when it encountered wake turbulence 12 nm from an Airbus 380 that had passed overhead in the opposite direction at FL350. As the bulletin noted, the so-called “heavy” and “super heavy” aircraft—such as the Airbus 340 and 380 and Boeing 747—are more prone

to generate stronger vortices, although there is also potential from other large aircraft types.

Considering the high operating airspeeds in cruise and the standard 1,000-foot vertical separation in RVSM airspace, EASA said that wake can be encountered up to 25 nm behind the generating airplane, but “the most significant encounters are reported within a distance of 15 nm.” The bulletin concludes with illustrations that show various scenarios of wake turbulence encounters and recommended avoidance techniques.

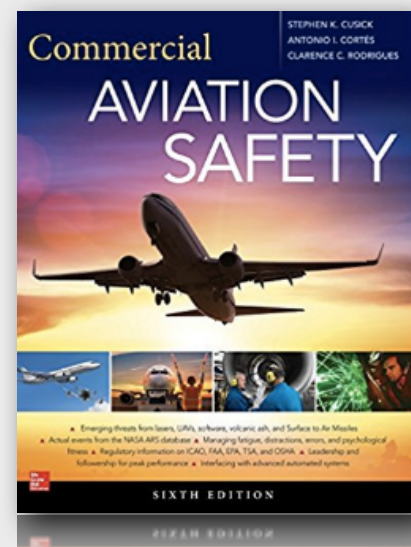
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[http://ea.ecn5.com/Clicks/
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New Edition of Commercial Aviation Safety book just released.

Up-To-Date Coverage of Every Aspect of Commercial Aviation Safety. Completely revised edition to fully align with current U.S. and international regulations, this hands-on resource **clearly explains the principles and practices** of commercial aviation safety- from accident investigations to Safety Management Systems.

Commercial Aviation Safety, Sixth Edition, delivers authoritative information on today's risk management on the ground and in the air. The book offers the latest procedures, flight technologies, and accident statistics.



You will learn about new and evolving challenges, such as lasers, drones (unmanned aerial vehicles), cyberattacks, aircraft icing, and software bugs. Chapter outlines, review questions, and real-world incident examples are featured throughout.

Coverage includes:

- * ICAO, FAA, EPA, TSA, and OSHA regulations.
- * NTSB and ICAO accident investigation processes.
- * Recording and reporting of safety data.
- * U.S. and international aviation accident statistics.
- * Accident causation models.
- * The Human Factors Analysis and Classification System (HFACS).
- * Crew Resource Management (CRM) and Threat and Error Management (TEM).
- * Aviation Safety Reporting System (ASRS) and Flight Data Monitoring (FDM).
- * Aircraft and air traffic control technologies and safety systems.
- * Airport safety, including runway incursions.
- * Aviation security, including the threats of intentional harm and terrorism.
- * International and U.S. Aviation Safety Management Systems.

Available now through Amazon: <https://www.amazon.com/Commercial-Aviation-Safety-Stephen-Cusick/dp/1259641821>

FAA Seeking to Identify and Track Drones in Flight

Eventually, the recommendations the new Aviation Rulemaking Committee produces could help to pave the way for drone flights over people and beyond visual line of sight, FAA reported.

Saying that knowing the identity of whoever is flying a drone unsafely or somewhere it shouldn't be flown is a critical question for law enforcement and homeland security,

the Federal Aviation Administration is creating a new Aviation Rulemaking Committee that will help the agency create standards for remotely identifying and tracking unmanned aircraft in flight. The committee held its first meeting June 21-23 in Washington, D.C.

Currently, there are no established requirements or voluntary standards for electrically broadcasting information to identify an unmanned aircraft while it is in the air, FAA reported, adding that it is setting up the committee ["to help protect the public and the National Airspace System from these 'rogue' drones."](#)It's clearly a big committee, because FAA [listed 73 organizations](#) as confirmed members. They include the Air Line Pilots Association, the American Association of Airport Executives, AT&T, BNSF Railway, Ford Motor Company, the Helicopter Association International, Intel Corp., the International Association of Chiefs of Police, the National Governors Association, Qualcomm, SAE International, the Texas Department of Public Safety's Aircraft Operations Division, Verizon, the New York City Police Department, and PrecisionHawk. FAA said the committee's membership "represents a diverse variety of stakeholders, including the unmanned aircraft industry, the aviation community and industry member organizations, manufacturers, researchers, and standards groups."

[Its major tasks include:](#)

- Identify, categorize, and recommend available and emerging technologies for the remote identification and tracking of drones
- Identify requirements for meeting the security and public safety needs of law enforcement, homeland defense, and national security communities for remote identification and tracking
- Evaluate the feasibility and affordability of the available technical solutions and determine how well they address the needs of law enforcement and air traffic control communities

"Eventually the recommendations it produces could help pave the way for drone flights over people and beyond visual line of sight," FAA added.



Don't Forget To Check These 6 Small Parts On Every PreflightIt's easy to skip or miss these tiny parts during a preflight inspection. Here's why they're so important...

DON'T FORGET

1) Bonding Straps

The electrical bonding straps between different components of your airplane prevent static electricity build-up that can interfere with radio and navigational equipment. More importantly, they provide lightning protection by allowing current to pass through the airframe with minimum arcing.

You'll find these metal straps connected between parts like the ailerons and wing, or elevator and horizontal stabilizer. They're built to be flexible, and to move with the control surface. But over time, they can corrode and snap.

2) Cotter Pins

Cotter pins ensure that bolts, screws, and nuts stay secure. Make sure these pins are installed in the correct locations, and haven't come loose over time.

3) Safety Wiring

Safety wiring prevents fasteners from loosening or falling out due to vibration. You'll find safety wiring on many engine components that are susceptible to engine vibrations.

4) Brake Pads

Make sure to check the brake pads behind the tires to ensure there's useable pad left, and that the rotors aren't corroded or damaged.

5) Static Wicks

Like bonding straps, static wicks help control electrical current build-up on aircraft parts. They dissipate electrical energy to prevent communication and navigation radio interference. Most aircraft have a limit for how many static wicks can be missing for the aircraft to remain airworthy.

6) Hose Clamps

Hose clamps are used within aircraft systems to connect tubing to their attachment points. If you open the engine cowling, you might notice large, orange tubes. These are usually used to transport air for anything from environmental systems to electrical components. Their connection points are fastened with hose clamps.

If You Can't Take the Heat...Speak Up!

What's at Stake?

The body normally cools itself by sweating. During hot weather, especially with high humidity, sweating isn't enough. Body temperatures can rise to dangerous levels if you don't drink enough water and rest in the shade. You can suffer from heat exhaustion or heat stroke. In 2014 alone, 2,630 workers suffered from heat illness and 18 died from heat stroke and related causes on the job. Heat illnesses and deaths are preventable.

What's the Danger?

Any worker exposed to hot and humid conditions is at risk of heat illness, especially those doing heavy work tasks or using bulky protective clothing and equipment. Some workers might be at greater risk than others if they have not built up a tolerance to hot conditions, including new workers, temporary workers, or those returning to work after a week or more off.



All workers are at risk during a heat wave.

The three main heat related illnesses are heat stroke, heat exhaustion, and heat cramps. Heat stroke can be fatal and heat exhaustion and heat cramps can quickly lead to heat stroke if left untreated.

How to Protect Yourself

To prevent heat related illness and fatalities:

- Drink water every 15 minutes, even if you are not thirsty.
- Rest in the shade to cool down.
- Wear a hat and light-colored clothing.
- Learn the signs of heat illness and what to do in an emergency.
- Keep an eye on fellow workers.
- "Easy does it" on your first day of work in the heat. You need to get used to it.

Pilot shoots video of 787 contrail — from above

Lou Boyer was in the cockpit of a Boeing 747 over eastern Russia early one morning when he saw a Boeing 787 crossing 1,000 below him. That was not unusual, of course, but the contrail it left behind was extraordinary. Mesmerizing, you might say.



<https://youtu.be/epa6WxEw1Xk>

Book: Careful

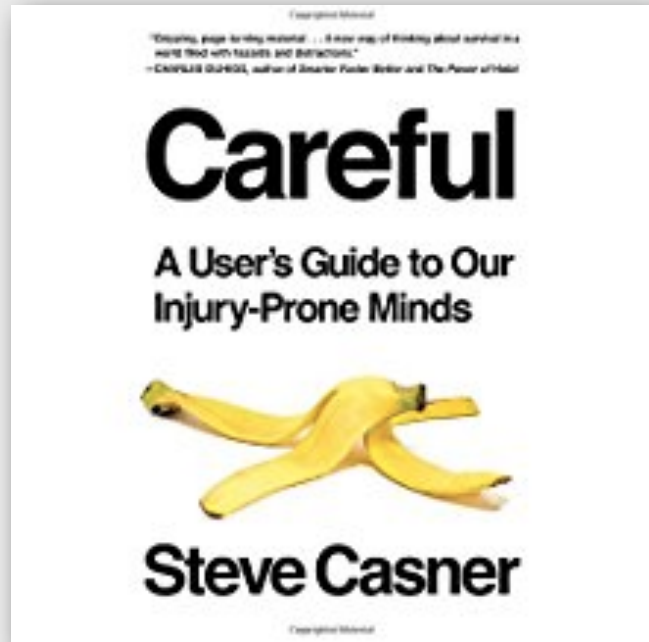
A safety expert reveals why *few of us are as careful* as we think we are, and *what we can do about it*.

The modern world can be a dangerous place, filled with fast cars, smartphones, new drugs, and thrill sports. *Meanwhile, we humans are as fragile as ever*. In fact, after a century of steady improvement, injuries and accidental deaths are on the rise.

Steve Casner has devoted his career to studying the psychology of safety, and he knows there's not a safety warning we won't ignore or a foolproof device we can't turn into an implement of disaster.

Careful helps us *understand why we do things* like insist on the fat-free salad dressing but then text and drive. Casner explains the psychological traps that can lead us to the scene of an accident. They're the same whether you're a pilot, a Hollywood stuntwoman, a parent, or the owner of a clogged dishwasher you're trying to fix with a screwdriver. Then Casner shows us how and when the injuries happen, so we know exactly what we should really be worrying about.

Casner's book helps us keep our fingers attached in the kitchen, our kids afloat at the pool, and our teens safe behind the wheel, and *shows us many other ways* we can take control of our own safety and get through the day in one piece.



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