Aviation Human Factors Industry News

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

Hello all,

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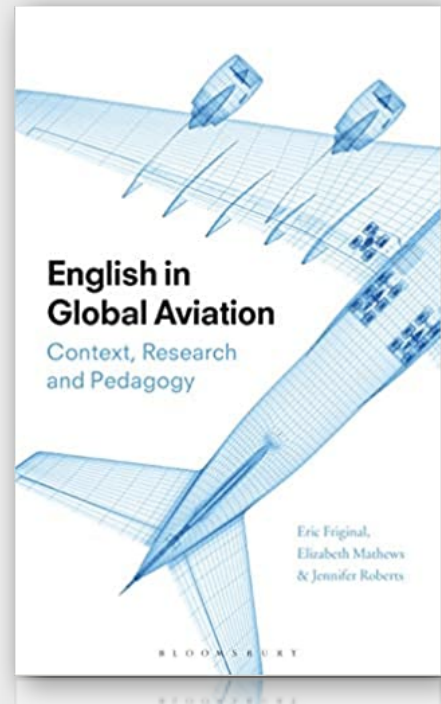★**Employee Recognition is the Future of Workplace Culture**

Groundbreaking Book Examines Role of English Language Proficiency in Airline Accidents

On Dec. 20, 1995, just before American Airlines Flight 965 slammed into the tree line at the summit of a mountain near Cali, Colombia, among the captain's final words on the cockpit voice recorder were, "Pull up, baby."

A host of complex factors contributed to the accident, but within this set of circumstances, investigators found evidence of possible language problems between the pilots and the Cali Airport air traffic controller. Specifically, while not mentioned in the official "findings" of the accident investigation, the report noted that the Cali airspace was not provided with "a controller who shared native language and culture with the flight crew."

"While aircraft accidents usually have multiple causes, miscommunication often plays a more significant role than many people realize," said applied linguist Elizabeth Mathews, an assistant professor of Aerospace and Occupational Safety at Embry-Riddle Aeronautical University's Daytona Beach Campus.

A systematic review of approximately 5,000 aviation accident reports from 1990 to 2012 by Embry-Riddle researchers uncovered a number of other cases in which language appears as a valid investigative question in the chain of events leading to disaster, in ways that can be difficult for investigators to perceive. Mathews notes that accident investigators need to be better supported with tools and training to assist their analysis of possible language factors.

English in Global Aviation, a new book by Mathews and co-authors Eric Friginal, a professor of applied linguistics at Georgia State University, and Embry-Riddle aviation applied linguist Jennifer Roberts, takes readers through the major issues surrounding the use of – and sometimes misunderstanding of – English in the global aviation industry.

While written for applied linguists in teaching and research fields to encourage greater participation in efforts to improve teaching English to speakers of other languages in the aviation industry, many chapters are immediately useful for the general aviation community, especially aviation maintenance and flight schools around the world that are teaching English language learning.

With both cutting-edge research and evidence-based practice, the three researchers explore the critical role of English in aviation, including national and global policies affecting training and language assessment for pilots, air-traffic controllers, cabin crew, ground staff and students.

"Too often, aviation personnel receive operational training without sufficient English language instruction to support the English language proficiency they need to communicate effectively in the hangar, the tower or the flight deck," Roberts said. "The list of potential opportunities for miscommunication in aviation are endless because there are no native speakers of aviation English."

The International Civil Aviation Organization (ICAO), a United Nations agency, was established in 1944 to create international consensus on civil aviation standards and recommended practices. It developed language proficiency requirements for the global aviation industry in 2003 and Member States began adopting the language standards. However, 17 years later there are still no uniform training and testing protocols.

"In terms of the actual implementation, there is not always clear oversight," said Friginal in an interview with the Georgia State University News Service. "Air traffic controllers in one country may have different [testing] protocols from those in another country. Currently, no one is technically monitoring and analyzing these [programs] and the problem could only grow as demand for pilots grows globally."

Mathews, who was a linguistics consultant at ICAO during the development of the Language Proficiency Requirements, sees the two-year collaboration to research and write *English in Global Aviation* as a wake-up call and a pioneering opportunity for the aviation industry.

"This is the first book to situate the ICAO language requirements into the context of aviation human factors. It begins to define the testing and training programs that are required to create effective learning and comprehension strategies," said Mathews. "We look at human factors, crew resource management, the testing and training programs needed and what research has been done."

"Much like programs designed to teach English for business and medicine, our fundamental goal is to establish a core group of academically trained applied linguists that focus their expertise on the development of English language acquisition programs for the greater aviation community," said Roberts. "From what we've seen in our research, it could also ultimately help save lives."

https://www.amazon.com/English-Global-Aviation-Research-Pedagogy/dp/1350059307

Report: Drugs Showing up more in pilots killed in crashes

More than one in four pilots involved in fatal crashes have drugs in their system, and the number is up slightly since researchers first studied the problem.

The National Transportation Safety Board said Tuesday that 28% of pilots who died in crashes between 2013 and 2017 and for whom there were toxicology results were found to have used at least one impairing drug.

Safety Research Report
NTSB/SS-20/01
PB2020-100106

National Transportation Safety Board

That included prescription, over-the-counter and illegal drugs.
That was an increase over the 23% rate among pilots killed in plane crashes from 1990 to 2012. Results from the earlier period were published in a 2014 report.

In both studies, researchers used information from a toxicology-lab database maintained by the Federal Aviation Administration and the safety board's accident records. The researchers did not determine whether the drugs were likely to have impaired a pilot at the time of the crash.

In the most recent report, which covered 952 pilots, 97% were killed in crashes of private planes or "general aviation." The average age of the pilots was 56.

Researchers saw increases in the presence of potentially impairing drugs, controlled substances and illegal drugs. Sedating antihistamines were the most frequently-found drug that could impair a pilot's ability, followed by pain relievers including opioids.

The board said the research indicated that marijuana use is increasing, which it called a safety hazard that hasn't been effectively addressed.

https://www.ntsb.gov/safety/safety-studies/Documents/SS2001.pdf

Inspector General Report Signals Dangerous Air Safety Complacency

Episode 17

The Department of Transportation's Inspector General's office recently issued a scathing report about failures in Southwest Airlines' safety practices and culture. The report also criticizes the Federal Aviation Administration's inspectors and leaders assigned to monitor Southwest for lax and ineffective safety oversight of the airline.

John and Greg discuss the issues found at Southwest, and broaden the discussion to US air safety practices in general. Air safety has been so good for so long -- are we getting dangerously complacent?

John and Greg discuss recent and historical incidents and lay out the need for a reinvigorated commitment to safety procedures.

The episode wraps with a new "What Would You Do" challenge that stems from the recent helicopter crash in California. If you were the pilot of a helicopter with a high-profile customer on board and deteriorating conditions, what would you do?

https://www.flightsafetydetectives.com/e/inspector-general-report-signals-dangerous-air-safety-complacency/

Share your answer with John and Greg at flightsafetydetectives@gmail.com.

Former AA Mechanic Sentenced For Attempting To Destroy An Aircraft

A former American Airlines mechanic was sentenced to 37 months in prison for "attempted destruction of an aircraft" on Wednesday. Abdul-Majeed Marouf Ahmed Alani, 60, had previously pleaded guilty to tampering with the air data module (ADM) on American Airlines Flight 2834, which was scheduled to fly from Florida's Miami International Airport (MIA) to Nassau, Bahamas, on July 17, 2019, >

with 150 people on board. A cockpit error message alerted pilots to the problem before the aircraft left the ground and it returned for maintenance.

Alani, who began working for American in 1988, was arrested on July 18 after being identified on security camera footage. As previously reported by *AVweb*, he told investigators that his intention was to cause the flight to be delayed or canceled so he could collect overtime pay to make up for financial hardship caused by stalled contract negotiations between American Airlines and its mechanics union. Wednesday's ruling found that there was no evidence to support allegations made by prosecutors that Alani might have links to terrorist organizations.

https://www.avweb.com/aviation-news/airline-mechanic-accused-of-sabotage

Beware What You Put in Writing

by John Goglia

Just when you think there isn't another lesson to be learned from the Boeing 737 Max crashes in Indonesia and Ethiopia, along comes a trove of email and text messages from Boeing employees involved in the certification of the Boeing 737 Max that just leave me scratching my head. The messages were handed over to Congressional investigators at the beginning of the year and include over 100 pages of internal documents; most are messages between Boeing employees; but some are between Boeing employees and inspectors at the Federal Aviation Administration.

The messages are all archived here if you want to read them for yourselves. These employees were lucky in that their names have all been deleted although some of their job titles have not. The messages raise many questions—some about the safety culture at Boeing, the pressure to save money on airline pilot training at almost all costs—but I'm not going to write about that here. What the emails and texts also reveal is a sophomoric humor that may momentarily relieve stress or make you feel clever but do not reflect highly on you or your company when published as headlines in, say, *The New York Times* or *The Washington Post*. Or pick your favorite news media since pretty much everyone used lines from these messages in headlines about Boeing.

One of the headlines derived from this trove of documents is this one from the New York Times, *Boeing Employees Mocked FAA and 'Clowns' Who Designed 737 Max*. The subheading is even worse: The company expressed regret at the embarrassing communications it sent to investigators on Thursday, which included a comment that "this airplane is designed by clowns, who are in turn supervised by monkeys."

Other comments regarding the aircraft and its training program: "this airplane is ridiculous", "It seems like we'll never get it right, fix one thing, break three others," "I'll be shocked if the FAA passes this turd," and so forth. You get the picture. I venture to guess that the employees who wrote these message were probably venting frustrations that we have all felt working for large organizations and didn't really think the aircraft were designed by clowns or supervised by monkeys or that the airplane was ridiculous. I'm sure I have expressed similar frustrations in my past—and in perhaps saltier, hangar-floor language—but it's unlikely I ever reduced them to writing. Of course, much of my career was spent in the pre-email, pre-instant message and pre-social media days. Who knows what I might have written if I worked for an airline today.

COOPERATIVE EFFORT THWARTED

But we are where we are. Emails and texts are difficult, if not impossible, to erase and can be dug up years and years from when they were written. And this kind of banter is not how you want to be remembered.

The messages denigrate not just the aircraft but also include disparaging comments about the FAA employees who were overseeing the certification of the Boeing 737 Max. In one exchange, employees referred to them as "dogs watching TV." Another continued by saying, "With all the inexperience present we should be able to gang up on them and steer it the direction we want. We just need to figure out what that direction is." While there are certainly legitimate questions that can be raised about the knowledge and experience of FAA inspectors overseeing new and complex aviation systems, this kind of mocking in writing is hardly the best way to do it. And actually makes the writers look much more unprofessional than the people they're mocking. I also can't imagine what it does to any type of collaborative work environment with FAA regulators now that these sentiments are all over every media outlet. Not a good situation.

And similar derisive sentiments were expressed regarding foreign civil aviation authorities. Again, embarrassing to the company and employees but also feeds into stereotypes about "ugly Americans" having condescending attitudes towards foreigners. Certainly not the best way to encourage foreign entities to buy American products or to do business with American companies.

These types of messages can do real damage to the company you work for. And in the aviation field—especially after two major accidents and the deaths of hundreds of people—these types of foolish comments can undermine the public's trust in the aircraft they frequently fly on. In other organizations, say an airline or a repair station, these types of comments becoming public after a major accident or incident would raise similar questions in the public's mind about the safety and quality of the work performed by that company.

So, just to be clear. While I am criticizing stupid comments reduced to writing, I am not suggesting that aviation employees avoid putting their concerns in writing. Sometimes, the best way to get action on a problem—especially a safety problem—is to document it in writing.
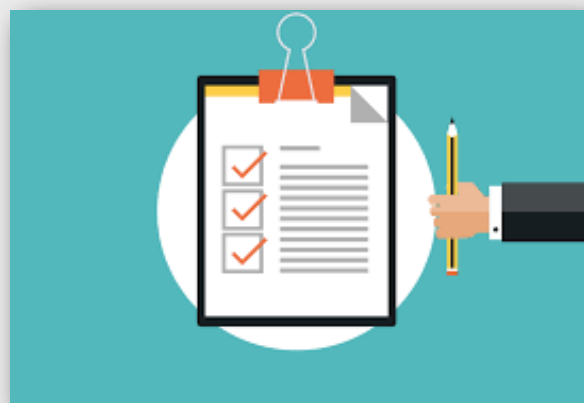
And I know many employees in different industries who have learned that documenting their concerns with data to back them up is an effective way of getting supervisors and managers to take their issues seriously, more so than bringing them up verbally in hallway conversations or even employee meetings.

But as far as venting frustrations about fellow employees, supervisors, customers or regulators, imagine your email or text in a *New York Times* or *Washington Post* headline first. And don't press "send" if you or your company would not be well-served by your words. That momentary "cleverness" can come back to haunt you even years later. And for those of you who think WhatsApp and other so-called secure messaging apps will keep your words confidential, think again. The messages may be encrypted from third parties, but a party to the messages can always decide to release them, as we have seen in some recent cases that have gotten a lot of media attention. If in doubt about a message, either delete it or wait a day to send it. The reputation you save could be your own.

https://archive.org/details/boeingemailsocr/page/n10/mode/2up

2019 General Aviation Survey is Open Now

The Federal Aviation Administration's (FAA) 42nd Annual General Aviation (GA) and Part 135 Activity Survey is open February 24 to July 10, 2020. This voluntary survey is distributed by mail to a representative sample of GA and on-demand Part 135 aircraft owners and operators. Survey participants may complete the survey online or by mail.

The survey estimates the size, primary use, and flight hours of the 2019 general aviation fleet. This information enables the FAA to track the success of our safety initiatives and to better serve the GA community by evaluating pilot's access to the equipment and services that they rely on to navigate and fly safely.

The survey is four pages long and takes 10 to 30 minutes to complete. Individual responses are kept confidential to the extent permitted by law. The FAA receives and publishes only data aggregated to a level where individual responses are no longer identifiable. The independent research firm, Tetra Tech, is conducting the survey on the FAA's behalf. Tetra Tech will mail out the surveys, process responses, analyze the results, and maintain custody of individual responses.

Survey results will be posted on the public website by January 2021.

If you have questions, contact the GA Survey help line, at 1-800-826-1797, or email: infoaviationsurvey@tetratech.com or the FAA at GASurvey@faa.gov.

Eye-tracking study shows how unexpected aviation events can disrupt a pilot's cockpit scan

New research provides more evidence that unexpected events harm flight performance. The study used heart rate monitors and eye-tracking devices to investigate the psycho-physiological impact of being surprised in the cockpit.

The findings have been published in a master's thesis and in _Human Factors: The Journal of the Human Factors and Ergonomics Society_.

The researchers were interested in examining the topic because of "several high profile accidents where what should have been routine responses were delayed or absent," explained study author <u>David O'Hare</u>. "Most notably Air France 447 — where the crew's actions seemed particularly hard to understand."

O'Hare is a private pilot and professor of psychology at the University of Otago in New Zealand. His co-author and former student, Lana Kinney, conducted all the testing and analysis. She has graduated from the university with a Master of Science degree specializing in Human Factors.

"No matter how often pilots have rehearsed actions to an event in a simulator, events in the real operating environment can present in confusing ways, leading to a temporary and potentially disorienting disruption of normal information processing," O'Hare told PsyPost.

In the study, 22 general aviation pilots were tested in a flight simulator. They had a wide range of experience — from 15 to 2,050 flight hours.

The pilots first completed an orientation flight, in which they took off from a small rural air strip, flew for a few minutes, and then landed. After this, the pilots completed seven more flights.

Two of these flights included an aerodynamic stall and another two included an engine failure. During one of the stalls and one of the engine failures, the pilots were given a warning beforehand in a pre-flight briefing. In the other two cases, the abnormal flight event happened without warning.

The researchers recorded flight data, eye movements, and heart rate during all the simulator tasks.

The researchers found that the pilots' heart rate increased during the expected engine failure, but it increased even more after the unexpected engine failure. Similarly, the expected engine failure resulted in an increase in pupil dilation, but the unexpected engine failure resulted in even greater dilation.

Kinney and O'Hare also found that the unexpected event impaired flight performance and visual scanning of the cockpit. No pilots crashed after the expected engine failure, but only 54.5% of the pilots landed safely after the unexpected engine failure.

Pilots tended to spend less time looking at the flight instruments and more time looking at the outside environment during the unexpected engine failure. They specifically spent less time viewing the airspeed indicator, altimeter, GPS map, turn coordinator, and directional gyro in the unexpected compared to the expected event.

The researchers found that pilots who landed safely after the unexpected engine failure tended to spend more time viewing the airspeed indicator, the attitude indicator, and the altimeter compared to those who crashed.

In contrast, Kinney reported in her master's thesis that pilots spent more of their time looking at flight instruments during the unexpected stall compared to the expected stall, suggesting that they were "attempting to gather and process as much information as possible."

In the unexpected stall, 30.8% of the pilots incorrectly pulled back on the throttle after hearing the stall warning and 38% of pilots did not lower the plane nose. None of the pilots pulled back the throttle during the expected stall and they all lowered the nose as required.

The researchers found that pilots who incorrectly pulled back on the throttle after hearing the stall horn spent longer looking at the flight instruments, >

while those who did not pitch the nose down spent significantly less time viewing the altimeter and the vertical speed indicator.

The former group may have recognized there was an abnormal event but diagnosed it incorrectly, while the latter group may have continued to fly towards their destination without initially recognizing there was even a problem.

Despite the importance of recovering from unexpected aviation events, there is relatively little scientific research on the topic.

"Experimental studies are still few and far between. We need to know much more about exactly what mechanisms are disrupted, and most importantly, how to prepare pilots for such eventualities. Much training involves preparing a response to a given event but determining exactly what the event is can often be challenging," O'Hare said.
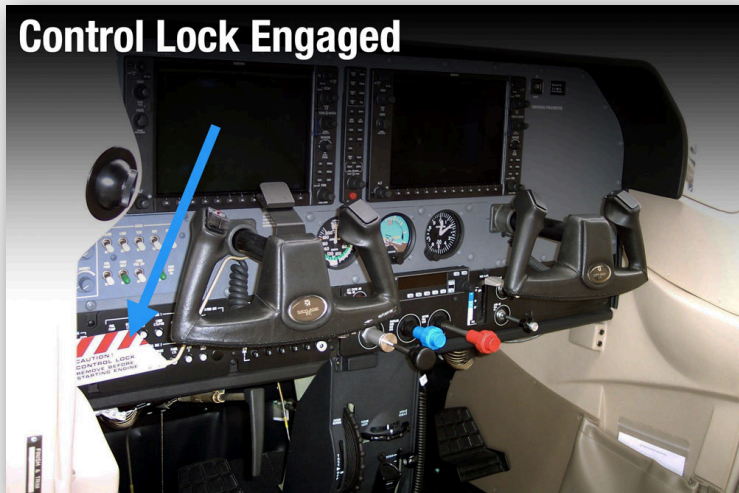
https://journals.sagepub.com/doi/10.1177/0018720819854830

Attempted takeoff with stowed rudder pedals goes awry

The pilot reported that, during a return flight, he chose to fly from the Cessna 207's right pilot seat to allow a cargo handler to sit in the left pilot seat. The taxi to the runway at the airport in Newtok, Alaska, was short and required little rudder input.

However, during takeoff, as he added power, he "did not seem" to have full right rudder authority, and he was unable to maintain the runway centerline.

Subsequently, the airplane left the left side of the runway, hit a small ridge, and came to rest nose down.The airplane sustained substantial damage to the fuselage and left wing.

The pilot reported that, after the accident, he realized the plane had stowable rudder pedals on the right side and that they had been placed in the "stowed" position.

Control Lock Engaged

The pilot reported that there were no pre-accident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

Probable cause: The pilot's failure to maintain directional control during takeoff. Contributing to the accident was the pilot's failure to properly check that the flight controls were correctly configured before takeoff.

NTSB Identification: GAA18CA154

This February 2018 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

Employee Recognition is the Future of Workplace Culture

Competitive pay, benefits, and flexibility all influence employees' contentment and productivity in the workplace; however, recent studies show that employee recognition is potentially the most important.

In the corporate world, it's easy to feel like a little fish in a big pond. Employees drive a business, but they are also people who work hard and like to be recognized for that work. One article from Thrive Global discusses the fact that many workers nowadays value employee recognition as one of the biggest factors for staying at a job—and working towards a company's success.

Employee recognition is difficult to define. Some workers describe it as allowing them to use their strength, not treating them like faceless robots, and not letting others' egos overshadow colleagues. The article even notes that some might argue that not providing flexible working opportunities where possible could be a failure to recognize individuals, too.

Employee recognition really goes hand-in-hand with employee engagement. Many sources will tell you that when your employees are engaged and committed, a company is much more like to thrive.

"Organizations that are the best in engaging their employees achieve earnings-per-share growth that is more than four times that of their competitors," according to a Gallup article. "Our research among millions of employees worldwide shows that firms that score highest for engagement achieve 2.5 times the revenue growth of those that rate lowest."

However, the importance of engaged and recognized employees is not always valued the same in every hierarchy level of a company. In 2012, Deloitte found that "83 percent of executives and 84 percent of employees rank having engaged and motivated employees as the top factor that substantially contributes to a company's success." However, there was a disparity between what elements executives and employees identified as impacting workplace culture.

Executives identified elements like "financial performance (65 percent) and competitive compensation (62 percent)" whereas employees pointed to "candid communications (50 percent), [and] employee recognition (49 percent)."

While pay, bonuses, and perks are all part of the happy-employee equation, a culture of employee recognition is just as important—if not more. Employees want to understand how they are valued within an organization and team. Employees want to feel like they are contributing towards something that matters to them.

In the thought leadership piece titled "The New Rules of Employee Engagement," Korn Ferry discusses six megatrends that are "fundamentally changing how we work, what we care about in the workplace, and what we need from our employers."

One megatrend is "individualism." Korn Ferry emphasizes that money will no longer be the main influence on life and career decisions. Employees are prioritizing other things like fulfillment, meaning, self-development, recognition, and work-life balance." Really, employers need to start focuses more on the individual and employee engagement if they want to improve company performance.

What's the key to employee engagement, however? Open communication.

The *Thrive Global* article explains that managers need to know their staff on an individual level. One-to-one dialogue is critical, conversations are so important, and open communications allows managers and employees to understand one another on a personal (non-business) level.

Any workplace culture should value the very force that keeps a company afloat: the employees. This means making sure employees are heard, listened to, and valued. This means fostering employee engagement and employee recognition.

https://thriveglobal.com/stories/the-future-of-workplace-culture/

https://www.kornferry.com/

Boeing: Inspections find 70% of undelivered 737 Max jets have debris in fuel tanks, a fire risk

Debris has been found in the fuel tanks of 70% of grounded Boeing 737 Max jets that have been inspected by the company, Boeing has confirmed.
Inspectors found the debris in 35 out of about 50 jets that were inspected. They are among 400 built in the past year that Boeing hasn't been able to deliver to airline customers.

Chicago-based Boeing temporarily halted production last month because the planes were grounded after crashes in Indonesia and Ethiopia that killed 346 people.

Although debris hasn't been linked to those crashes, metal shavings, tools and other objects left in planes during assembly can raise the risk of electrical short-circuiting and fires. Last week, the company had said debris was found in "several" planes but it did not give a precise number.

The debris was discovered during maintenance on parked planes, and Boeing said it immediately made corrections in its production system to prevent a recurrence. Those steps include more inspections before fuel tanks are sealed.

"This is unacceptable and won't be tolerated on any Boeing aircraft when it's delivered to the customer," the company said in a statement Saturday.

Boeing previously said the issue does not change the company's belief that the Federal Aviation Administration will certify the plane to fly again this summer.
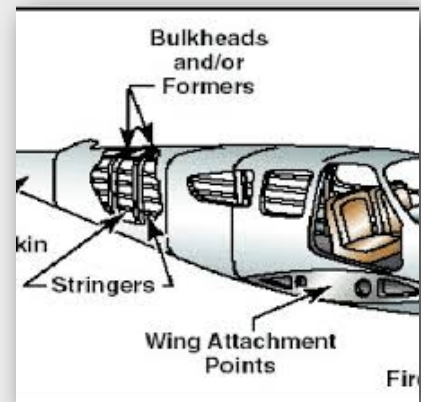
A Boeing spokesman cautioned against applying the 70% to all 400 jets, saying there's no way to know how many have the same problem until they're all inspected.

An FAA spokesman said the agency knows that Boeing is inspecting undelivered Max planes and said the agency has increased surveillance.

FAA Safety Team | Safer Skies Through Education

The Arthropod's Revenge!

The fuselage is like an aircraft's skeleton. And just like any skeleton, its faults and failures can be at best disabling, and at worst crippling. To learn more about your fuselage and how to detect flaws before they become problems, read the article "The Arthropod's Revenge: How the Airplane's Fuselage Has More in Common With Bugs Than Birds" here:

https://adobe.ly/2QTQy1t.

Check out the entire issue at www.faa.gov/news/safety_briefing.

<u>Qantas' 100th Anniversary Safety Video</u>

Qantas is currently celebrating their 100th anniversary, and to commemorate that they're introducing a new safety video, which will debut on all flights on March 1, 2020.The safety video takes place through different eras of flying, starting in the 1920s, all the way through present day. The airline is using present day employees in carefully recreated historical settings and uniforms.

Apparently months were spent perfecting the details of each scene to be as accurate as possible, from original life jackets, to some wall panels being retrieved from the Mojave Desert from retired aircraft. As far as the clothing goes, that was sourced from Qantas' own collection, and from retired Qantas crew.

https://youtu.be/rLq8if1nkTM

The Origins of National Nap Day (March 11) and Reasons to Take a Nap

Regular naps can have benefits that can help people improve their overall health and productivity.If the lurching forward of the clock for Daylight Saving Time the previous Sunday made you noticeably more tired, you're not the only one.

This time change was actually the inspiration for National Napping Day, which takes place annually the day after the clocks move ahead. In 1999, Dr. William Anthony, a Boston University professor, and his wife, Camille, instituted National Napping Day in an effort to overcome American cultural prejudice against napping and to raise awareness about the health benefits of catching up on quality sleep.

"We figured this would be a good day to celebrate the importance of napping because everyone is one hour more sleep-deprived than usual," Anthony said.
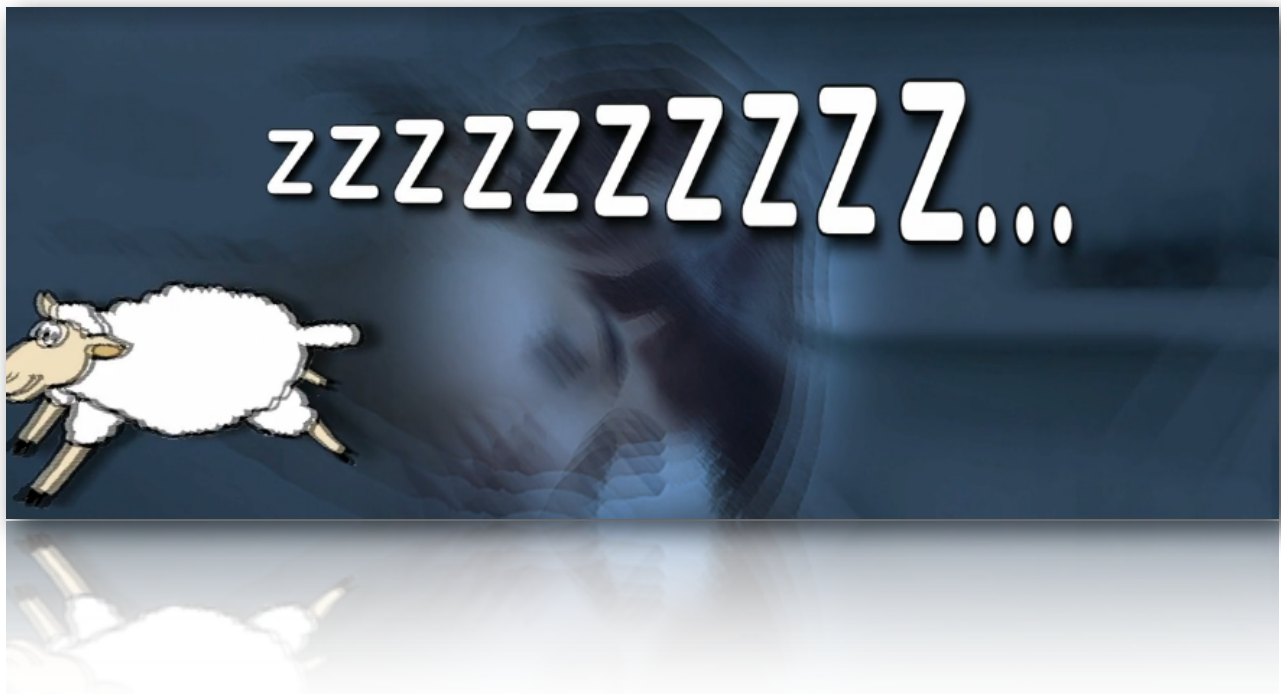
Get the full story at cnn.com

The benefits of napping on the job

As Seen On CBS Sunday Morning Program.

Whoever said "You snooze, you lose," never met Brian Halligan, CEO of a Boston-area tech company, who admits he sleeps on the job. And researchers say that can be a good thing:

An afternoon nap has been found to improve performance, cognition and memory, and reduce frustration. Need proof? How about the 2013 Boston Red Sox, who put a nap room in the clubhouse, on their way to earning their World Series championship rings? Susan Spencer talks with Dr. Charles Czeisler, researcher Dayna Johnson, and "sleep historian" Roger Ekirch about the restorative effects of naps, how our sleep architecture has changed over time, and why sleep-deprived Americans spend almost $30 billion a year on items (from weighted napping blankets to odd-looking headgear) aimed at helping them catch some Zzzzzz.

https://www.cbs.com/shows/cbs-sunday-morning/video/OHHwmuRT_OoNnx2DWdfmPKJAojWht4jq/the-benefits-of-napping-on-the-job/