# Aviation Human Factors Industry News

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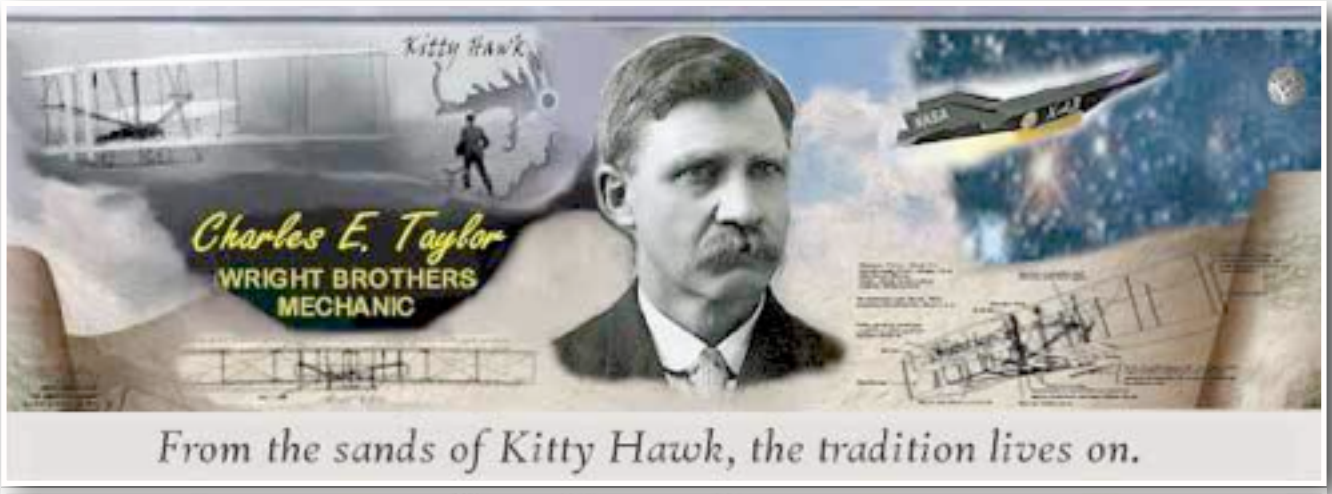



**Hello all,**

***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:**

# Legacy of the deadliest aviation crash in 1977


On March 27, 1977, a chain of events began that would eventually result in the deadliest aviation accident. 583 people were fatally injured on the day and only 61 passengers from the Pan American World Airways Boeing 747 survived the accident, including the Pan Am flight crew.

KLM Flight 4805 that began its journey that day from Amsterdam Schiphol Airport, Netherlands (AMS) and Pan Am Flight 1736 that started its day in Los Angeles International Airport (LAX) via John F. Kennedy International Airport (JFK) in New York, both were destined for Gran Canaria Airport (LPA) in Spain. Gran Canaria and Tenerife, where the accident did happen, are part of Canary Islands, a Spanish archipelago in the Atlantic Ocean, just off the coast of Africa. A popular tourist spot throughout the years, the islands long ago established themselves as one of the major tourist spots in the world.

And while they were both en route to Gran Canaria, a bomb exploded in the passenger terminal at Las Palmas Airport. Subsequently, all incoming traffic to LPA was diverted elsewhere, with a lot of aircraft going towards Los Rodeos Airport (TFN) in Tenerife, Spain, just 69 miles (112 kilometers) northwest of Gran Canaria. Los Rodeos, as it was known back then and is now named Tenerife North, is a fairly small airport with a single runway and a parallel taxiway next to it.
And with the bomb explosion in Las Palmas, the chain of events that would eventually lead to 583 fatalities and KLM taking responsibility for the accident was set off.

## Crowded airport

After Las Palmas Airport (LPA) was closed off in the aftermath of the explosion, a fair few aircraft landed in the small airport, which was also manned by a single tower controller. Later on, Dutch investigators (Netherlands Aviation Safety Board, succeeded in 1999 by the Dutch Transport Safety Board) noted that he worked for the whole day with "an unusually high traffic load."

As the aircraft landed at Tenerife, they were parked anywhere where they could fit, from the taxiway to the various aprons. Thus, when Gran Canaria was reopened, quite a lot of traffic was on the ground. For aircraft to depart, they had to taxi on the runway, take a 180-degree turn on the runway and prepare for take-off.
With KLM's 747 lined up in front of Pan Am's Queen, as traffic started to move, the 747 operated by KLM moved onto the runway, with the Pan Am following suite. However, Pan Am was set to exit the runway on the third taxiway exit to allow the KLM to continue its journey to Las Palmas.

At this point, the weather turned for the worse. Spanish investigators highlighted that three minutes before the disaster occurred, the Dutch flight crew, which operated KLM Flight 4805, asked whether the runway center lights were in service in connection with the minimum required take-off conditions.

TFN, which is located 2,077 feet (633 meters) above sea level, is very prone to deteriorating weather conditions, including fog, which was also one of the contributing factors on the day of the accident.

The controller responded that runway center lights were out of service. He also reiterated the information to the Pan Am crew.

## Miscommunication on all fronts

When the KLM Boeing 747 stopped at the end of the runway and finished its take-off checklist, the first officer noted that "we [KLM crew – ed. note] do not have an ATC clearance." The captain responded with "No, I know, go ahead, ask."

The controller, when the first officer stated that the 747 is ready for take-off, responded that the flight is cleared for "Papa Beacon [a VOR interception for Las Palmas Airport – ed. note], climb to and maintain flight level nine zero," with a right turn after take-off. The Dutch captain responded with a short yes, while the first officer repeated the instructions from the Air Traffic Control tower. The controller responded with an "ok," and added to "stand-by for take-off" as he would call the KLM crew to give full clearance.

However, before the controller could inform the pilots of their full clearance, according to Dutch investigators, the KLM Boeing 747 had already started its take-off run. While Pan Am's crew heard the conversation and informed ATC that they were still "taxiing down the runway." The controller confirmed that he heard the message and asked the pilots to "report runway clear."

Further strain was put on the controller due to the fact that heavy fog had set in: without any ground radar present at the airport, the controller was essentially blind to what was happening on the runway, just 30 seconds before disaster struck.

When the Pan Am crew replied "okay, will report when we are clear," the KLM crew then began discussing their reply as the message was audible up in the Dutch cockpit. While the first officer and flight engineer discussed whether the Pan Am exited the runway, the captain of the flight emphatically said "Oh, yes," continuing the take-off.

The investigators also noted that "perhaps influenced by his great prestige, making it difficult to image an error of this magnitude on the part of such an expert pilot, both the co-pilot and the flight engineer made no further objections."

## The lasting legacy of the accident

The investigators concluded that the KLM captain was at fault for taking off without proper clearance and not aborting the take-off after the Pan Am crew reported that they were still on the runway. Moreover, when his flight engineer asked whether the other Boeing 747 left the runway, he emphatically confirmed that it left the runway.

The Tenerife disaster further enhanced the view from several studies that concluded that the majority of accidents happened due to human error, rather than a mechanical failure or weather difficulties. Research into the dynamics of human error within the cockpit resulted in a highly influential NASA paper in 1980 that resulted from a workshop held in June 1979, titled "Resource management on the Flight Deck." The paper was the start of crew resource management – training procedures for pilots to "emphasize increased awareness and the use of available resources by aircrews under high workload conditions."

One of the attendees of the NASA workshop concluded that "the justification for resource management training is, I think, abundantly clear."

Thus, crew resource management was “born”. Emphasis was put on using all available resources to flight crews, including people. Younger pilots were now able to speak up and suggest solutions to a pressing issue, reducing the chance of a human error leading to an accident, no matter fatality-free or such deadly incidents like the one in Tenerife in 1977.

Further legacy is the clearing up of Air Traffic Control and flight crew communication. The investigation into the Tenerife disaster recommended the “use of standard, concise and unequivocal aeronautical language.”

This resulted in the standardization of language, as the Air Line Pilot Association (ALPA) conducted their own investigation into the accident and heavily emphasized the usage of “rigid standards” to staff that are involved in “commercial aeronautical communications.”

However, changes only came in 2001 when the International Civil Aviation Organization (ICAO) presented a set of recommendations called the Proficiency Requirements in Common English (PRICE). ICAO adopted the Standards and Recommended Practices (SARPs) in 2003, which became applicable only in March 2008.

## FAA grounds future "Wings of Freedom" flights, cites lack of training, maintenance prior to fatal B-17 crash at Bradley

The Federal Aviation Administration recently announced a Massachusetts foundation can no longer book passengers for flights on historic World War II-era aircraft after investigators found several safety violations while investigating the crash last fall of a B-17 bomber at Bradley International Airport that killed seven people.

In a letter to the Collings Foundation, Robert C. Carty, the deputy executive director of the FAA's Flight Standards Service, notified the foundation that the FAA is immediately rescinding the waiver that allowed them to charter flights on vintage aircraft as part of its "Wings of Freedom" tour.

"The FAA has determined through its ongoing investigation that Collings has not been operating in compliance with the conditions and limitations of the (exemption) issued to Collings," the letter states. "In addition, the FAA continues to gather facts that indicate Collings lacked a commitment to safety, insofar as Collings did not take seriously its safety management system program."

To book passengers on vintage aircraft, the company needed to reapply for an FAA exception every two years. The most recent exemption was granted in March 2018. In revoking that waiver, the FAA also denied the foundation's request for a renewal that was submitted in August prior to the Oct. 2 fatal crash, and a revised application filed afterward in November.

The crash of the B-17 bomber at Bradley killed seven, including the two pilots, and injured six others. The crash came moments after the plane developed engine problems just after takeoff and sought to make an emergency landing.

Among the shortcomings cited in the letter, it notes:

The crew chief on the flight did not have sufficient training in the aircraft's systems or safety protocols. The crew chief is supposed to assist the flight crew with pre-flight checklists and preparations for flight, the handling of emergencies, and safety procedures. Records indicate the crew chief on board during the crash has no formal training. During an interview, the chief described receiving only "on the job training."

Collings did not comply with a requirement to continuously operate a safety and risk management program that included daily maintenance and inspection of systems to identify, minimize or eliminate potential mechanical issues. There were no records of periodic audits of systems on the aircraft. Also the pilot was also the director of maintenance. "This indicates Collings lacked a safety culture when operating the B-17G."

Inspection of engines 3 and 4 showed existing magneto and ignition failures, and multiple spark plugs that needed cleaning and had improper electrode gaps. "As a result of these findings and other information, the FAA questions whether the engines were inspected adequately and in accordance with applicable maintenance requirements."

The Collings Foundation did not return calls for comment.

## Flight Safety Detectives

**Are Active Winglets the Next Game Changer for Aviation?**


# Episode 19

Guests Nick Guida and Jacob Klinginsmith from Tamarack Aerospace Group talk about the company's patented active winglets. Installed now on 100 Citation Jets, the winglets have proven to offer better climb, more range, and less fuel burn.

Active Winglets add up to 33 percent fuel savings on general aviation aircraft and at least double or triple fuel savings percentage on commercial or most military airframes.

Greg and John discuss the genesis of the idea, the impact for pilots, the effect on aircraft performance, and the environmental benefits of the active winglet technology. They look at the potential for military, commercial and general aviation.

They also explore a 2018 accident involving a Citation Jet equipped with active winglets. Despite initial negative press, the Tamarack technology was cleared for flight. Guida and Klinginsmith share lessons learned and ongoing efforts to work with the FAA to get out accurate information.

**https://www.flightsafetydetectives.com/e/are-active-winglets-the-next-game-changer-for-aviation/**

## Plane parking spaces hard to find as coronavirus grounds thousands of aircraft

It's a bit like the mystery of where butterflies go in the rain - where do the worlds planes go when they're not flying? It's one of the many unprecedented problems the COVID-19 pandemic has thrown up for the aviation industry.

Airlines have spent decades mastering the art of maximizing the amount of time an aircraft is in the air and shortening the turnaround time between flights as much as possible, because an aircraft on the ground doesn't make any money.

But with coronavirus effectively pressing pause on the travel industry, airlines around the world have been forced to ground most of their aircraft and in some cases their entire fleet.

To put this into perspective, Singapore Airlines usually operates a fleet of nearly 140 aircraft and is now using just nine.

American Airlines has to park 450 of its aircraft, Delta around 600 and Lufthansa 700.

It's a bit like Christmas Eve in the supermarket car park, except you're attempting to find space for something that weighs around 250 tonnes.

And, if you accidentally scratch something or make a small dent, it's going to cost you a few million dollars to fix. At least.

To make matters worse, space was already in short supply. The grounding of every Boeing 737 MAX 8 in the world after two notorious commercial airliner disasters meant hundreds of aircraft were already grounded.

The infamous town of Roswell is offering airlines parking space at its airport. It says there is space for around 300 aircraft and the airport told local media they would charge airlines just US$14 a day per aircraft. It's hard to get a carpark in Auckland for that price.

It's not known at this stage where Air New Zealand will park some of its grounded fleet, but it has the options of a handful of air force bases around the country.

Airports such as Atlanta Hartsfield Jackson in the United States is the busiest airport in the world by passenger number. It usually operates five runways with aircraft leaving just seconds apart, all day.

Now, it has turned three of its runways into parking space.

The parking wardens of the aviation world, the airports which own the land, appear to be keeping their ticket machines in their pockets.

The New Zealand Government is also stepping in during this time, paying all passenger-based Government charges and covering Airways related fees for the next six.

Just like the supermarket carpark at Christmas, let's hope the chaos only lasts a short while and things return to normal soon.

# Human factors, meteorological conditions contributed to Belize Defence Force Huey crash


Preliminary reports released by the Belize Ministry of National Security on March 18 indicate that meteorological conditions, human factors, and a lack of operational flight crew experience were contributing factors to the Feb. 27, 2020, crash of a Belize Defence Force (BDF) Bell UH-1H Huey.

The helicopter, marked with "BDF 12," departed Williamson Hangar Complex with clear visibility at approximately 4:07 a.m. local time on Feb. 27 to assist with a counter-narcotic mission at a clandestine airstrip near Western Lagoon in Belize.

The aircraft reportedly hovered near the airstrip for a short time, and was believed to have departed the area, subsequently flying directly over the lagoon. The aircraft made a sharp right turn at very low altitude over the unlit body of water and crashed into the lagoon at a high-impact angle while still powered, according to the Belize Civil Aviation Department's report. All four persons on board — two BDF Air Wing pilots and two engineers — were killed in the crash due to blunt force. Prior to the crash, one of the flight crew was communicating via text message. The last text message was received at approximately 4:27 a.m., and the helicopter crashed at approximately 4:30 a.m, the report states.

In the moments after the helicopter first took off, a Gulfstream II business jet loaded with 69 bales of cocaine touched down on the airstrip near the lagoon. A neighboring country's counter-narcotics air asset was tracking the plane as it moved toward Belize airspace. Authorities used actionable intelligence to determine where the plane had landed, and were able to swarm the area.

Photos of the crash site showed the helicopter resting almost vertically in water that was approximately five feet deep.

A review of the meteorological conditions at the time of the accident showed that weather was a contributing factor to the crash, though it was not the primary cause. In the early morning hours of Feb. 27, a strong cold front crossed the country, producing periods of rain and thunderstorms with low ceilings of 500 to 1,000 feet — which reportedly decreased at times to as low as 300 feet in the area of the crash. Visibility was low, and wind gusts of 25 to 30 knots produced strong turbulence in the area.

After reviewing the aircraft remains such as the instrument scar marks, among other recovered evidence, the investigative team determined that human factors — more specifically, spatial disorientation — was the major contributing factor to the accident. It was suspected that the flight crew's spatial disorientation occurred while transitioning from straight, level flight into performing a maneuver (right turn). While the crew was flying at low altitude in instrument meteorological conditions at night and over a body of water with gusty winds, the report indicates that the crew was unable to recognize the onset of spatial disorientation and had little time to react appropriately using the flight controls.

The investigation also found that the aircraft flew over the unlit lagoon at night without night vision capability; however, the report states the flight crew was wearing helmets that were capable of being equipped with night vision capability. According to the Honduran investigative team that assisted the Belize Civil Aviation Department in the accident investigation, the flight crew had a limited number of hours on the Huey — the pilot-in-command had accumulated 512.5 hours, and the co-pilot had clocked 162.4 hours.

The aircraft itself had just under 3,980 flight hours, and its Honeywell T53-L-13 engine had a time of 375.1 hours. Bell, which is the manufacturer of the UH-1H aircraft, also took part in the accident investigation, and stated in its own report that no pre-accident airframe abnormalities were found. Bell's report also states that Honeywell is assisting in the engine portion of the investigation. However, the investigation found that indicators related to the helicopter's main rotor, tail rotor, and transmissions showed no signs of engine failure.

A final report of the accident is expected to be published following the completion of tests with the aircraft's engine, and once any additional evidence is gathered.

https://mns.gov.bz/press-releases/ministry-of-national-security-releases-two-reports-bdf-helicopter-accident/

https://d2rdp9tdz0ispr.cloudfront.net/wp-content/uploads/2020/03/bdf-helicopter-civil-aviation-preliminary.pdf

## Fact Sheet – FAA's Response to NTSB's "Most Wanted" Safety Recommendations


The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) share a common goal — promoting safety in aviation and preventing aircraft accidents. The record shows the NTSB and FAA agree on a course of action about 80 percent of the time. Of the safety recommendations made to the FAA, the NTSB has classified about 80 percent closed acceptable, and approximately 5 percent remain open in acceptable status.
We have made substantial progress in meeting the safety intent of the NTSB's "Most Wanted" recommendations.

### REDUCE FATIGUE-RELATED ACCIDENTS

Recommendations A-94-194/A-95-113/A-14-72: Set working hour limits for flight crews, aviation mechanics, and air traffic controllers based on fatigue research, circadian rhythms, and sleep and rest requirements. Require that aviation safety inspectors brief the threat of fatigue before each departure.

**FAA Action:** The FAA will publish an advance Notice of Proposed Rulemaking (NPRM) addressing Part 91 tail-end ferry operations for Part 135 operators and an NPRM to extend Part 121 flight, duty, and rest limits to tail-end ferry flights that follow an all-cargo flight.
Recommendation A-13-3: Require that personnel performing maintenance or inspections under 14 CFR Parts 121, 135, 145, and 91 Subpart K receive initial and recurrent training on human factors affecting maintenance that includes a review of the causes of human error, including fatigue, its effects on performance, and actions individuals can take to prevent the development of fatigue.

**FAA Action:** The FAA is updating FAA Order 8900.1 and Advisory Circular (AC) 120-72, Maintenance Human Factors Training, to address this recommendation.

## ELIMINATE DISTRACTION

No NTSB recommendations to the FAA were identified.
The FAA and the general aviation (GA) community's national #FlySafe campaign helps educate GA pilots about the best practices to calculate and predict aircraft performance and to operate within established aircraft limitations, including a focus on eliminating distractions. The FAA emphasizes minimizing distractions from every source, such as the pilot explaining sterile cockpit procedures to passengers, self-briefing if the pilot is alone, and establishing a focused, no-nonsense mindset you need for critical phases of flight.

The FAA specifically prohibits personal use of electronic devices on the flight deck. The use of personal wireless communication devices or laptop computers for personal use while at a duty station on the flight deck while the aircraft is being operated, is strictly prohibited.

You can find NTSB safety recommendations and FAA responses at: https://ntsb.gov/_layouts/ntsb.recsearch/RecTabs.aspx

# S.A.F.E. Reminds Mechanics to Think Safety First


S.A.F.E. Structure Designs reminds everyone to think about safety while maintaining aircraft. This spring season shows many aircraft in for extended maintenance due to a halt or slowdown in operations and government restrictions with the spread of the Covid-19 virus. This is the time to remain vigilant on safety. Consider the following recommendations. Wear the right gear. Don't rush. Manage fatigue. Manage tools. Maintain situational awareness. Use approved procedures and parts. Finish all steps. Use the correct equipment and fall protection for the work.

"We know everyone is concerned about health right now and we wish all aircraft operators and their families a healthy and swift end to the Covid-19 slowdown." said Johnny Buscema, CEO of S.A.F.E. ""We also want to remind the mechanics to be safe. So many times we are called to provide a solution after a fall. Think safety first and call us if you need help with your platforms, ladders and fall protection."

S.A.F.E. Structure Designs is the global leader in maintenance support equipment that strives to put safety first, S.A.F.E. listens to the needs of the maintenance teams. S.A.F.E. designs custom equipment to the exact specifications that consider realistic ergonomic factors as well as efficiency. S.A.F.E provides the answers to the unique challenges of working on complex aircraft. S.A.F.E. is also hosting a maintenance safety seminar "Troubleshooting Technology" in Dallas and working with Southern Utah University on maintenance certificate courses.

# New vibrating vest warns pilots who can't see in fog, other hazards


Researchers with the U.S. Army and Embry-Riddle Aeronautical University in Florida have developed a vest that vibrates to warn disoriented pilots and help prevent aviation accidents.

Although Embry-Riddle received $203,000 in grant money to test the vest, faculty members said they believed the main benefit was enhanced learning with new technology.

"The human sense of balance and location aren't designed to comprehend and adapt to the conditions pilots encounter in airspace. It's dangerous, and this vest is a good countermeasure," said Jonathan French, professor at Embry-Riddle.

French also serves as research director at the Daytona Beach campus for the school's Department of Human Factors and Behavioral Neurobiology, which focuses on how humans interact with technology.

The vest has been used in limited military applications in the United States and Australia. After rounds of testing, researchers now seek interest in commercial production.

According to the Federal Aviation Administration, at least 10 percent of aviation accidents are due to pilot spatial disorientation. Ninety percent of those are fatal, and the proportion of disorientation crashes is higher for small craft.

Helicopters and airplanes have many warning lights, audio alerts and even tactile alerts like the vibrations in the vest that's been tested at Embry-Riddle**.** But the number of alerts can be overwhelming, French said, while the trouble is actually physiological -- located in the inner ear, or vestibular system.

The vest has a series of vibrating points up and down and around the torso called a Tactile Situation Awareness System.

If the aircraft's systems detect a roll to the left, the vest vibrates on the left, with an increasing number of vibration points for harder rolls. Such an instant cue gives a pilot -- even a sleepy or impaired pilot -- a chance to respond quickly. French said pilots react more slowly to warning lights or sounds than to tactile alerts by up to 30 seconds.

The inventor of the vest, physiologist Angus Rupert, began work on early concepts in 1989. At that time, he said, "people looked at spatial disorientation as a weakness of the pilot."

He has worked for military research institutes and NASA over the years, but he never sought a patent.

"I never patented it. In fact, I published it widely to prevent anyone from patenting it, in the hope that it would be accepted by the aviation community," Rupert said. He said he's more hopeful than ever that the vest will be embraced because of attention given to the crash that killed basketball star Kobe Bryant on Jan. 26 near Los Angeles.

French led an effort to test the vest over the past year at Embry-Riddle, which showed that student pilots could learn within four hours to intuitively respond to the warnings the vest was giving. Student testing was done at Embry-Riddle using simulators, virtual reality and actual flights.

The official cause of many celebrity pilot deaths, such as John F. Kennedy Jr.'s crash in 1999 near Martha's Vineyard, Mass., has been spatial disorientation. Foggy conditions like those during the Bryant crash often lead to pilot disorientation, said Randy Waldman, a helicopter flight instructor based in that city.

"Too many accidents like that happen every year. I would welcome any new tools that help pilots overcome disorientation," Waldman said. "It's a very spooky feeling. Your body thinks you're going up when you're going down and to the left."

One of the students involved in testing the vests, Qian Hong Liu, 23, of China, said she has learned something new almost every time she's tried the vest. She's also interviewed other flight students after they learn to respond to the vest.
"I'm happy to be doing something that will improve aviation safety," Liu said.

# Effective Communication Using the "I Intend" Method

"The single biggest problem in communication is the illusion that it has taken place."

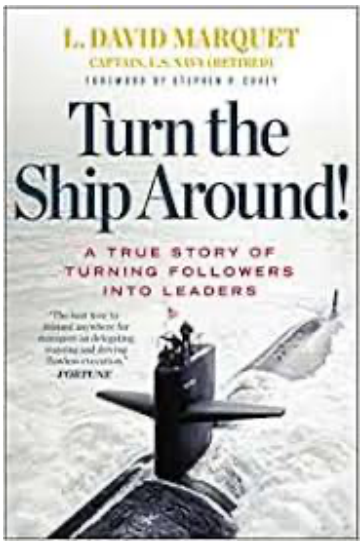
Think of the many barriers to communication in our industry: Physiological — business aviation is full of loud environments like the ramp, echoing hangars and static-filled headsets where it is hard to hear and be heard. Cultural — with clients and vendors from around the globe, language differences can be a challenge. But far less obvious, and way more dangerous, are the assumptions we all make daily. It's how maintenance that's scheduled to be completed by the fifteenth of the month, can end up disappointing the owner who plans a flight for that same day. It's also how an executive request for a flight to Las Vegas can end up in NV instead of NM as intended (KLAS vs. KLVS). While it would be great if clients, subordinates, leaders and even loved ones could read our minds, unfortunately most cannot. Consider the simple, common exchange below:

***John*** (manager): "SEI JET needs XYZ. Will you take care of this, please?"
***George*** (subordinate): "Sure. I've got it."

*There is the illusion that effective communication has taken place.*
However, John's immediate assumption is that XYZ will be done exactly as he wants it to be done, most likely, as he would do it himself. In reality, George will do it based on his own assumptions, which come from such places as how he was trained, how he's done or seen it done in the past, how his generation handles things (hastily or methodically, in-person or electronically, etc.), the way that is most in line with his personality — delegation versus doing it himself, personal values, etc.

Some of these can be great. Has George completed the company's rigorous training program on performing XYZ service? Or is he being mentored by Kim who's the company XYZ rock star? But some of these can yield disappointing, or even disastrous results; was his past training from his last job — an operation which just got fined by the FAA for infractions? Or, is this an immediate need that he puts off until tomorrow because he is already working on several other things? And, to further complicate things, John's and George's understanding of what the heck XYZ actually is may be completely different.

Since we all make unique assumptions based on our own experiences, values, needs, etc., it becomes important to share our assumptions when we communicate. This does NOT mean micromanaging. In an environment where employees are skilled, motivated and engaged, John should not have to tell George the 10 things that XYZ entails. And as a competent employee, George will not appreciate it if he does. However, he does need to convey any critical and/or nonstandard assumptions he is making. When does XYZ need to be accomplished? Is the way SEI JET needs it different in any way from what John knows George's experience with their service to be?




And what about George's response? It turns out that he, too, benefits from revealing his assumptions. In his book, "Turn the Ship Around, How to Create Leadership at Every Level" (2012 Greenleaf Book Group Press), (retired) U.S. Navy Captain L. David Marquet introduces a method of communication he calls, "I intend" — the act of stating out loud your next intended action(s). This method balances self-inspiration and ownership with the accountability of input from others. Using this simple, straight forward principle, George can state his assumptions as what he intends to do to accomplish XYZ for SEI Jet.
After John listens, either or both of them can then check for understanding and alignment:

***John*** (manager): "SEI JET needs XYZ ***by 5pm today. Since they are new with us, I'd like you to do this personally.*** Will you take care of this, please?"
***George*** (subordinate): "Sure. I've got it. ***Since they ARE new, I intend to personally meet with them today, both to provide XYZ and to make sure they understand and are comfortable with our process and timeline. Does that sound good?***"

***John*** (manager): ***"That sounds great! Thanks!"***

By including them in the request, John effectively communicates both his time critical assumption that the work be done by 5pm today and his non-standard assumption that the service be done differently in consideration of this being a new client. Using Marquet's "I intend," George effectively communicates his assumptions by stating how he intends to execute John's assignment.

With George's check to see if his plan "sounds good," he assures understanding and alignment with John's assumptions. And we can see by John's response that they are indeed aligned.

So let's move past the *illusion* and ensure that effective communication takes place.

## Don't Forget To Check These 6 Small Parts On Every Preflight

**It's easy to skip or miss these tiny parts during a preflight inspection. Here's why they're so important…..**

### 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 pines 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.

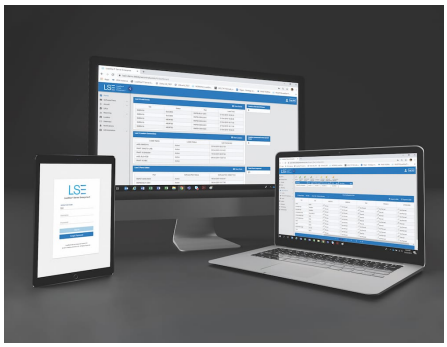
### 3) Safety Wiring
Safety wiring prevents fasteners from loosening or falling out due to vibration. You'll find safety wiring on many engine components that are susceptible to engine vibrations.

### 4) Brake Pads
Make sure to check the brake pads behind the tires to ensure there's useable pad left, and that the rotors are'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.

## Can This New Software Tool Remove Floppy Disks From Aircraft Data Loading?



A new software configuration management and distribution tool, Loadstar Server Enterprise 3 (LSE 3), has the potential to eliminate the use of floppy disks and other physical media still being used by airline maintenance technicians for software loadable aircraft parts.

LSE 3 is the third-generation update of the Teledyne Controls LSE technology, which gives airlines the ability to manage the configuration, storage and electronic distribution of field loadable aircraft software and data, such as navigation databases or applications necessary to control aircraft systems and flight functions.

Despite technological advancements in physical media and the increasingly digitally wireless nature of modern airplane data acquisition systems, a significant number of airlines are still using floppy disks for software parts loading, Craig Aitken, senior director of data loading solutions for Teledyne Controls told *Avionics International*.

How do airlines go from using floppy disks to LSE 3? Aitken said that as the process for OEMs delivering software parts to airlines moves away from floppy disks and becomes increasingly electronic, the parts can be transmitted to LSE 3. Once an airline's engineering team assigns the parts to specific tail numbers and LRUs, LSE 3 then automatically distributes the parts to the airborne loaders used to transfer the parts to the aircraft's operating system.

"Software parts are delivered to the airlines on media (e.g. floppy disks) from the OEMs and increasingly software parts can be electronically transferred from OEM Portals," Aitken said. "After loading software parts into LSE 3 from media, such as floppy disks, the media is no longer required for data loading. Media would be disposed of according to internal airline policy."

Aitken said LSE 3 also gives airlines the ability to wirelessly transfer their software parts directly to their aircraft from LSE 3. As shown in the workflows infographic below, LSE3 has the potential to eliminate some of the most cumbersome aspects of software data loading. LSE 3 can connect to ethernet, cellular or WiFi, to ARINC 615-3 and ARINC 615A portable data loaders.

The new tool is also capable of tracking the use of automated load reporting and software part distribution once an upload is complete.

"There are 45 airlines using the current version of LSE. We just launched LSE 3 and there are 7 customers being setup to use LSE 3 today. LSE supports most legacy Airbus and Boeing aircraft flying today as well, such as the A319, A320, A321, A330, A340, A350, A380 and 737, 747, 757/767," Aitken said.

# How to Stay Asleep and Fall Asleep Fast

Even before that moment of lying in bed, it is a good idea to carve out time to relax in the evenings, reports Real Simple.

According to Janet Kennedy, PhD, a clinical psychologist and sleep expert, being able to fall asleep quickly once you're lying in bed starts several hours before tucking in.

"If the first chance you have to be still is when you lie down in bed, you'll be flooded with thoughts about all of the things that happened, everything you need to do, random conversations—everything you didn't have time to think about during the day," Kennedy says. "Ruminating increases arousal, making it much harder to fall asleep."

Get the full story at realsimple.com.

## TED TALK

The Surprising Science of Happiness

Dan Gilbert, author of "Stumbling on Happiness," challenges the idea that we'll be miserable if we don't get what we want. Our "psychological immune system" lets us feel truly happy even when things don't go as planned.

https://www.ted.com/talks/dan_gilbert_the_surprising_science_of_happiness