Aviation Human Factors Industry News

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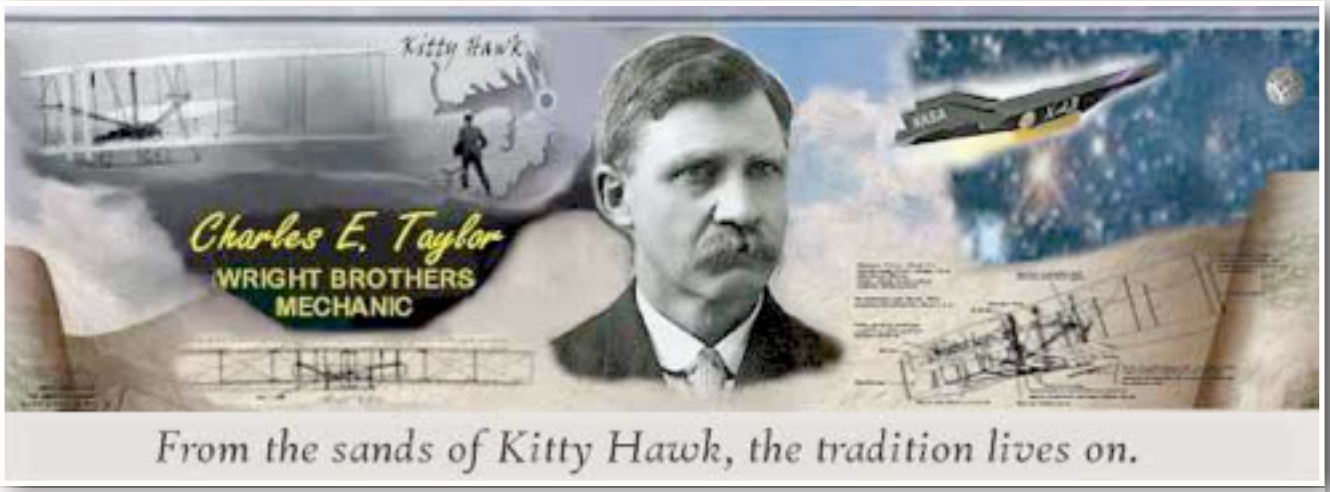

Hello all,
To subscribe send an email to: rhughes@humanfactorsedu.com
In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

Human Factors Ground School is Finally Live!

It has been a long time in development, but my new Human Factors Ground School is live and available for enrollment. I wish I could offer it for free, but the online learning management system I am using has a cost that must be covered along with other development costs. I am offering the course at 70% off the retail price to subscribers of "Vectors for Safety." The subscriber cost is $59.70. Any additional revenue earned from the course will be used to help support the Safety Initiative.

Here is the official course description: Nearly all aviation accidents have their roots in human error. This updated course will present basic human factors and apply them to Aeronautical Decision Making (ADM) and Risk Management. The influence of the unconscious mind, including our cognitive biases, is explored without the psychobabble, but with practical application examples. Some accident analyses are presented to illustrate important concepts. Lessons are primarily delivered via narrated video. Pertinent documents are available for download and review quizzes are provided for each section. A final course quiz must be successfully completed to earn FAA Wings credit.

The course is valid for All 3 FAA Wings Credits at the Basic Level (Basic Knowledge-1, Basic Knowledge-2, Basic Knowledge-3)
Completion time is approximately 3.5 hours.

Here is how to enroll and receive the discount of 70% off:
1. Use this link to access the enrollment page: http://bit.ly/2O1FBLr
2. Click on the green field *"Enroll in course for $199."*
3. The next page will appear. Click on the green *"Add Coupon"* near the top.
4. In the "COUPON" field, enter VECTORS70 and the price will change to $59.70.
5.Complete the remainder of the enrollment form and begin the course.

Important notes: The coupon must be used by December 15, 2019. The course will be available through February 3, 2020. After that date, the course will not be available and Wings credit will not be issued.

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http://2k32o.r.a.d.sendibm1.com/mk/cl/f/FasdLOnIPUXsnbfB2xvszPamDDOwzG34fl01iljFjx5f0MmNQlQwJJTcLtXAgaYHioW3t4H5qGqsg7Db8gYv-7yEflkEE3rD2elC61QlS3Bl5a6CudKR10dy3P7Az7oOLEtnkff9PCrz0zcA-e7BFAnFCCZ4UQ

Not subscribed to Vectors for Safety yet?
Click here for the sign-up form on my website.

Flight Safety Detectives

An Insider Look at NTSB Aircraft Accident Investigations - Episode 8

John and Greg take listeners inside NTSB aircraft accident investigations. They use the case of Valujet Flight 592 to illustrate how the process works and the types of issues encountered.

The parties and technical experts involved can be forthcoming and not so helpful, with serious consequences. They also highlight how these investigations uncover the facts that can lead to everything from criminal proceedings to new safety procedures.

Valujet Flight 592 was a regularly scheduled flight from Miami International Airport to Hartsfield–Jackson Atlanta International Airport. On May 11, 1996, the ValuJet Airlines McDonnell Douglas DC-9 operating the route crashed into the Everglades about 10 minutes after taking off from Miami as a result of a fire in the cargo compartment.

https://www.flightsafetydetectives.com/e/an-insider-look-at-ntsb-aircraft-accident-investigations/

Human Factors Hotspots

Take a good look at your Human Factors (HF) course. Does it strategically focus on current aviation maintenance “hotspots” or are you literally trying to cover dozens of topics in just two days (check the EASA HF recommended >

training syllabus and you will see what I mean). The good news is that all of those topics in the EASA syllabus are recommended—they are not cut in stone. You have the ability to customize topics to fit your organization's specific needs.

According to our Line Operations Safety Audits for Maintenance (LOSA-M) data as well as a review of the last ten-plus years of maintenance accident/incident reports, it is clear that safety culture and procedural deviations are two of the most significant contributing factors in aviation maintenance-related accidents and incidents (and, typically, procedural deviations are a manifestation of an unhealthy safety culture). Yet, many HF courses only speak to these topics in a very cursory way, if at all. This is a missed opportunity.

I'm not diminishing the importance of topics such as, for instance—Motion and Vibration—but spending an inordinate amount of time on these types of topics at the expense of more relevant topics is not the most productive way to use your limited time to make an impact on behavioral change. When choosing your hotspots, keep in mind that there are "global" hotspots (the things that are happening at MRO's all over the world) and there are resident hotspots (the things that are indigenous to your specific organization).

Your syllabus should address both global and local; however, more emphasis should be placed on your local issues. In many cases there is a strong similarity between global and local hotspots, but there will always be unique issues that are specific to your operation.

How do you get this local information? Your company's Safety Management System (SMS) is a great start. Also look at Maintenance Error Decisions Aid (MEDA) data, Maintenance Operations Quality Assurance (MOQA) data, Aviation Safety Action Program (ASAP) data, incident/accident reports, occurrences, on the job injuries, etc. And don't forget that you can get a lot of information by simply observing operations in real-time.

This is where a LOSA for maintenance program is very beneficial. All of these data sources will assist you in identifying the unique hotspots that can be used for focused training in your company's HF courses.

Dr. Robert Baron is the President and Chief Consultant of The Aviation Consulting Group. He performs extensive work in his core specializations of Human Factors (HF), Safety Management Systems (SMS), Crew Resource Management (CRM), and Line Operations Safety Audit (LOSA). He consults with, and provides training to, hundreds of aviation organizations on a worldwide basis.

http://www.tacgworldwide.com/

Just Culture—Are We There Yet?

A Boeing 747-400 attempting to take off during a typhoon crashes through construction equipment and barriers, killing 83 of the 179 people on board. Three days later, authorities declare "pilot error." For the next two months, all three flight crewmembers—the captain, first officer, and relief pilot—are detained while prosecutors began building a case to pursue criminal manslaughter charges.

This event, nearly two decades ago, was the tragic crash of Singapore Airlines Flight 006 (SQ 006) in Taipei, Taiwan. A fiery crash, a massive loss of life, a rush to judgment, misplaced blame, and another attempt to criminalize an aviation accident were all outcomes of this event. It's difficult to determine if the aftermath would be any different today.

Since SQ 006, criminal proceedings following aviation accidents and incidents have been initiated in Brazil, France, Greece, India, Indonesia, Spain, Switzerland, and, most recently, Russia. These government "overreaches" are a clear threat to aviation safety.

In a recent editorial, Flight Safety Foundation president and CEO Dr. Hassan Shahidi said criminalization of aircraft accidents "can have a chilling effect on the flow of crucial safety information and have a long-term adverse impact on safety. Holding controllers, pilots, and aviation technicians criminally liable for honest mistakes ultimately threatens the safety of the traveling public."

The primary objective of an investigation is to prevent future incidents and accidents. ICAO Annex 13–the global guide for aircraft accident and incident investigations—clearly states "it is not the purpose of an investigation to apportion blame or liability." Yet today, many authorities around the world would rather seek retribution for an incident or accident than determine cause.

For example, earlier this year India's DGCA suspended more than 40 pilots' licenses for up to 12 months for perceived safety violations (non-alcohol related) without a full investigation or process. This heavy-handed approach stifles the spirit of openness and cooperation that is the foundation of any technical investigation and modern safety beliefs.

Unfortunately, the concept of applying a just safety culture in aviation is elusive. It's truly a global clash—a conflict between blame and accountability. According to aviation safety expert James Reason, the components of a safety culture include just, reporting, learning, informed, and flexible cultures. A just culture is an atmosphere of trust where individuals are encouraged and sometimes rewarded for providing safety-related information.

A key principle of a just culture is the clear understanding of the difference between acceptable and unacceptable behavior. Defining what is acceptable or unacceptable is a trick. Who gets to decide?

The left side of this line allows for human error, omissions, and lapses, and accounts for other vulnerabilities in the system, whereas on the right side of the line are behaviors that are determined to be culpable such as intentional willful violations, reckless behavior, or criminal acts.

Back to SQ 006. Just days after the accident, Taiwan's Civil Aeronautics Administration (CAA) director-general said the three pilots "must shoulder the responsibility." Blaming the accident on pilot error made the pilots the scapegoats.

The claim of pilot error—more of a symptom than a cause—related to the aircraft attempting to take off from a closed runway. It was clear that blame would trump accountability. This claim of pilot error would be dismissive of the critical "what" and "why" of a major event; that's how we learn.

In the end, a multitude of other issues were identified during the investigation: intense rainfall, low visibility, strong winds, communications, poor runway markings on the closed runway, a lack of ground surveillance radar, and runway lighting circuitry that lit both the active and closed runways. Just before midnight and amid a typhoon, "Cleared to take off on Runway 05L" were the instructions from ATC.

The crew rather than making the second right hand turn onto Runway 05L, made the first right onto a partially lit Runway 05R that was closed. Approximately 41-seconds after setting takeoff thrust, nearing rotation speed, the aircraft struck barricades and machinery, breaking into three major pieces. The middle section of the fuselage and wings exploded and were incinerated; most of the casualties were seated in this section. The rest is history.

Significant in many ways, case studies of SQ 006 introduced me to the idea of a systems approach to aviation safety and that the efforts of safety professionals are often eclipsed by overly aggressive judicial authorities. Human error that results in a runway incursion or excursion is an opportunity to learn and should not be punished.

Retribution against an individual for an honest mistake holds the potential to interfere with the prevention of future incidents or accidents. Motivation by fear will limit participation in change.

Flight Crew Experiences A Pitch Trim Runaway, And Safely Returns To The Airport

An airline crew recently experienced a pitch trim runaway that caused an uncommanded climb to 14,000 feet. Here's what you should know about control failures like this...

Low-Altitude Pitch Trim Runaway

The following incident occurred as an Embraer 170 departed from Atlanta. Shortly after takeoff, the pilots experienced a pitch trim runaway during their climb. Initially, the pilots were not able to stop the trim runaway, and the aircraft climbed to 14,000 feet. They declared an emergency shortly after takeoff, to help explain the gravity of the control failure to ATC. There hasn't been a final report released about this event, so what we have at this point is the ATC audio.

The crew did an excellent job flying the plane, communicating with ATC, and safely returning to Runway 10 at ATL. (Remember: Aviate, Navigate, Communicate!)

System Review: How Trim Works

Trim holds airspeed. If you trim for a speed and let go of the yoke, your plane will keep flying at that speed, regardless of your power setting. If you trim and change your power, your plane will pitch up or down to maintain your trimmed speed. Trim for climb speed, let go, and you'll maintain climb speed. Trim for cruise, let go, and it'll maintain cruise speed. Trim for final approach speed, let go, and you'll maintain final approach speed. The list goes on.

Trim systems can fail. Broken pulleys, lines, hydraulics, or even FOD in the cockpit can render a trim system useless. A trim runaway happens when an un-commanded trim setting progresses.

Electric Trim vs. Mechanical Wheels

Most general aviation airplanes have pulley/cable trim systems with manual control wheels. These can't "runaway" on you. But other airplanes have electric trim controls with primary and secondary switches.

The Embraer 170, for example, does not have a manual trim wheel. It's trim is controlled with electric switches on the control yoke and center pedestal. And even if trim fails, control can be maintained below certain speeds.

Emergency Procedures Are Similar Across The Board

Look to your emergency checklist or POH for details on how to handle trim runaways in your airplane. For the most part, all procedures are similar. **Press and hold the autopilot disconnect button (if available), pull system circuit breakers/push system disconnect buttons, and slow down.** In many cases, the slower you fly, the lighter control forces you'll need to control the airplane. If you're flying an airplane without electric trim, you won't experience a trim runaway, but your trim might become jammed instead.

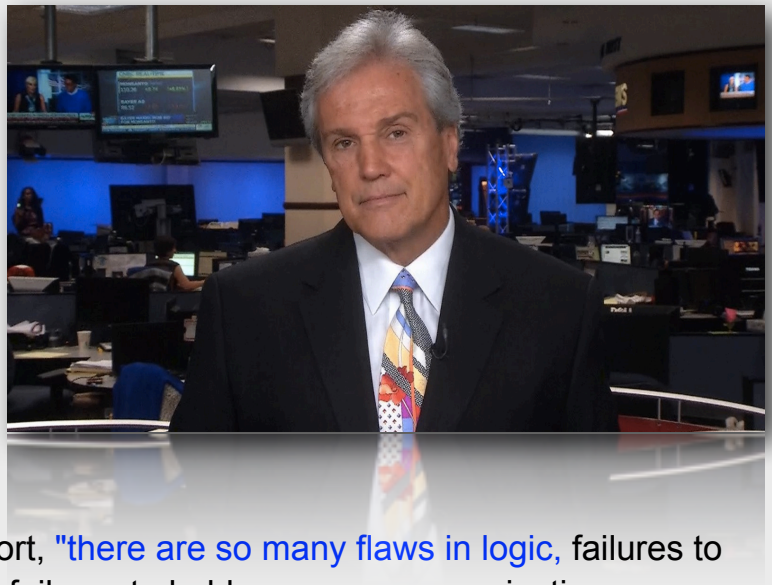
Here's the ATC audio from the event:

https://youtu.be/RzoEsM0L2CM

HIGHLY RESPECTED AVIATION EXPERTS CRITICAL OF LION AIR PILOTS AND CRASH REPORT

Former NTSB crash investigator is highly critical of the Indonesian NTSC report and the primary conclusion that the MCAS software caused the crash of LionAir Flight 610 in October last year.

Well known, former NTSB crash investigator and air safety expert Greg Feith, says the Indonesian NTSC 322-page report, issued last month, into the LionAir 737MAX tragedy presents an in-depth account of the "factual" information developed during the course of the investigation.



However, Feith says of the report, "there are so many flaws in logic, failures to properly analyze the facts, and failures to hold persons or organizations accountable and much more. They (NTSC) obviously reverse-engineered the "facts" to support their preconceived conclusions that the airplane and MCAS are to blame," said Mr Feith.

The NTSC stated the pilots, especially the First Officer, had significant training deficiencies and lacked basic flying skills. These same deficiencies occurred during the accident flight. These two pilots had no business being in the cockpit and the airplane should not have been operated because of all the maintenance issues that began at the beginning of October, and were not corrected, making the airplane unairworthy."

Feith questions the NTSC's silence regarding "the oversight by the Indonesian DGCA and the accountability of LionAir, especially after the airline had several serious incidents and accidents in the past 6 years.

Mr Feith's views are supported by a well-respected Airbus training captain, who told AirlineRatings.com the first officer "could not fly".

"The report on the FO is an eye-opener as he is constantly very poor in all phases of operating an aircraft," the training captain said.

"The report indicates a lot of additional training in standard operating procedures and emergencies and this was repeated on almost every subsequent training session but the problems were never resolved.

"There is a continual mention of a very poor instrument scan which was also never resolved. Even more deeply troubling was that, according to the pilot reports, the first officer didn't understand and had difficulty handling aerodynamic stalls, a fundamental of flying."
"That FO could not fly and I wonder why the Lion Air trainers didn't cull him as his performance at proficiency checks are all fail items."

That assessment is supported by one of the world's leading flight crew trainers, who told Airline Ratings.com "it would appear that much had been overlooked in order to keep the FO operational".

He said the captain had his issues, too, and asks why the two margin pilots were put together. "While there are 'green-on-green' restrictions for the pairing of flight crew with respect to time on type (of plane), this accident makes a compelling case against pairing marginal performing pilots together as well," he said.

Both the captain and first officer acted as the pilot flying on the fatal flight and the FO was in command when it crashed.

The Digital Flight Data Recorder revealed that the inputs (to correct the nose down pitch from MCAS) from the FO were weaker than the captains, who seemed to have some control over the aircraft.

Why the captain didn't take back control of the 737 is a mystery.

Earlier this month a panel of US government flight-safety experts, the Technical Advisory Board, said that Boeing's redesign of the 737 MAX complied with regulations and was "safe".

The Technical Advisory Board, created after the 737 MAX jet was grounded in March has just presented its preliminary report to the FAA. The TAB is made up of aviation experts from the US Air Force, the Volpe National Transportation Systems Center, NASA and FAA.

And US and Europe regulators said the 737 crashes are a watershed for the industry and that previous assumptions on pilot competency have to be re-evaluated for all new designs.

Aviation Organizations Oppose Foreign Maintenance Oversight Bill

The Aeronautical Repair Station Association (ARSA) and ten other aviation organizations have come out in opposition of a recently introduced bill aimed at increasing FAA oversight of repair stations located outside of the United States. The Safe Aircraft Maintenance Standards Act (H.R. 5119) was introduced by U.S. House of Representatives Transportation & Infrastructure Committee Chairman Peter DeFazio, D-Ore., last Friday.Provisions laid out in H.R. 5119 (PDF) include annual unannounced FAA inspections for foreign repair stations, requiring certain air carriers to provide detailed monthly maintenance reports for FAA analysis and requiring supervisors and mechanics to be certified under FAA regulations regardless of location. The bill would also put a moratorium on FAA certification of new foreign repair stations if the FAA does not implement the new requirements, including issuing a rule to require security assessments of foreign repair station employees, within one year of the bill being enacted.

“For years I’ve pressed FAA officials to heed the warnings from its own Inspector General and to do more to close the gap between our safety standards and those of foreign repair stations,” said DeFazio.

"The bill I'm introducing … does just that by establishing one standard of safety regardless of where the aircraft is maintained."

According to a letter (PDF) sent by the ARSA-led coalition to the chairman and ranking members of the House Transportation & Infrastructure Committee and Aviation Subcommittee, the groups believe the new record-keeping and reporting requirements the bill suggests "do nothing to help focus regulators on safety critical information and will simply overwhelm them with irrelevant data." In addition, the letter states that H.R. 5119 "puts in place regulatory requirements that would be likely impossible to implement" and runs the risk of impacting cooperation with international aviation authorities "including key bilateral aviation safety partners."

Along with ARSA, the letter was signed by organizations including the Aircraft Electronics Association (AEA), General Aviation Manufacturers Association (GAMA), International Air Transport Association (IATA) and National Air Carrier Association (NACA).

https://transportation.house.gov/imo/media/doc/Introduced%20Text%20of%20Safe%20Aircraft%20Maintenance%20Standards%20Act.pdf

http://arsa.org/wp-content/uploads/2019/11/ContractMaintenanceCoalitionLetter-20191118.pdf

Teamsters Support Safe Aircraft Maintenance Standards Act

Legislation Protects Aviation Maintenance Workers and the Flying Public

The International Brotherhood of Teamsters today announced its strong support for H.R.5119, the Safe Aircraft Maintenance Standards Act, which was passed out of the House of Representatives' Transportation and Infrastructure Committee earlier this week.

"I'd like to thank our allies in Congress who have been working incredibly hard on this legislation out of their concern for the safety of both their constituents and every U.S. citizen who steps foot on an airplane," said Capt. David Bourne, Teamsters Airline Division Director. "This bipartisan legislation is a perfect example of representative democracy at its finest."

The legislation was introduced by House Transportation and Infrastructure Committee Chairman Peter DeFazio (D-OR), Representative John Katko (R-NY) and Representative John Garamendi (D-CA). It requires that aircraft maintenance performed abroad be held to the same standards as maintenance performed domestically.

"This bill closes significant regulatory loopholes that could lead to tragic accidents if they are unattended to," said Teamsters Airline Division International Representative Chris Moore.

"It is in everyone's best interest to have aviation mechanics overseas held to the same domestic standards regarding inspections, drug and alcohol testing, professional qualifications, background checks, threat assessments and other regulations that are essential to the safety of airline workers and passengers throughout the United States."

Long EZ's propeller separates in flight

The pilot was conducting a personal flight in his experimental Long EZ.

While in cruise flight, the airplane "violently began shuddering," and the pilot immediately shut down the engine and attempted an emergency landing. The airplane was unable to reach the selected runway and landed about 200′ short of the runway threshold in a rough, grassy area in Eufaula, Alabama.

After exiting the airplane, the pilot discovered that a portion of the trailing edge of the wood propeller had separated and penetrated the lower half of the right rudder control surface.

A post-accident examination of the remaining portion of the wood propeller determined that the propeller was manufactured from laminations of defect-free hard maple lumber that showed no signs of decay.

An inspection of the separation surface indicated that the individual layers of the propeller were laminated together using an adhesive that resulted in a light-colored bond line. The failure surface included an exposed portion of the bond line between two wood layers that had failed.

Examination of this bond line showed minimal wood failure that was about 8″ long and between 1/8″ and 1/4″ wide.

The amount of cured adhesive observed varied considerably along the length of the failure surface's bond line, with an area of the bond line having minimal adhesive coverage.

According to the propeller manufacturer, the propeller was carved by hand and assembled using an adhesive that is advertised as "ideal for interior wood application."

However, the adhesive had not been tested for applications in which extreme temperature fluctuations, pressure, and vibrations would be expected, such as those experienced during airplane operations.

Probable cause: The in-flight separation of a portion of the propeller, which subsequently penetrated the right rudder, as a result of the failure of the bond line between two of the propeller's wood layers. Contributing to the failure of the propeller was the manufacturer's use of an inappropriate bonding agent.

NTSB Identification: ANC18LA008

This November 2017 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.

Air BP rolls out Airfield Automation digital technology in Dubai to help prevent misfuelling

The rollout of Airfield Automation at EFTA is part of a global program by Air BP. The technology is already live at more than 100 airports in 13 countries on 4 continents. More than 45,000 over-wing fueling have been completed where fueling operators and customers have benefited from Airfield Automation's unique Misfuel Prevention Technology, which helps to reduce the risk of misfueling. Most recently, Air BP rolled out the technology to its locations in Greece at Megara (LGMG), Syros (JSY/ LGSO), Ioannina King Pyrros (IOA/ LGIO) and Sitia airports (JSH/ LGST). It is anticipated that the technology will be fully operational at around 350 locations globally by the end of 2020.

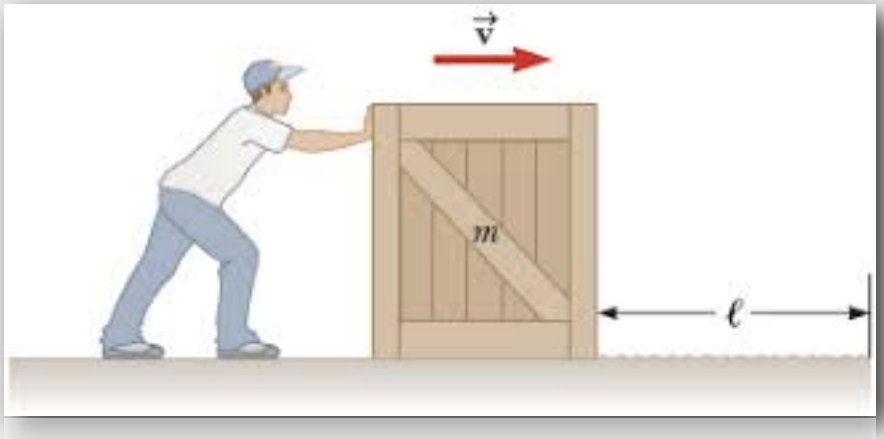
Airfield Automation is a cloud-based platform that is designed to help prevent misfueling by means of an engineering barrier. It helps to deliver enhanced safety, reliability and compliance in airport fueling operations, and enables Air BP to provide data in real time to airline customers. It is the first commercially deployed system of its kind in the world.

The platform consolidates the data related to airport fueling operations and works via an app on a handheld device in the fueling vehicles. The 'safe2go' app captures fuel volume readings and provides fuel grade checks to add an additional misfueling barrier. It then electronically captures customer details which are confirmed with an electronic signature from the pilot or airline representative. By using this automated, end-to-end, paperless system, accuracy is enhanced and any potential miskeying errors minimized.

In addition to the enhanced safety barriers, aircraft operators will also benefit from faster, more comprehensive and more accurate fueling and delivery data. The cloud-based technology will enable Air BP to offer increasingly integrated information to customers, such as delivery records and precise delivery timings.

Robert Gerritsen, general manager for Air BP Middle East & Northern Africa, comments: “We are delighted to be exhibiting at the Dubai Air Show and to be rolling out Airfield Automation at Emirates Flight Training Academy. Our success in the Middle East is based on our track record in safe and reliable operations. Misfueling is one of the biggest risks we face in our industry. With this new technology, we are providing an engineering barrier to help prevent misfueling which is good news for our region and good news for our industry.”

Ergonomics Testing Reveals Workers are Injuring Themselves More Quickly Than Guidelines Suggest



Caster Connection collaborated with the Spine Research Institute at Ohio State University, in conjunction with the NSF Industry/ University Cooperative Research Center to discover the importance of replicating authentic movement for injury prevention.

New findings suggest that the International Organization for Standardization (ISO) push/pull requirements might not go far enough to protect workers. More testing is needed to better represent real-life situations and in turn, become more effective for injury prevention.

Caster Connection, manufacturer of casters and wheels, collaborated with the Spine Research Institute at The Ohio State University, in conjunction with the National Science Foundation (NSF) Industry/University Cooperative Research Center, who together, discovered the importance of replicating authentic movement for injury prevention in push/pull testing.

"Occupationally-related low back disorders and shoulder musculoskeletal disorders are a leading cause of lost work days and are a costly occupational safety and health problem facing a variety of industries," said Joe Lyden, President of Caster Connection. "These injuries occur because organizations vary in the type of push/pull gauge they're using – varying test results from one organization to the next."

Additional findings include:

- In order to be accurate for real-life situations, acceleration in testing should be much higher than ISO guidelines advise
- Workers are injuring themselves more quickly than guidelines suggest and before they even realize it
- Current guidelines do not reflect how people are using carts in real-life situations
- The force required to push a cart differs from the force required to pull a cart and people don't typically test pulling

The objective of this particular study was to provide recommendations for practitioners in regard to push/pull force assessment that improves the accuracy and precision of hand force estimates, thus making the SRI push/pull guidelines more applicable. More testing is required to determine the gold standard for new guidelines.

For more information about the early findings of the study, visit www.casterconnection.com/research. The study in its entirety will be available online in 2020.

US aviation fatalities increased by 13% in 2018, NTSB says

The number of people killed in US aviation accidents increased by 13% from 2017 to 2018, according to the **National Transportation Safety Board**.

The NTSB reported 347 people died in aviation accidents in 2017, compared to 393 in 2018. "The NTSB is disappointed to see that the fatal accident rate and fatal accident numbers have increased overall for last year," NTSB Chairman Robert L. Sumwalt told CNN. "The rate is once again above one fatality per 100,000 flight hours."

Most of the fatalities occurred during general aviation, which includes private and recreational flying. For two years, the fatal accident rate among general aviation was below 1.0 per 100,000 flight hours. It increased to 1.029 accidents per 100,000 flight hours in 2018.

Meanwhile, fatalities in On-Demand Part 135 operations -- which include charters, air taxis and air tours -- claimed 12 lives, down from 16 in 2017.

The commercial airline accident rate has gone significantly down in the last decade, according to Sumwalt.

The 2018 death of Wells Fargo executive Jennifer Riordan aboard a Southwest Airlines was the country's first commercial airline passenger fatality in nine years.

"It's a very good safety record, but still, one fatality is certainly one too many," Sumwalt said.

The NTSB did not provide reasons for the increase in aviation fatalities, but has issued recommendations for improving safety aboard general aviation and Part 135 operations.

One safety proposal is for charter operators to start using safety management systems that provide a formal approach to managing aircraft safety. Charter operators are also urged to employ flight data monitoring programs, which help detect problems before a crash.

"Our real mission is to investigate transportation accidents to determine the probable cause, and most importantly issue safety recommendations so that they don't happen again," Sumwalt said.

10 questions to ask your family around the table

Sometime between the first bite of turkey and the last slice of pie, it'll happen: a lull in the dinner conversation. What will you do next? If you're breaking bread with acquaintances, you might turn small talk into smart conversation. But if you're with family and friends and want to deepen the ties that bind, then try asking one of the following 10 questions around the table.
What are you grateful for?

What are you proudest of?

What's been the happiest moment of your life so far?

What's been the hardest moment of your life, and how did you get through it?

What are the most important lessons you've learned in life?

How would you describe yourself as a child? Were you happy?

Who has been kindest to you?

How do you want to be remembered?

If your great great grandchildren could listen to this years from now: is there any wisdom you'd want to pass on to them? What would you want them to know?

If you could honor one person in your life — living or dead — by listening to their story, who would that be, what would you ask them and why?

Blessed Thanksgiving to All