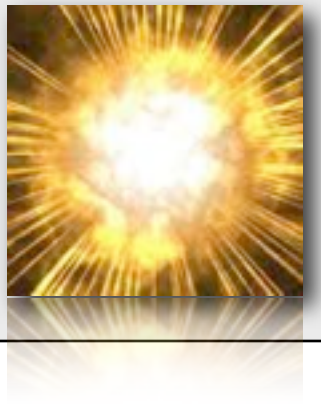
Aviation Human Factors Industry News

Volume VI. Issue 27, August 06, 2010

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:

A Human Error Slip. Good Plan Poorly Executed.

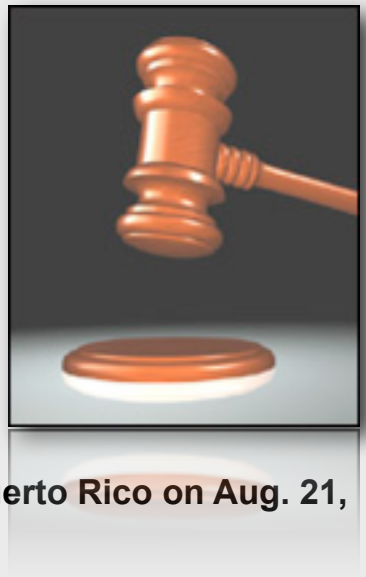
Falcon 20 Tire Explodes



Technician attempts to service Falcon 20 Tire. Manual calls for a max pressure of 94 PSI (6 BAR), but confuses BAR and PSI, and inflates tire to BAR (1276 PSI)...

http://www.youtube.com/watch?v=oyzg6y7fqGQ

FAA proposes civil penalty against Spirit Airlines



The U.S. Federal Aviation Administration (FAA) is proposing to assess a civil penalties of $50,000 against Spirit Airlines for alleged violation of the Federal Aviation Regulations. The FAA alleges that Spirit Airlines returned an aircraft to service, and then operated that aircraft on revenue passenger flights when it was not in compliance with Federal Aviation Regulations. The FAA alleged that Spirit failed to replace a faulty elevator aileron computer (ELAC) after the aircraft experienced an uncommanded pitch down of the nose while operating between Orlando, Fla. and San Juan, Puerto Rico on Aug. 21, 2009.

Although Spirit's maintenance program required replacement of the ELAC computer, the airline did not do so before flying the A321 on a revenue passenger flight the next day from San Juan to Fort Lauderdale, when the aircraft experienced another uncommanded pitch down.

Aircraft maintenance errors, FAR violations and using the Aviation Safety Reporting System (ASRS)

In order to fix a problem we must first know what the problem is. This is fundamental in troubleshooting a discrepancy on an aircraft system. The validity of that troubleshooting information relies on objective evidence. We then act on that information to make a repair that is both correct and.

This process is also an important element when trying to identify and fix problems regarding the safety of the aviation system such as violations or unsafe conditions that have the potential to lead to incidents or accidents.

How many times have you inherited a problem that was created up line from where you operate? A faulty process, bad paperwork or fallible decision made by someone far removed from the airplane that resulted in creating an error or violation made by the mechanic at the sharp end. These types of conditions we inherit are called "latent failures".

Sometimes we create an "active failure" or "unsafe act" that is no ones fault but our own. These are recognized conditions in Human Factors in aircraft maintenance. Most times these are simply honest mistakes. In our business we cannot afford to make errors or violate procedures, even if unintentional.

But how do you report these issues and why would anyone want to? Many times the information we posses relating to a mistake, FAR violation or unsafe condition that could lead to an incident or accident is the very same information that could get us into hot water with the FAA or the company we work for if we are involved. Information that could potentially result in our license being suspended, time off or even terminated as the penalty for that mistake.

As airmen who are responsible for the lives of others, we have to own up to these mistakes before something catastrophic happens. Your first priority is to get the situation corrected as soon as it's discovered then do the following:

Don’t panic! There is a process that can help you if you find yourself in this position.

That process is the Aviation Safety Reporting System (ASRS). The ASRS collects, analyzes, and responds to voluntarily submitted aviation safety incident reports in order to lessen the likelihood of aviation accidents. This program is described in Advisory Circular 00-46D. It is also covered in FAR 91.25. The purpose of the program is to identify safety problems in the aviation system so that improvements can be made.

If you have unintentionally violated the FARs which results in an unsafe condition, file a confidential Aviation Safety Report Form. You will have immunity from FAA enforcement actions if you do.

To understand how to protect yourself from enforcement actions or for additional information regarding the ASRS program from an aviation attorney click here and here.

Filing an ASRS form is right thing to do and if necessary will protect you. When in doubt, fill it out!

SNOWBIRDS CRASH REPORT CITES LACK OF TRAINING

The pilot who crashed a CT-114 Tutor during a photo flight with the Snowbirds in 2008 was not trained for the role that ultimately killed him and his onboard photographer, according to the flight safety report. Lead investigator Major Kevin Roberts told CTVNews that experienced pilot Captain Bryan Mitchell was maneuvering with the formation and was probably looking back over his shoulder at the formation when he flew the aircraft and his passenger, photographer Sgt. Charles Senecal, into the ground. The accident took place near the team's home of Moose Jaw, Sask. "Fluid maneuvering around a formation at low altitude is potentially a high-risk activity and typically involves specialized training," according to the report.

Mitchell had not received such training. According to the report, that fact was "not fully considered" while planning the flight and was likely "overshadowed by his [Mitchell's] overall high experience level and reputation." Click through for details of the maneuver that killed Captain Mitchell and Sgt. Senecal.

http://www.avweb.com/eletter/archives/avflash/1672-full.html#202852

Feds: Captain could have prevented Denver accident

In this Dec. 22, 2008 the wreckage of a Continental Airlines jet sits in a ravine at the Denver International Airport.. The plane veered off a runway while trying to take off on Saturday, Dec. 20, 2008.

Strong crosswinds are the focus of an investigation into why an airliner with 110 passengers ran off a runway in Denver, but the actions of air traffic controllers and the flight's captain have also been questioned, National Transportation Safety Board documents show.

The captain of an airliner that ran off a runway in Denver during a strong crosswind could have prevented the accident if he had used the plane's rudder to correct its direction, federal safety investigators said Tuesday.

The captain had a lot of flying experience and a good safety record, but he had probably never attempted a takeoff in crosswinds as strong as he faced the evening of Dec. 20, 2008, investigators told the National Transportation Safety Safety Board. Nor had he been trained for gusts that high, they said.

The Continental Airlines Boeing 737 with 110 passengers and five crew members was in the midst of a takeoff roll at Denver International Airport when it suddenly veered left off a runway, rumbled across a frozen field, broke into pieces and burned. No one was killed, but six people were seriously injured and dozens more were treated for minor injuries.

Just before the plane left the runway there was a gust of 52 mph that, hitting the plane's tail, caused it to "weathervane" — turn until its nose was pointed into the wind, investigators said.

The pilot had twice applied the plane's right rudder during the first 12 seconds of the takeoff roll to correct its direction back to the right. But when a gust caused the plane to swing violently to the left, he reached instead for the tiller — which turns the nose wheel and was of no use under the circumstances — instead of reapplying the rudder to turn the plane back to the right, investigators said.

The board was meeting to determine the cause of the accident and make safety recommendations.

The air traffic controller who cleared the plane for takeoff told pilots there was a crosswind of 31 mph, which was the reading on one of two wind sensors nearest the runway. However, the controller didn't mention that the other wind sensor was recording gusts of as much as 46 mph.

Controllers should have warned the flight's pilots about the gusts and changed the takeoff pattern at the airport to account for the wind, Continental said in written comments to the board.

The Air Line Pilots Association, which represented the flight's captain during the investigation, also faulted controllers for not giving pilots the highest wind reading. But the union blamed the airport for not having enough wind sensors to adequately detect the gusty conditions encountered by the flight.

Continental's guidance to pilots flying 737s was not to take off in crosswinds greater than 38 mph.

"Had the crew known of the actual current wind conditions as displayed on sensor No. 2, which exceeded Continental's ... guideline, they would have waited until wind conditions improved or requested a different runway," the airline said.

However, the National Air Traffic Controllers Association said the Denver controllers followed instructions by using the wind reading from the sensor that was closest to the departure end of the runway, which is where the plane leaves the ground and begins to climb. The union also said there isn't clear guidance from the Federal Aviation Administration on when controllers should change the direction of takeoffs and landings to account for strong winds.

JFK Emergency: An Airline Pilot's Perspective

The emergency declared by an American Airlines 767 crew landing at JFK on May 4, 2010, may have been unusual, but it might also represent a that's closer to "normal for JFK" than an emergency call might suggest. AVweb spoke this week to a JFK-based 13-year veteran American Airlines pilot and asked him to share his insights about operations, stresses, and pilot/ controller interactions at JFK, and what -- if anything -- can be done to improve them.

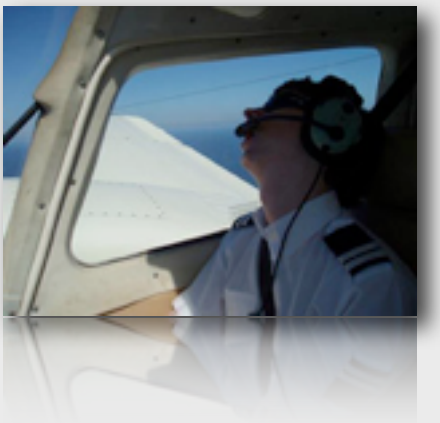
Flight 2 was an American Airlines 767 out of Los Angeles for JFK on May 4, 2010. As the airliner approached, wind was 320 at 23 gusting to 35. Once in the queue, the flight was not directed to land on 31R into the wind. Controllers instead directed the jet to land on Runway 22L with a gusty direct crosswind. When the pilot responded that "if you don't give us to Runway 31R, we're going to declare an emergency," the controller's reaction to the "emergency" and the recorded interaction that followed quickly spread through the pilot community.

To hear the original radio transmissions, click here, then click here for our conversation with Goldberg.

http://www.avweb.com/other/jfkemergencygo.mp3

http://www.avweb.com/alm?podcast20100719&kw=RelatedStory

Pilots punished for failing to stay alert during flights



The Japanese government has punished four pilots of Skymark Airlines for failing to stay alert during commercial flights between April 2009 and February 2010. A co-pilot who took photos of three chief pilots on six separate flights in violation of the aviation law will be barred from flight duty for 60 days, the Ministry of Land, Infrastructure, Transport and Tourism said yesterday.

The three captains have each been subjected to a 20-day flying ban, the ministry said.

The co-pilot has been dismissed by the budget airline.

The ministry also issued a warning to another captain and co-pilot at Skymark who failed to input altitude data into an auto-pilot system, with the result that they flew their aircraft at a higher altitude than instructed by air traffic control in March this year.

Pro-TEC Tool & Equipment Coverage

Tool Insurance

Pro-TEC Insurance, underwritten by Hanover Insurance Company, a special offer for new clients. Now through Sept. 1, 2010 , all applicants are eligible for a 50 percent discount on tool insurance. Pro-TEC protects the technician's tool investment for loss or damage. Coverage is available nationwide. There is no state restrictions. Currently, there is no other insurance like this available to cover loss or damage.

http://www.mechanicsinsurance.com

Study Paves Way for Hormonal Treatment for Jet Lag and Shift Work

Rodents adapted more quickly to altered circadian rhythms when researchers switched off the adrenal clock or manipulated the synthesis of corticosterone by the adrenal gland with the help of metyrapone. The findings, published in the Journal of Clinical Investigation, could pave the way for a new approach to the hormonal treatment of the effects of jet lag and shift work.
Results of the study showed how individual "clock" genes and the internal clocks of the different organs synchronize with the new external time in the case of jet lag. "The internal clocks and the 'clock' genes adapt to the altered external influences at varying speeds," says Gregor Eichele, PhD, director of the Genes and Behaviour Department, Max Planck Institute for Biophysical Chemistry in Germany. "When an organism suffers from jet lag, it would appear that the entire clock mechanism fails to tick at the right rhythm. As a result, numerous physiological processes are no longer coordinated."

When the scientists switched off the adrenal clock in mice, the rodents adapted their behavior more quickly to the new time and made a more rapid return to their laps on the wheel in synch with the new external time. It is not necessary, however, to switch off the entire adrenal clock to enable the mice to better recover from jet lag, according to the researchers. "The time-dependent release of corticosterone was crucial in enabling our rodents to adapt more quickly to the new time," explains Eichele. When the scientists administered the active agent metyrapone to the mice, their corticosterone rhythm changed as did their sleeping/waking rhythm.

"If the mice were given metyrapone at the right time, they adapted faster to the disturbed circadian rhythm. While the 'sleep hormone' melatonin, which is commonly used to treat jet lag, mainly acts by generating tiredness and is therefore more suitable for use when flying east than west, with metyrapone, the mice's internal clock can be turned both forwards and back," explains junior scientist Silke Kießling.

The insights of the Göttingen scientists could produce an entirely new approach to the treatment of jet lag and shift work disorders in the future. According to a press release about the study, metyrapone is already approved as a medication for the treatment of the overproduction of glucocorticoids and mineralocorticoids. However, it remains to be demonstrated in field trials and tests in the sleep laboratory whether the administration of metyrapone is suitable for the treatment of jet lag, and whether it has any side effects in humans.

FAA works with universities to study human factors research

US university Georgia Tech has entered into an agreement with the US Federal Aviation Administration to study pilot responses to alerts from traffic alert and collision avoidance systems used in the agency's next generation (NextGen) air traffic control system. The FAA's agreement with Georgia Tech is the first of several pacts the agency plans to forge in the coming months with universities to study aviation-related human factors.

Under the agreement, the FAA specifically seeks to determine how pilots should respond to alerts under the NextGen system where aircraft will be able to operate closer together.

One of the university's engineering psychology professors also plans to lead a team to study how flight crews and controllers work with current automation, and then determine how they use automation in the future to manage workloads and improve situational awareness and performance.

Georgia Tech's school of aerospace engineering features aviation research tools including air traffic control simulators and an Airbus flightdeck simulator.

Words are more important then you may think.

Debunking the 55%, 38%, 7% Rule

If you have been a student of public speaking for any length of time, you probably have heard of the so-called 55%, 38, 7% Rule. THis rule states that 55% of the meaning of communication is body language, 38% is in tonality, and 7% rest in the words themselves.

Most of us have blithely accepted this precept at face value. In fact, I've heard several Toastmasters glibly refer to this rule when making a point about the importance of gestures and vocal variety in public speaking.

Have you ever wondered where this percentages came from? Have you ever considered that they may have been misinterpreted and applied erroneously? Would it surprise you to know that the 55%, 38%, 7% Rule is a myth?

Words Are Only 7 %?

No one would argue that non-verbal expression and tonality are inconsequential to effective communication Yet, logically does it make sense to relegate words to a meager 7% of the message? Examine the origins of that rule, Dr. C.E. "Buzz" Johnson, a Certified Trainer of Neuro-Linguistic Programming, wrote in a 1994 issue of Anchor Point magazine:

"....if these percentages were really valid it would mean that the learning of foreign languages could be greatly abbreviated. After all, of the words only account for 7% of the meaning of communication, we should be able to go to any country in the world and simply by listening to the tone and carefully observing body language, be able to accurately interpret 93% of their communication!"

How many of us have 93% accuracy in immediately discerning the cause of a baby's cry, or even in understanding the communication of our pets? When a baby cries we know she/he is unhappy, but does it mean she/he is

wet, hungry, lonely or sleepy? When a dog barks, we know it is drawing our attention to something, but s it a visitor, an intruder, or simply a strange noise? Without the words, we still miss much of the meaning.

As Toastmaster, we learn to work with words, because a few well-chosen world can make the difference between a mediocre speech and a speech that inthralls, entertains and captures the heart. The right word can evoke our emotions, touch our values and stir us to action. Words, chosen conscientiously, can mean the difference between helpful feedback and hurtful criticism. Would words really be so important if they carried only 7% of the message?

Imagine if Nathan hale had said, "Okay, I'm willing to die for my country," instead of "I regret that I have but one life to give for my country." Imagine Franklin D. Roosevelt saying "Don't be afraid," instead of "We have nothing to fear but fear itself." Imagine John F. Kennedy saying "Do good things for your country," instead of "Asking not what your country can do for you, but what you can do for your country!" The words themselves make the difference in the intensity of the message, even when we no longer hear the tonality or see the body language with which they were spoken.

The Research

So where did this rule come from? Professor Albert Mehrabian, Ph.D., of the University of California, Los Angles (UCLA), is credited as the originator of the 55%, 38%, 7% Rule. He and his colleagues conducted two studies on communication patterns and published the studies in professional journals in 1967. Mehrabian later discussed the results of the studies in two book in the early 1970's.

The results of the studies were widely circulated in the press, in abbreviated form, leading to a misunderstanding of the original research and inaccurate generalizations of the conclusions.

Mehrabina and his colleagues were attempting to decipher the relative impact of facial expressions and spoken words. Subjects were asked to listen to a recording of a female saying in single word "maybe" in three tonalities, to convey liking, neutrality and disliking. Next, subjects were shown photos of female faces conveying the same three emotions. Then subject were asked to guess the emotions portrayed by the recorded voice, the photos and both in combination. The photos drew more accurate responses than the voices, by a ration of 3:2.