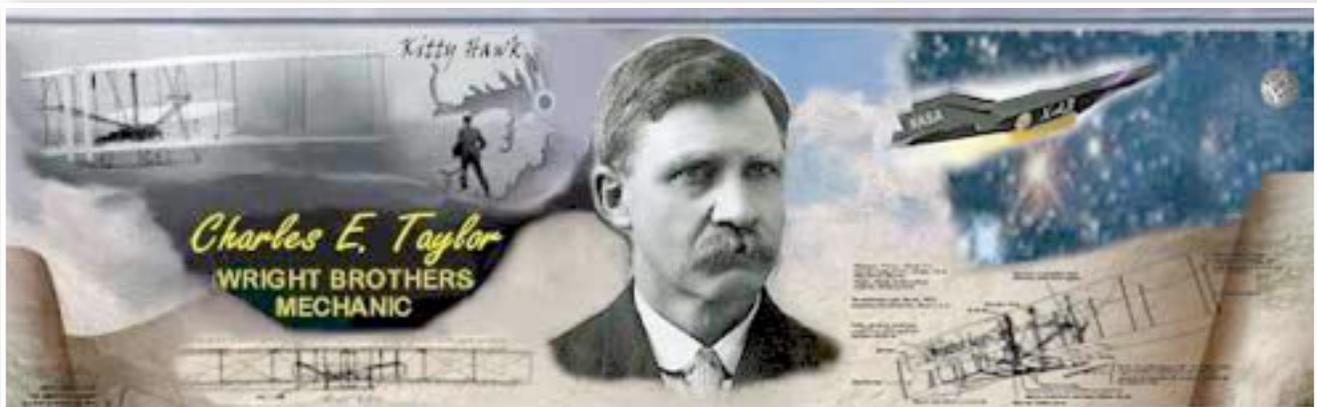


Aviation Human Factors Industry News

Volume VIII. Issue 47, December 21 , 2012



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

Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

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Wrong Bearing Blamed In Death Of Aircraft Maintenance Worker

Maintenance worker died after falling 20 feet while standing in deicing basket

An [incorrect part](#) in a deicing rig led to the death of an aircraft maintenance worker, an inquest heard. Forensic engineer John Hayes told Dublin Coroner's Court that the bearing used as the arm in the machine was '[not fit for purpose](#)'.

SR Technics worker David Ralph, 58, of Brackenstown, Swords, Co. Dublin, was standing in the deicing basket on March 19, 2008, when it plummeted more than 20 feet to the ground.

Ralph suffered severe head injuries and was pronounced dead at Beaumont Hospital shortly afterwards. The court heard earlier that a pin in the mechanism holding up the arm shattered causing the incident. But Hayes said that the accident happened when the [bearing jammed](#). It was "not fit for purpose," he said as its makers recommend a different kind of bearing be used with the deicer.

Coroner Brian Farrell adjourned the inquest until March to hear further evidence.



Just a Coffee Maker? by John Goglia

Listening to American Airlines' PR people trying to downplay the significance of loose seats found on their Boeing 757 aircraft after [improper maintenance](#) –one such incident resulted in the pilots making an emergency landing at John F. Kennedy International Airport – reminds me of how [critical even the most seemingly mundane maintenance task](#) can be. After all, cleaning a seat track and re-attaching a seat to it are not the most complex of aviation maintenance.



Yet, we all saw what doing it wrong can mean. And we can all imagine what the outcome could have been if those loose seats had been on an aircraft that hit a pocket of clear air turbulence or that careened off a runway, as a number of airlines have done in the last couple of years – including American in Jamaica just about Christmas time a few years ago.

Which brings me to the coffee maker story of my title. Back in the 70s when the push-button coffee brewers first came out on airplanes, some of you may remember how very unreliable they were. Even though the systems themselves were pretty basic, they had a high rate of failure. And usually the failures would be noticed just before departure when the push was on to make the airline's schedule. It was in the minutes just before pushback that we would invariably get a call that the flight attendants had reported a coffeemaker that wasn't working.

And coffee was considered a basic customer service item back in those days. So soon enough we would find ourselves scrambling to replace it as quickly as possible. Who wanted to take a delay because of a coffeemaker?

Well, the task had always seemed simple enough – disconnect the old coffeemaker and reconnect the new one. Two easy steps -connect the water hose, connect the electric plug and that's it. There couldn't have been a more routine job on the ramp. No one – certainly not me – ever thought much about the task. It wasn't like this was a critical component on an engine or anything. Well, you know where this is going. No one thought much about coffeemaker maintenance until one early spring morning when we got the word that a DC-9 that had just departed Boston for Philly was turning back. A [distinct smell of smoke in the cockpit](#) was reported by the pilots. We raced to the aircraft as it was being deplaned and quickly traced the smell to the coffeemaker.

Sure enough a bad cannon plug had caused an electrical fire in the coffeemaker. If anyone had thought to look closely at the cannon plug, it would have been obvious that it was defective and that it should have been replaced.

[Moral of the Story:](#) We need to remind ourselves –and our management personnel when they're looking to cut corners in maintenance or staffing – that every maintenance task, [no matter how inconsequential](#) it may seem, carries the risk of serious consequences if done incorrectly.

Human Factors training is just common sense... Or is it?

Gordon Dupont - System Safety Services

Many times over the years, I have had class participants tell me that they don't need human factors training because it is **just common sense**. Nothing could be farther from the truth. For example, look at the picture of the plumbing fittings on the right. It is just common sense that even your grandmother would know to tighten every single one of those fittings. Yet in my seven years of accident investigation I have met all too many **very qualified, conscientious and loaded** with common sense maintenance personnel who have left a line loose on an aircraft.



Human Factors training is nothing more than training the person on **how to avoid the error they never intended to make**.

It calls for providing the person with information on what can set him/her up to make an error and more importantly, what **"safety nets"** the person can put in place in order to prevent an error from occurring or to prevent any error from becoming an accident.

What is a "Safety Net"? A safety net is a regulation, a policy, a procedure or a practice which if in place, might break a link or prevent a link from forming. An example is: developing the habit to always go back three steps in your work after being distracted. In Human Factors training you are taught that your mind can work faster than your hands and thus you may think and believe you have completed a task when in fact you have not. Now take a look at our plumbing lines, a safety net of always using **TorqueSeal** to mark lines as you tighten each fitting would let you and others know that each fitting is correctly tightened. A **dual inspection** by a second person would also help ensure no lines were left loose.

To error is human

Ever since Eve made the error of eating the forbidden apple, we humans have been making human errors. To lessen errors being made we have tried to “Murphy-proof” everything we have come into contact with.

For example; you can’t start your car unless it is in neutral or park or you can’t retract the landing gear on the ground.

We also have come up with rules, laws and regulations to reduce human errors. I.e., You must stop at a red light even though common sense tells you there is no one around and it would be safe to not do so. If you do make an error we have put up warnings to prevent it from causing an accident or at least lessen its consequences. I.e., A [warning horn](#) to let you know that you forgot to lower the landing gear before you land or a seat belt to keep you Safer if you choose to ignore the horn.

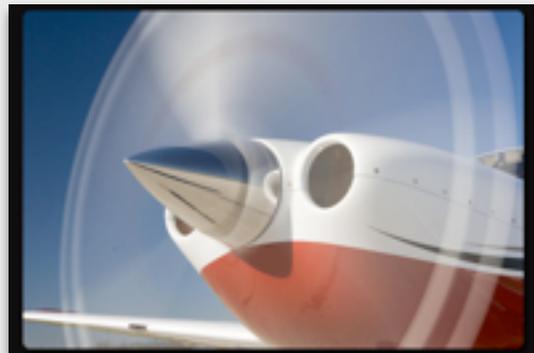
Today we have “[human-proofed](#)” the aircraft to the extent that we have a whole new set of problems. The pilots and crew on many occasions don’t even know what the aircraft is doing.

We also have so many rules nowadays that there are rules for the rules and because there are so many, few of us can remember them all. But the fact still remains that [human error is still our biggest problem](#) and in order to lower human error we must provide the correct training to all humans in the organization because EVERY human can make a mistake even with years and years of experience.

Student Pilot's Arm Severed By Propeller

Was Near Finishing Work On His Private Certificate When The Accident Occurred

A student pilot who was reportedly just about ready to go for his Private Pilot check-ride has his arm severed above the elbow by the propeller of the Cessna 172 he had just landed Sunday afternoon.



The pilot had been taking instruction through Pressley Aviation at Goose Creek Airport (28A) in North Carolina's Union County. He had flown with his instructor Sunday to Stanly County Airport in Arbermarle, NC (KVUJ). FBO and flight school owner Leighton Pressley and his 16-year-old daughter had gone along on the flight. Television station WSOC reports that the instructor was at the controls when the student exited the airplane and "ended up in the propeller," according to Stanly County Airport Manager David Griffin.

Pressley reportedly used his belt as a tourniquet to stop the bleeding from the students severed arm. He was airlifted to Carolinas Medical Center's main hospital in Charlotte, NC, where he was listed in fair condition.

The student had nearly 60 hours in his logbook, and was near to taking his check-ride for his Private Pilot certificate. The FAA told the station that it has not certified Pressley Aviation as a flight school, but that four of the five pilots listed on the company's website are CFIs.

Human Factors: Boeing vs. Airbus Design Philosophy



VS



This is the clearest demo and explanation of the two different design philosophies. If you haven't seen the following video you will find it most interesting.

CBS Report on Air France flight number 447:

In response to the release of the final report on the crash, Captain Chesley "Sully" Sullenberger comments on the event and what brought the airliner down.

<http://www.youtube.com/watch?v=kERSSRJant0&feature=endscreen>

NTSB Prelim: Heli-Lunch Break Goes Wrong

Pilot Secured Helo, Reached For Lunch, Helo Takes Off...

OK... ouch. There are those who will tell you that they've done this kind of thing [without a hint of a problem...](#) but securing a running helo, and relinquishing the ability to quickly retake control simply sounds like an accident waiting to happen... and this time, in particular, it was. This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed. NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this public aircraft accident report.



On November 23, 2012, about 1410 mountain standard time, an American Eurocopter Corporation AS350 B3 helicopter, N3984A, was substantially damaged following a loss of control while maneuvering near Newfield, Arizona. The helicopter was registered to the Customs and Border Protection (CBP), of Washington, D.C. The certified commercial pilot, the sole occupant, was not injured. Visual meteorological conditions prevailed for the routine air patrol mission, which was conducted as a Public Use flight, and a CBP flight plan was filed. The flight departed on the mission from the Davis Monthan Air Force Base (DMA), about 1210.

In a post accident statement provided to the National Transportation Safety Board investigator-in-charge, the pilot reported that after he landed for a lunch break with the helicopter's engine running at 100 percent flat pitch, he secured collective in the full bottom position and fractioned the cyclic. The pilot stated that as he was in the [process of retrieving his lunch](#), the helicopter suddenly became light on its forward skids and began to slightly pitch up.

The pilot further stated that at this time he corrected the slight pitch with forward cyclic to ensure skid contact with the ground.

The pilot revealed that within seconds the aircraft began to exhibit vertical dynamic oscillations that continued to worsen, at which time he applied collective to lift off in an attempt to regain aircraft stability. However, as the helicopter lifted off, an uncommanded downward change in pitch resulted in a nose-low attitude. The pilot stated that he then applied aft cyclic to compensate, but when in about a 5 foot hover the helicopter immediately began an [uncontrollable](#) left yaw. Due to the lack of tail rotor authority, the helicopter continued to pivot left for about 180 degrees before the pilot was able to land the aircraft. After securing the engine and egressing the helicopter, the pilot observed that both tail rotor blades had [separated](#) and that the aft section of the tail boom was [severed](#).

The closest weather reporting facility was located at the Nogales International Airport (OLS), Nogales, Arizona, which is about 50 nautical miles west of the accident site. At 1354, the OLS weather was reported as wind 080 degrees at 12 knots, visibility 10 miles, sky clear, temperature 27 degrees Celsius (C), dew point -02 degrees, and an altimeter setting of 30.18 inches of mercury.

On November 26, 2012, the helicopter was recovered to a secure location for further examination.

FAA Proposes Policy to Improve Flight Attendant Workplace Safety

The U.S. Department of Transportation's Federal Aviation Administration (FAA), working with the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA), recently proposed a new policy for addressing flight attendant [workplace safety](#).



While the FAA's aviation safety regulations take precedence, the agency is proposing that OSHA be [able to enforce certain](#) occupational safety and health standards currently not covered by FAA oversight.

“Safety is our highest priority and that certainly extends to those who work in the transportation industry,” said U.S. Transportation Secretary Ray LaHood. “Under this proposal, flight attendants would, [for the first time](#), be able to report workplace injury and illness complaints to OSHA for response and investigation.”

“The policy announced with the FAA will not only enhance the health and safety of flight attendants by connecting them directly with OSHA, but will by extension improve the flying experience of millions of airline passengers,” said U.S. Secretary of Labor Hilda L. Solis.

Flight attendant workplace issues could include things such as [exposure to noise](#) and blood borne pathogens, and access to information on hazardous chemicals. The FAA and OSHA will continue to work to identify any additional conditions where OSHA requirements could apply. They will also develop procedures to ensure that OSHA does not apply any requirements that could affect aviation safety.

“Flight attendants contribute to the safe operation of every flight each day,” said Acting FAA Administrator Michael Huerta. “This proposed policy is an important step toward establishing procedures for resolving flight attendant workplace health and safety concerns.”

“We look forward to working with the FAA and the airlines to assure the protection of flight attendants,” said Dr. David Michaels, assistant secretary of labor for occupational safety and health.

Through the FAA Modernization and Reform Act of 2012, Congress required the FAA to develop a policy statement to outline the circumstances in which OSHA requirements could apply to crewmembers while they're working on aircraft.

The policy notice was sent to the Federal Register today and is currently available at <http://www.faa.gov/about/initiatives/ashp/>. The 30-day comment period begins when the policy notice is published in the Federal Register.

Decision Making

Essence of decision making whether one is a pilot, air traffic controller, or aircraft mechanic is:

1. Having the proper information at hand and,
2. being able to make the proper decision based on that information.

1. Having the proper information at hand

"A decision is thus no better than the information it is based on."

Could Chalk Airlines accident (N2969 killing all 20 people aboard) been prevented if better information were present? How many times have mechanics found the manufacturer's service department is "non-existent" or provides little information? Is the method of delivering critical information to the mechanic effective? "It's up to the mechanic" **attitude** toward service information doesn't lead to an effective solution nor enhance safety. Many times this is an organizational problem and responsibility.

Chalk Airlines mechanic's decisions, while with hindsight are fatally flawed, might not have been an incorrect decision based on the information present at the time. Throw in a dose of **confirmation bias** and the decision even becomes expected under the circumstances. This leads one to the conclusion that accidents such as this one are not a one-off event.

2. Being able to make the proper decision based on that information

Confirmation Bias recognition and management

We can have a lively discussion about what decision to make even when all relevant information is present. I don't understand why you don't agree with me and you don't understand why I don't agree with you. "People believe what they want to believe" This is Confirmation Bias. Interesting accidents caused by Confirmation Bias include Airbus A321-232 SK-473 and Airbus A320 UP-BWM.



[A more formal description of Confirmation Bias:](#)

Confirmation bias is a phenomenon wherein decision makers have been shown to actively seek out and assign more weight to evidence that confirms their hypothesis, and ignore or underweight evidence that could disconfirm their hypothesis. As such, it can be thought of as a form of selection bias in collecting evidence.

[We all have Confirmation Bias.](#) It's not a defect but normal human behavior. Errors caused by Confirmation Bias are not solved through penalties. For the aircraft mechanic I believe there are two methods of reducing maintenance errors caused by Confirmation Bias:

1. You cannot inspect your own work. Often you cannot see your own mistakes, even glaring ones, because your mind has already decided that the work was done as you intended. An [inspector does not have your bias](#) (he has his own) and can better judge your work.
2. Education and recognizing when Confirmation Bias might be present.

With 45 years in aviation I have learned that most mistakes (flying or maintenance) are not due to a lack of skill, [but a lack of judgment](#). How often have I been told that "he is a good pilot". Fine, that's good, but as a human being can he make the right decision when the situation gets rough? For that we need to look at the [soul](#) of the person; the personality. Can he accept failure (land before his destination)? Or will his [ego](#) send him forward on a path of destruction? Its not about being good -- its about avoiding failure. Sometimes the more timid pilot is better at avoiding failure.

<http://mechanicsupport.blogspot.com/2011/11/metal-fatigue-cracks-and-turbo-mallards.html>